OPTIMAL WATER USE OF TURF GRASS

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OPTIMAL WATER USE OF TURF GRASS

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OPTIMAL WATER USE OF TURF GRASS

EXECUTIVE SUMMARY

Rationale

Estimation of water requirements for turf grass used in South Africa is of utmost importance for irrigation scheduling on sports fields. This is very important as South Africa is prone to water shortages. In urban environments water treated to potable standards is often used for irrigation and over- irrigation of sports fields causes wastage of this precious commodity. Currently irrigation on most of the sports fields in South Africa is according to the feeling of the superintendent and is considered an art rather than a skill based on scientific knowledge. Many golf greens are over-watered and irrigation applied at the wrong times of the day. It would be of cardinal importance to develop some means of estimating the rate of water use to assist in proper irrigation scheduling which is sparing in its use of water, affordable and user-friendly to sports facilities.

Objectives

The overall objective of this study was to measure evapotranspiration rates of turf grasses used in South Africa and to establish so-called crop factors which relate water usage of turf to a convenient measure of potential evaporation. A preferred means of obtaining potential evaporation measurements was with a Class-A evaporation pan. Data from an automated weather station was also considered to be of benefit in enabling the sport facilities country-wide to apply the results of these investigations. It was also necessary for crop factors to reflect the influence of cultural practices such as mowing height and fertilization which play a major role in turf grass water use.

Methodology

Evapotranspiration was measured with the aid of weighing lysimeters in a field of well-maintained turf grass located at Potchefstroom University. Six different turf grasses were evaluated according

to their response to mowing height and fertilization. These included one cool-season grass and five warm-season grasses. **Penncross Creeping Bent** (*Agrostis pulastris Huds.*) was used as the cool-season grass while the following warm-season grasses were evaluated : **Numex Sahara** (*Cynodon dactylon* (L.) Pers.), Kikuyu (*Pennisetum clandestinum* Hochst ex Chiov.), **Bayview** (*Cynodon transvaalensis* Burtt-Davy), **Speedy Royal** (*Cynodon dactylon* (L.) Pers.), and **Florida** (*Cynodon transvaalensis* Burtt-Davy).

Results

1. *Water use of Bermuda grasses*

Four Bermuda grasses were evaluated in this study, of which two belong to the *Cynodon dactylon* species and two to the *Cynodon transvaalensis* species. Numex Sahara grass which belongs to the *Cynodon dactylon* species, had the lowest ET rate of all the grasses evaluated. The average ET of the grass was found to be 3.95 $mmday^{-1}$ and it had a crop factor of 0.69. Florida grass, which is a strain of *Cynodon transvaalensis*, was the grass that had the second lowest ET rate of these grasses. The average ET rate of this grass was found to be 3.99 $mmday^{-1}$ with a crop factor of 0.70. Speedy Royal, another *Cynodon dactylon*, followed with an average ET of 4.23 $mmday^{-1}$ and had a CF of 0.75. Bayview is the Bermuda grass with the highest water use rate with an average ET of 4.29 $mmday^{-1}$ and a crop factor of 0.76.

Evapotranspiration rates of Bermuda grasses ranged from 1.32 to 8.81 $mmday^{-1}$. A broad range of canopy structure, shoot density, leaf area and vertical leaf extension rate exists among the commercially available Bermuda grass cultivars. In comparisons among cultivars, higher nitrogen levels tended to have a stronger effect on increasing ET rate than a higher mowing height with the ranges used. This response is probably associated with the enhanced vertical leaf extension rate associated with higher N applications.

The fact that Bayview grass used considerably more water than Florida grass, could probably be explained by its deeper green colour which reflects less energy in visible wavelengths, its more vigorous growth and its higher root mass. It could also be due to

the high potential of this grass to thatch. Bayview comes out dormancy faster than the other *Cynodon* spp. and cultivars considered and takes longer to reach dormancy in the winter. It thus has a longer growing season, which leads to an increase in the average ET rate.

The *Cynodon dactylon* spp. have a broader leaf texture than the *Cynodon transvaalensis* spp. This creates a relatively open canopy more conducive to convective air flow. This leads to a higher water use rate. An increase in mowing height causes an increase in water use for much the same reason.

In this study it was found that Bermuda grass can use up to 8.81 mmday^{-1}. At this maximum level of water use, the crop factor is 0.95. It must be remembered that this study was conducted under non-limiting water conditions and the N levels were very high. It is believed that the use of average ET rates and crop factors for irrigation scheduling would be more realistic than the use of maximum rates.

2. *Water use of Kikuyu grass*

Kikuyu grass used the most water of all the turf grasses evaluated. The average ET of Kikuyu grass in these tests was 4.41 mmday^{-1}, with a crop factor of 0.78. The maximum ET of Kikuyu grass was found to be 8.66 mmday^{-1} with a crop factor of 0.97.

This is a very high crop factor for a warm season grass. The high potential ET rates of Kikuyu under non-limiting soil water conditions are possibly due to its rapid vertical leaf extension rate and high leaf area, plus its reduced horizontal leaf orientation. This is essentially similar to the explanation given for the higher water use rate of the *Cynodon dactylons*.

3. *Water use of Creeping Bent grass*

Penncross Creeping Bent grass has a potential ET of 7.9 to 9.7 mmday^{-1} in summer months. Creeping Bent grass is a vigorous grass with fairly rapid vertical leaf extension rate. In this study the Creeping Bent grass had an average ET rate of 4.21 mmday^{-1} and

a crop factor of 0.75. The maximum ET recorded in this study was 8.17 mmday^{-1} with a crop factor of 1.22. This is unrealistically high and could only be explained by the non-limiting conditions or a measurement error.

4. *Effect of mowing height on turf grass water use*

This study confirmed the fact that increase in mowing height will lead to an increase in water use of turf grass. Turf grown at 8 mm used 10% more water when compared with turf grown at 4 mm. Tall grass transpires more than short grass since, while no more solar radiation is intercepted per unit area, more advective energy can be intercepted. This has an implication for golf greens where the apron is grown at a higher mowing height than the rest of the green and, therefore, subjected to localized drying. A recommendation based on the results of this study would be to remove the apron and mow all the Bent grass to the same height of 4 mm. The Kikuyu grass that is usually used as fairway grass can be mowed shorter to 8 mm to surround the green. Kikuyu grass mown to 8 mm uses approximately the amount of water as Bent grass mown to 4 mm.

The fact that an increase in mowing height leads to an increase in water use of turf grass does not necessarily mean that the average mowing height of turf grasses should be reduced to conserve water. It would be impossible to reduce the mowing height of certain grasses. Several of the tall-type cool-season grasses (Tall Fescues and Rye grasses), for instance, would not survive when mowed too short. It is also a known fact that there is no relationship between drought tolerance and water use efficiency of turf grass. The longer the turf, the more drought tolerant it is. Frequent mowing to a height that will not affect the turf detrimentally will, undoubtedly, promote water conservation.

To conserve water, it is thus recommended to increase the frequency of mowing rather than to reduce mowing height drastically.

5. *Effect of fertilizer application on water use of turf grass*

Increasing the amount of Nitrogen applied will lead to an increase of water use. Overall,

the turf grass used 11% more water when the N was increased from two applications of 20 kg.ha^{-1} mo^{-1} to 2 applications of 30 kg.ha^{-1} mo^{-1}. The grass also used 9% more water when two applications of 30 kg.ha^{-1} mo^{-1} was given instead of one application of 60 kg.ha^{-1} mo^{-1}. The turf grass used less water at two applications of 20 kg.ha^{-1} mo^{-1}.

It is thus recommended to apply small quantities of fertilizer (especially N) more frequently.

Conclusions

It is concluded thus that frequent mowing and frequent fertilization with small quantities of fertiliser should be used to reduce water use of turf grass. From this research it became evident that Florida grass uses the least amount of water and Kikuyu grass has the highest water use rate (see Table). Average crop factors arrived at in this report are recommended for use with the respective mowing heights as a guideline when irrigating. The crop factors should be considered as making allowance for the maximum water use rate of these turf grasses. If warm season grasses are irrigated at 60% of the crop factor, no considerable loss in quality will occur. Cool-season grasses should, however, not be irrigated at less than 80% of these crop factors.

Average Crop Factors of Several Turf grasses

Mowing Height (mm)	4	6	8	10	12	Average
Turf grass Type	Crop Factors					
Numex Sahara		0.64	0.70	0.74		0.69
Creeping Bent	0.69	0.75	0.79			0.74
Kikuyu			0.73	0.79	0.82	0.78
Bayview	0.71	0.75	0.83			0.76
Speedy Royal		0.70	0.75	0.79		0.75
Florida	0.65	0.72	0.74			0.70
Average	0.68	0.71	0.76	0.77	0.82	0.74

Technology Transfer

Results of this research have already been adopted in practice at several golf courses in the Witwatersrand area where the crop factor of Creeping Bent at a 4 mm mowing height and fertilisation at the rate of 2x20 kg N per month is being used for irrigation scheduling. No decrease in turf quality has occurred and the practice has led to a saving in water use which is still being quantified. Practical application of findings for Kikuyu has, in addition, led to an increase in the quality of turf grass.

Several other golf courses will be encouraged to apply the crop factors in their irrigation planning and Class A evaporative pans will be installed at these locations. For the moment, the individual courses will be making use of Class A pan figures supplied by the Weather Bureau.

The fact that automatic weather stations are so expensive in South Africa will restrict the use of real time weather data for sports field irrigation scheduling. The use of such equipment and data would, nevertheless, be fundamentally sounder than the use of evaporation pans, which are prone to large errors if not sited properly. Consequently, further research is needed to relate automatic weather station data to measured ET data, thereby further refining irrigation scheduling technology for turf grass applications.

Recommendations

Turf grass water use is a complex interaction of atmospheric, plant and soil phenomena and cultural management practices. Investigations in one of these areas generally require control of the others. These restraints generally make an unreal scenario for complete explanation of mechanisms incurred in drought or water use related research, especially under field conditions.

The degree of available soil water for turf varies considerably, and conditions will differ for the researchers studying potential water use, restricted water use, survival of turf grass and drought tolerance of turf grass.

More research is needed to explain the relationship if any, between water use efficiency and drought tolerance. It is often being said that a grass with a high drought tolerance is not necessarily a turf grass with a low water requirement.

Research is needed to relate physiological responses associated with water use, coupled with better understanding of morphological parameters that affects water use rate.

Probably the most needed research on water use of turf grass will be the effect of elements other than nitrogen and their interactions on water use.

The current study only evaluated one cool-season grass, Penncross Creeping Bent grass, due to the fact that when the study was initiated it was the most widely used cool-season grass in South Africa. Since then, many rugby and soccer fields have started to use perennial cool-season grasses such as Tall Fescues and Rye grasses. It would be important to establish the crop factors of these grasses as well.

In proposing a plan for future research on turf grass water use, the first phase should be to establish ET values and corresponding crop factors at an interspecies level with non-limiting water supplies. The same study should, therefore, be undertaken under water-stressed conditions.

The second phase should be the development of ET rates and crop factors at an intraspecies level at both non-limiting water and deficit irrigation supplies. As soon as this has been accomplished, methods of water saving can be incorporated. Resistance to ET should be the major part of this study which would include other factors such as root development and growing media. The final phase of this research should be the development of cultural practices which will ensure a decrease in water use of turf grass. Factors such as optimal mowing height, mowing frequency, amount, type and timing of fertilization, irrigation scheduling, growth regulators, anti-transpirants, species selection and plant breeding should be investigated.

The knowledge gained with this project is a useful starting point for follow-up projects to develop computer programs for the irrigation scheduling and management of sports fields in South Africa.

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1 LITERATURE STUDY, RATIONALE AND AIMS

1.1 Introduction

The priority of irrigation as a component of turfgrass management ranges from an absolute essential for grass survival in arid climates to luxury, "cosmetic" applications in areas with a high rainfall. Judicious application of irrigation water requires uniform application at rates sufficient to meet the needs of the particular turfgrass situation. Besides a well-designed and operated irrigation system, there are other parameters essential to this process. These include the infiltration rate of the soil, the evapotranspiration (ET) potential, the water requirement of the turfgrass as determined by ET rates, and the level of turfgrass performance chosen (Kneeborne, Kopec, & Mancino, 1992).

1.2 Water Requirement

Turfgrass water use rate is defined as the total amount of water needed for plant growth which includes water lost by evaporation and transpiration from soil and plant surfaces. Water use rates are expressed in terms of millimetres per day and are referred to as evapotranspiration. The turfgrass water use rate may be influenced by soil moisture availability, the degree of water demand by the atmosphere and by cultural management practices. Complex interactions often occur between the plant's ability to dissipate its solar heat load and its available soil moisture (Carrow, 1985).

1.3 Evaporative Demand

The driving force for evaporative demand is solar radiation. Amounts and effectiveness of solar radiation are functions of climate, season, altitude, and latitude. The energy from solar radiation can be absorbed or dissipated in many ways, one of which is by the latent heat of evaporation (transpiration). The first consideration in determining water requirements is to establish basic patterns of evaporative demand and determine how that demand is translated to ET losses from

turf whose water use is not restricted in any other way. Having established the potential evaporative demand, the factors can be considered which limit or change ET at given levels of demand (Kneeborne, Kopec, & Mancino, 1992).

Crop water use and methods for its estimation start mostly with knowledge of evaporative demand as a basic requirement. An obvious measurement of evaporative demand is water loss from and to exposed free water surface. The type of evaporimeter for which most data are available is probably the U.S. Weather Service Class A Pan, which has a diameter of 122 cm and is 25 cm deep. It is supported 15 cm above the ground (Doornbos & Pruitt, 1975).

1.4 Turfgrass Water Use

Water requirements of turfgrasses are important in their selection, adaptation, and use, particularly in areas and times when water for turfgrass culture and maintenance is restricted. Turfgrasses require water for growth and evapotranspiration. Turfgrass water use has been defined as the total amount of water used for plant growth plus the water lost through transpiration and evaporation from plant surfaces (Beard, 1973). In this regard turfgrass growth rate, length of growing season, and the presence of turfgrass cover versus bare soil, will have a distinct influence on turfgrass water use (Biran, Bravdo, & Rawitz, 1981). It is thus evident that factors influencing turfgrass leaf, shoot and root growth, or leaf area and extent of rooting would influence water use.

1.5 Factors Affecting Water Use

Irrigation, mowing, and fertilization are primary cultural practices that affect turfgrass growth and development. They have direct effects on growth rate, leaf surface area, canopy resistance, and extent of rooting. Therefore they are expected to influence water use and could thus be manipulated, alone or in combination, to reduce water loss and enhance water conservation.

1.5.1 Soil Moisture

When soil moisture is high, water use is primarily a function of evaporative demand and estimates based upon that demand are estimates of maximum water use. As soil moisture declines below field capacity, water use becomes more and more a function of moisture availability (Kneeborne & Pepper, 1982). They even suggest that water savings could be made with little loss in turf quality by allowing short periods of water stress between irrigations. Danielson, *et al*, (1981) found a reduction of 20% consumptive use when turfgrass was irrigated to only 80% of field capacity with only 10% loss in overall quality. Several factors enter into the relationship between water supplied and water used by grass. At optimal soil moisture levels, plants retain full tugor under all but the most extreme conditions of evaporative demand. With reducing the soil moisture, tugor is progressively reduced and two things happen. One of these is a closing of stomatal guard cells which is a drought avoidance mechanism which reduces water loss. The other is reduction of CO_2 entry and hence photosynthesis and growth (Kneeborne, *et al*, 1992).

1.5.2 Mowing

Evaporation or transpiration increases as the leaf surface area increases. Increased mowing height and amount of top growth can be expected to increase water use, since increased leaf area enhances potential transpiration loss. It also changes the geometry of the plant canopy surface, making it rougher (allowing for more turbulent gas exchange), causing less boundary resistance, and increasing the capacity for absorbing advective heat. A secondary effect of increased top growth is an increase in root growth and depth. This beneficial response results in a greater soil water source to exploit. Most data available on the effect of mowing height on water use are with cool season grasses. According to Madison and Hagan (1962) Kentucky Bluegrass use 15 % more water when the mowing height was doubled from 12.5 mm to 25 mm.

Mowing frequency and mower sharpness can affect water use. Shearman and Beard (1973) found that the water use of Penncross creeping bentgrass increased by 15 % as mowing frequency increased from 1 to 12 times every 14 days. Immediately after mowing there is a temporary

increase in water loss from the cut leaf ends that is aggravated by shredding, tearing, or bruising caused by dull blades. This, however, is a transient effect and only a small portion of water use. It becomes more important where mowing is very frequent, as on a golf green.

1.5.3 Fertilization

Any cultural practice that increases the leaf surface area, internode length, and vertical leaf extension rate should also increase water use. Nitrogen (N) fertilization increases shoot growth and we would expect increases in water use under higher N regimes. A study by Shearman and Beard (1973) where four levels of N fertilization were used, resulted in a corresponding increase in water use with increase of N application. Leaf width, shoot density, and shoot growth increased with increasing N levels and these morphological changes were positively correlated with water use. Water use was negatively correlated with stomatal density that decreased as N increased. Excessive N levels reduced shoot density, shoot growth, and water use rates. Deficient N levels will also lead to lower ET due to a slower growth rate and a lighter colour which reflects energy. This will also induce shorter roots which may reduce potential water use because of a reduction in the available soil water reservoir. In reality, shorter roots have the net effect of increasing the irrigation requirement because of the need to maintain moisture in the upper 5-10 cm of surface soil where the roots are located.

1.6 Procedures In Measuring Water Use

One must have some means of determining available soil water. Crude estimating procedures such as squeezing soil samples in the hand or inserting a rod, can be effective in experienced hands. Experienced turfgrass managers also sometimes gauge soil moisture by turf conditions alone. These days there are also moisture meters available commercially. There are, however, more precise instrumental procedures. Measuring changes in soil water over time is the most widely used method for determining turfgrass water use. Measurement of soil water content can be performed by gravimetric, volumetric, neutron scattering, gamma-ray attenuation, time domain reflectometry, and other methods. Knowing how much water is applied from rainfall and/or

irrigation, or by monitoring soil moisture at appropriate intervals and depths, one can determine how much water is used by turfgrass or lost to runoff and deep percolation.

A lysimeter is a container providing a closed system in which plants are grown, to which water and nutrients can be added, and by means of which the fate of the latter two can be ascertained. Two general types, each with various sub-types, have been used to measure water use. These are weighing lysimeters and percolation lysimeters. Weighing lysimeters can be as simple as pots that are weighed at various intervals under different water regimes (Kneeborne, *et al*, 1992). A somewhat more complicated (but still simple) system used by Feldhake, *et al*, (1983) where field performance was evaluated by lysimeters made of large PVC cylinders set into the turf grown under various management practices. Lysimeters were lifted and weighed at regular intervals.

Construction of mini-lysimeters and the use of root zone medium are important considerations. If the objectives of the research are to determine potential or maximum evapotranspiration, then lysimeters which have a depth of approximately 20 cm or so can be used. Either a calcined clay or a fine silica sand can be used as growing medium. These materials offer a minimum of water perching and have adequate water holding capacity. Drainage is an additional factor deserving of consideration. Early models used simple removable drain plugs (large test tube stoppers) in the base (Feldhake, *et al*, 1983). After drainage had occurred, these stoppers were inserted. Subsequent water loss were only from ET.

Percolation lysimeters are containers of various sizes designed in such a way that water can be added to the top and leachates can be collected from the bottom. The difference between the amount of water added and the leachates collected is the amount of water lost from the surface or remaining in the soil.

1.7 Typical Water Requirement Levels

Beard (1973) stated that typical water use rates of turfgrass vary from 2.5 to 7.5 mmd^{-1} with maxima as high as 12 mmd^{-1} . These values varied considerably between different grasses. Where

direct comparisons have been made, cool-season (C_3) grasses have used more water than warm-season (C_4) grasses, in most cases with a significant margin. Water use differences among species of C_3 and C_4 types have also been demonstrated. If available data are compared with Class A Pan evaporation, one finds that many of the climatic and location differences are smoothed out and typical turfgrass water requirements range from 55 to 85% of Class A Pan evaporation. Warm-season grasses normally use from 55-65% and cool-season grasses from 65-85% of typical pan evaporation during growing season.

1.8 Rationale for the Study

Estimation of water requirements for turfgrass used in South Africa is of utmost importance for, irrigation scheduling on sport fields. This is very important as South Africa is prone to water shortages. In urban environments water treated to potable standards is often used for irrigation and over irrigation of sportfields causes wastage of this precious commodity. Currently irrigation on most of the sportfields in South Africa is according to the feeling of the superintendent and is considered an art rather than a skill based on scientific knowledge. Many golf greens are over-watered and irrigation applied at the wrong times of the day. It would be of cardinal importance to develop some means of estimating the rate of water use to assist in proper irrigation scheduling which is sparing in its use of water, affordable and user-friendly to sport facilities.

1.9 Objectives of the Study

The overall objective of this study was to measure evapotranspiration rates of turfgrasses used in South Africa and to establish so-called cropfactors which relate water usage of turf to a convenient measure of potential evaporation. A preferred means of obtaining potential evaporation measurements was with a Class-A evaporation pan. Data from an automated weather station would also be of great benefit in enabling the sport facilities country-wide to apply the results of these investigations. It was also necessary for crop factors to reflect the influence of cultural practices such as mowing height and fertilization which play a major role in turfgrass water use.

2 MATERIALS AND METHODS

Evapotranspiration was measured with the aid of weighing lysimeters in a field of well-maintained turfgrass located at Potchefstroom University. Six different turfgrasses were evaluated according to their response to mowing height and fertilization.

Bucket type, weighable lysimeters (Fig 1), constructed from polyvinyl chloride (PVC) pipe and plates, were installed as diagrammed in the layout of the trial plots (Fig. 2). The lysimeters were fitted into the centre of the different plots (2.5 x 2.5 m) to enable close-cut mowing as part of the surrounding turfgrass. The bucket lysimeters, 20 cm diameter by 25 cm deep (Fig. 1), contained mature turf growing on pure silica sand. The lysimeters were lifted and rapidly taken to a nearby shed for weighing each Monday, Wednesday, and Friday. A heavy duty balance, capable of weighing to the nearest 0.5 gram, was used throughout the study . The lysimeters were constructed to collect the leachates (Fig. 3) which were measured when lysimeters were weighed.

A mist-type irrigation system was installed in the trial area and amount of irrigation was measured once during the first season and twice a month for the remainder of the research period to ensure that irrigation was uniform to the entire trial plot area. Measurements revealed that the amount of irrigation per trial plot also remained constant over time. The irrigation was always applied during the day and at specific times. An early irrigation at 07:30 of 10 minutes and two follow-up irrigations of 5 minutes each at 12:00 and 14:00, were applied six days a week. Precipitation was also measured for inclusion in ET calculations. The total amount of irrigation normally applied during a day was 15 mm . The amount of irrigation was reduced with the amount of precipitation on rainy days where this was possible.

The treatments imposed during the 32-month period involved grass species, mowing height, and N & K fertilization level. Common to the whole period was a control treatment involving a tall fescue (*Festuca arundinaceae* Schreb.) and perennial ryegrass (*Lolium perenne* (L.)) mixture of which the exact composition was unknown. Three plots each containing a lysimeter installed in a manner similar to the other treatment plots were used for this control and the same measurements

as for the treatment plots. The grass was grown at a 100 mm length. Fertilization comprised one application of 60 kg actual N & K per month and applied in the first week of each month. This control treatment accepted as the standard against which each of the other treatments would be compared.

Six different turfgrasses that are commonly used throughout South Africa on various sportfields were evaluated. One cool-season grass and five warm-season grasses were included. **Penncross Creeping Bent** (*Agrostis pulastris* Huds.) was used as the cool-season grass while the following warm-season grasses were evaluated: **Numex Sahara** (*Cynodon dactylon* (L.) Pers.), **Kikuyu** (*Pennisetum clandestinum* Hochst ex Chiov.), **Bayview** (*Cynodon transvaalensis* Burtt-Davy), **Speedy Royal** (*Cynodon dactylon* (L.) Pers.), and **Florida** (*Cynodon transvaalensis* Burtt-Davy).

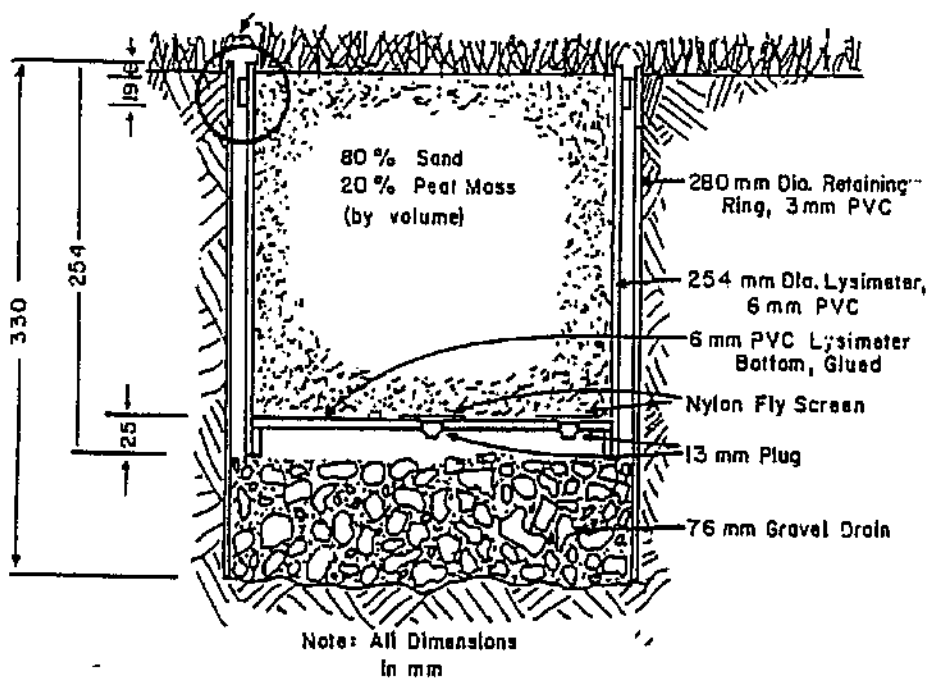

Figure 1. Schematic diagram of installed lysimeter

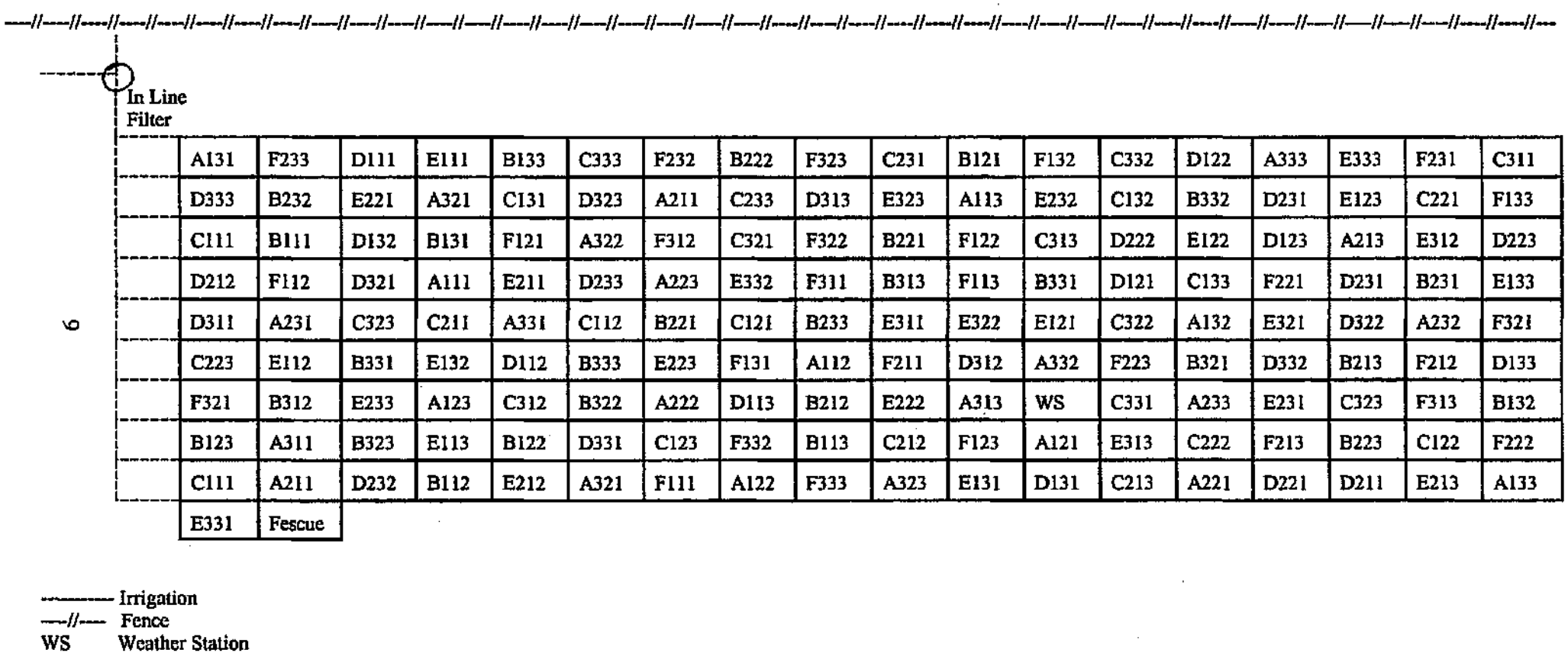

Figure 2 - Schematic diagram of the research plots

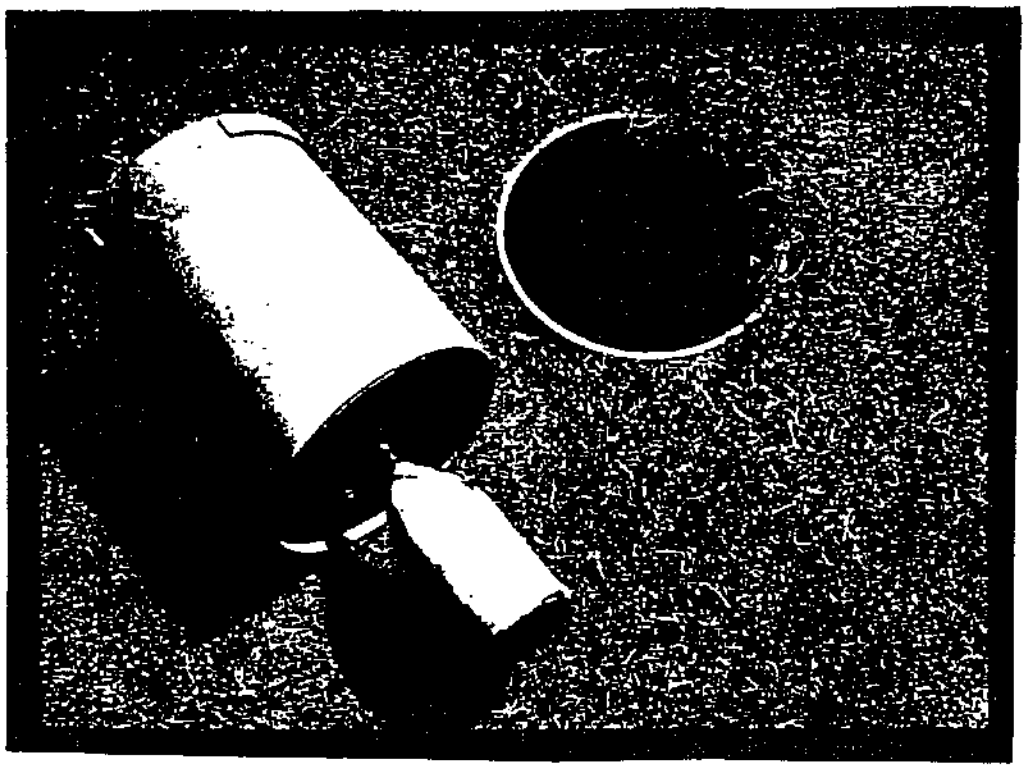

Figure 3. Lysimeter with bottle for collecting leachates.

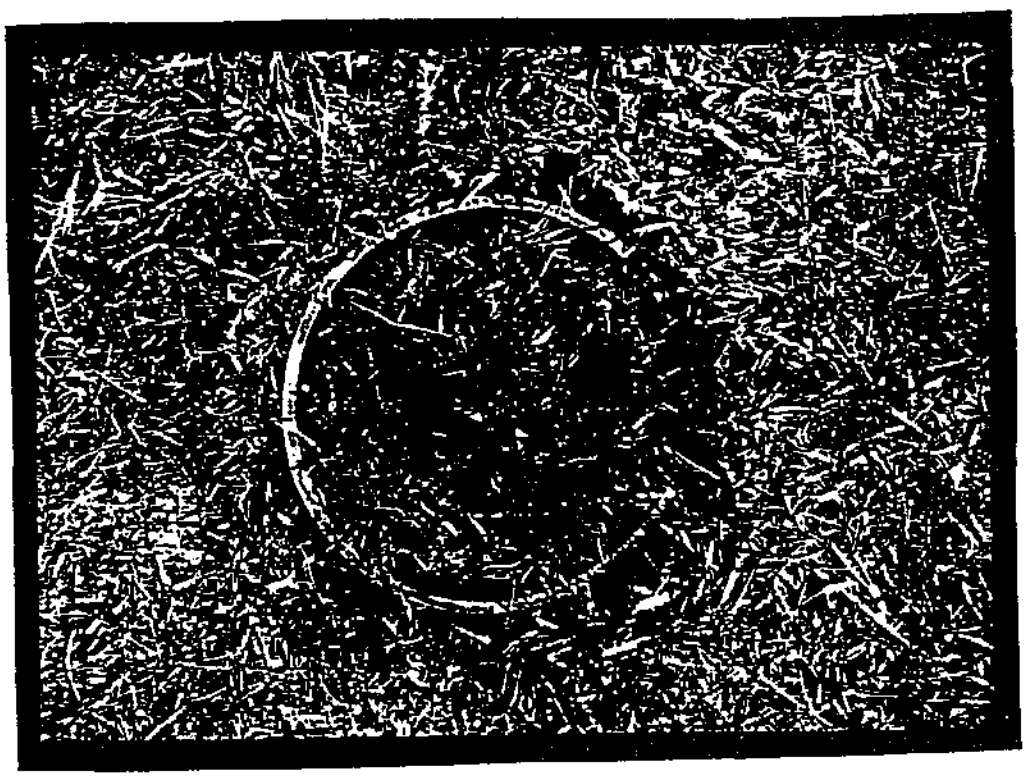

Figure 4. Lysimeter installed to enable mowing together with surrounding turf

Grass in the lysimeters was mowed along with the surrounding turf with a cylinder type lawn mower. Mowing occurred three times a week on Tuesdays, Thursdays, and Saturdays, and grass clippings were removed after mowing. The grass around the edges of the lysimeters was hand trimmed biweekly to further encourage a spatially homogeneous canopy area. Three different mowing heights were used for each turfgrass (Table 1). One of the mowing heights selected (8mm) was common to all grasses to facilitate direct comparisons of water use rates among the various grasses. The different mowing heights cover the range of heights commonly used for the selected turfgrasses in different circumstances.

During the establishment of the different turfgrasses, Superphosphate was mixed thoroughly with the growing medium to obtain a P level of 40 ppm. (Bray # 1) which was considered adequate for establishment. After turfgrasses were established three different N & K fertilization levels were maintained in order to study the effect of nutrition on water use. A granular mixed fertilizer , 1:0:1 (36) was applied with a fertilizer spreader for this purpose.

The N & K levels used were:

1 - One application of 60 kg of actual N & K per month per ha. This was applied during the first week of every month;

2 - Two applications of 30 kg of actual N & K per month per ha, and;

3 - Two applications of 20 kg of actual N & K per month per ha.

These two applications for levels 2 and 3 were given during the first and third weeks of every month. All the fertilizer applications given throughout the year, even during months of non-active growth.

Coding used as a sample identification system is described in Table 1. This coding system is used throughout the report. It consists of a capital letter, followed by three numbers, for example, A123, which means the following: A - Type of Turfgrass

1 - Mowing height (According to Table 1)

2 - Fertilization Level (1=1x60 kg.ha.$^{-1}$ month^{-1}, 2=2x30 kg.ha.$^{-1}$ month^{-1}, 3=2x20 kg.ha.$^{-1}$ month^{-1})

3 - Replications (Three replicates were used in each treatment)

Table 1. Mowing height used to establish water use of Turfgrasses

Treatment		1	2	3
Turfgrass		MOWING HEIGHT (mm)		
A	Numex Sahara	10	6	8
B	Penncross Creeping Bent	4	6	8
C	Kikuyu	10	12	8
D	Bayview	4	6	8
E	Speedy Royal	10	6	8
F	Florida	4	6	8

The experimental site was equipped with an automated weather station (Campbell Scientific), (Fig. 5) a Class A Evaporation Pan screened with wired mesh (Fig. 6), and a Raingauge for manual readings.

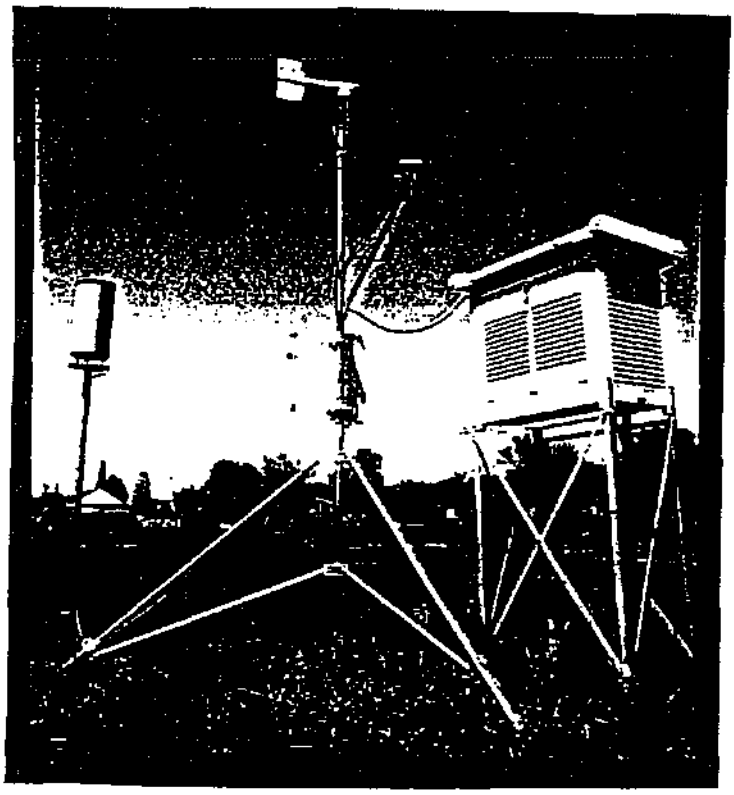

Figure 5. Campbell Scientific Weather Station on Site

The weather station was supplied by the University of the Orange Free State for the first year after which the Golf Course Managers Association of South Africa (GCMA) purchased one for Potchefstroom University. Hourly measurements were made in the centre of the trial plot area. Included were:

- Net radiation, 2.5 m above the turfgrass surface.
- Windspeed and direction at a height of 2.5 m above the turfgrass surface.
- Wet and dry bulb temperature at a height of 2 m above turfgrass surface
- Rainfall with a tipping bucket rain meter .

Measurements made manually included:

- Evaporation with a Class A Pan (Daily measurements at 4:30 pm)
- Rainfall with a conventional raingauge.

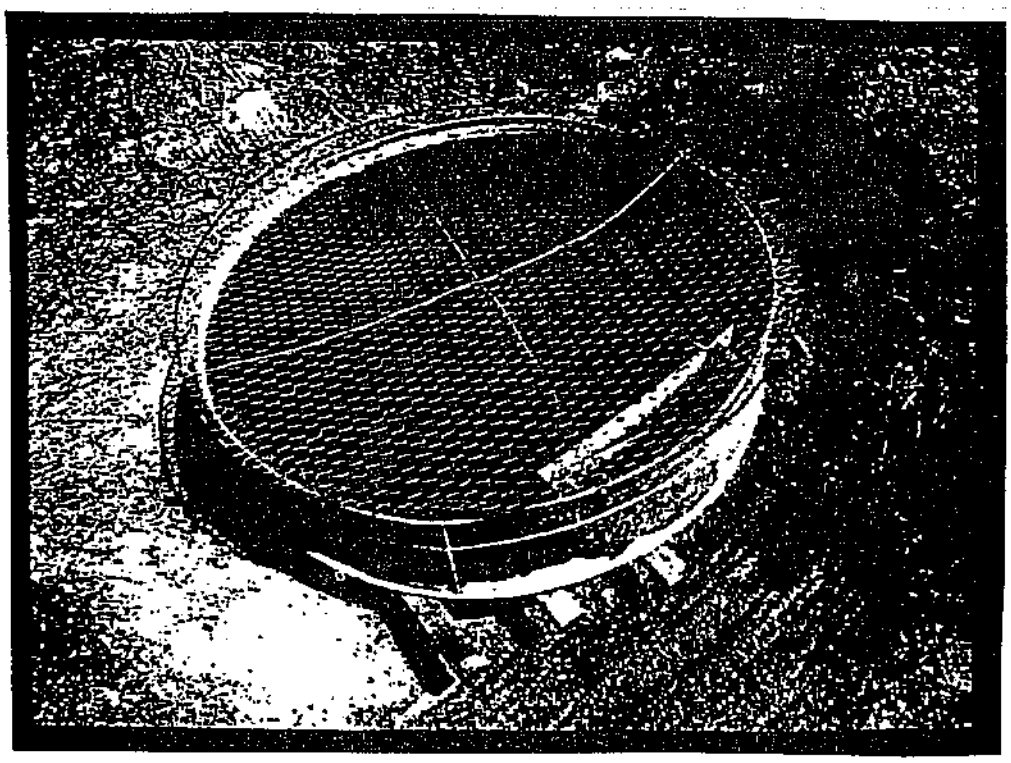

Figure 6 Class A Evaporative Pan on Site

3 RESULTS AND DISCUSSION

3.1 Background

Potchefstroom, elevation 1345 m, is in a semi-arid region averaging 550 mm of precipitation per year. Summer weather generally consists of warm, sunny, days and moderate night temperatures. The long term average daily evaporation for Potchefstroom is 5.93 mm. Evaporation and control plot evapotranspiration (Table 2) is shown in Fig.7. The climatical data are shown in Appendix B.

Table 2 Evaporation (E) and Evapotranspiration (ET) of Fescue grass (100 mm)

Y	'1992		'1993										'1994								'1995						A
M	N	D	J	F	M	A	M	J	J	A	S	O	J	F	M	A	M	J	J	A	J	F	M	A	M	J	
E	8.1	9.4	9.2	5.9	5.3	4.6	5.0	3.8	4.3	5.5	8.6	4.9	6.2	4.7	5.5	4.8	4.2	3.8	3.7	5.5	8.8	7.7	5.4	5.4	3.3	3.4	5.7
ET	7.4	8.6	8.4	6.8	6.1	5.3	4.9	3.7	4.3	6.3	9.8	5.5	5.7	5.4	6.2	5.5	4.1	3.7	3.5	6.3	8.1	9.6	6.2	6.2	3.2	3.2	5.9
CF	0.9	0.9	0.9	1.2	1.2	1.2	1.0	1.0	1.0	1.2	1.1	1.1	0.9	1.1	1.1	1.1	1.0	1.0	1.0	1.2	0.9	1.2	1.1	1.2	1.0	1.0	1.0

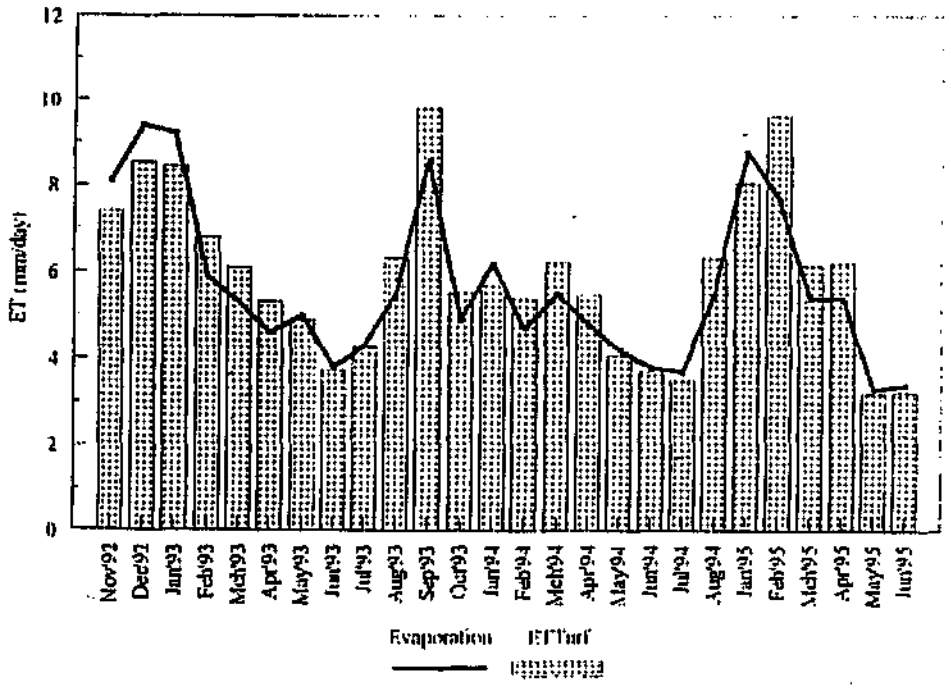

Figure 7. Comparason between Class A evaporation and control plot ET (Fescue)

The crop factor (CF) of the Fescuegrass was estimated at 1.05. The turf had an evapotranspiration which is higher than evaporation from the screened Class A pan. This was the case particularly during the active growth periods of the grass where the CF reached values of 1.2. When the grass was suffering from temperature stress the CF reduced to 0.9 (Table 6). The ET of this grass was as high as 9.8 mmday^{-1}, but the average was found to be 5.9 mmday^{-1} .

3.2 Evapotranspiration of Numex Saharagrass

The average ET rates over the range of treatments are listed in Table 1.1 (Appendix A), the average CF values are listed in Table 1.2 (Appendix A), the statistical analysis of the CF data is presented in Table 1.3 (Appendix A), and the percentage changes in CF due to variations in treatments, are listed in Table 1.4 (Appendix A).

Table 3 Average ET rates of Numex Sahara grass for the Test Period

Mowing Heights	Nitrogen Treatments			
	1x60 N	2x30 N	2x20 N	AVG
	Evapotranspiration (mmday^{-1})			
6 mm	3.50	3.96	3.56	**3.67**
8 mm	3.85	4.17	3.87	**3.96**
10 mm	4.05	4.49	4.08	**4.21**
AVG	**3.80**	**4.21**	**3.84**	**3.95**

3.2.1 One fertiliser application per month of 60 kg/ha (1x60 kg N)

The ET of the grass with a mowing height of 6 mm averaged 3.50 mmday^{-1} (Table 3) for the period of research. It peaked at 6.46 mmday^{-1} and the lowest ET was recorded as 1.98 mmday^{-1}. The crop factor (CF) was established at 0.62. The grass mowed to 8 mm had an increase in the ET rate of 10.18% . This difference was significant ($p < 0.01$). The average ET was 3.85 mmday^{-1} (Table 3), with a highest value of 6.79 mmday^{-1} and lowest of 2.06 mmday^{-1}. The CF was found to be 0.68. The ET of the grass mowed at 10 mm was 5.13% higher than the grass

mowed at 8 mm. This difference was found to be significant ($p < 0.01$). The ET of the grass mowed at 10 mm peaked at 7.25 mmday^{-1} and the lowest ET was 2.29 mmday^{-1} . The average ET for the study period was 4.05 mmday^{-1} (Table 3). The grass mowed at 10 mm had a ET rate of 15.83 % higher than when mowed at 6 mm. This increase was found to be highly significant ($p < 0.001$).

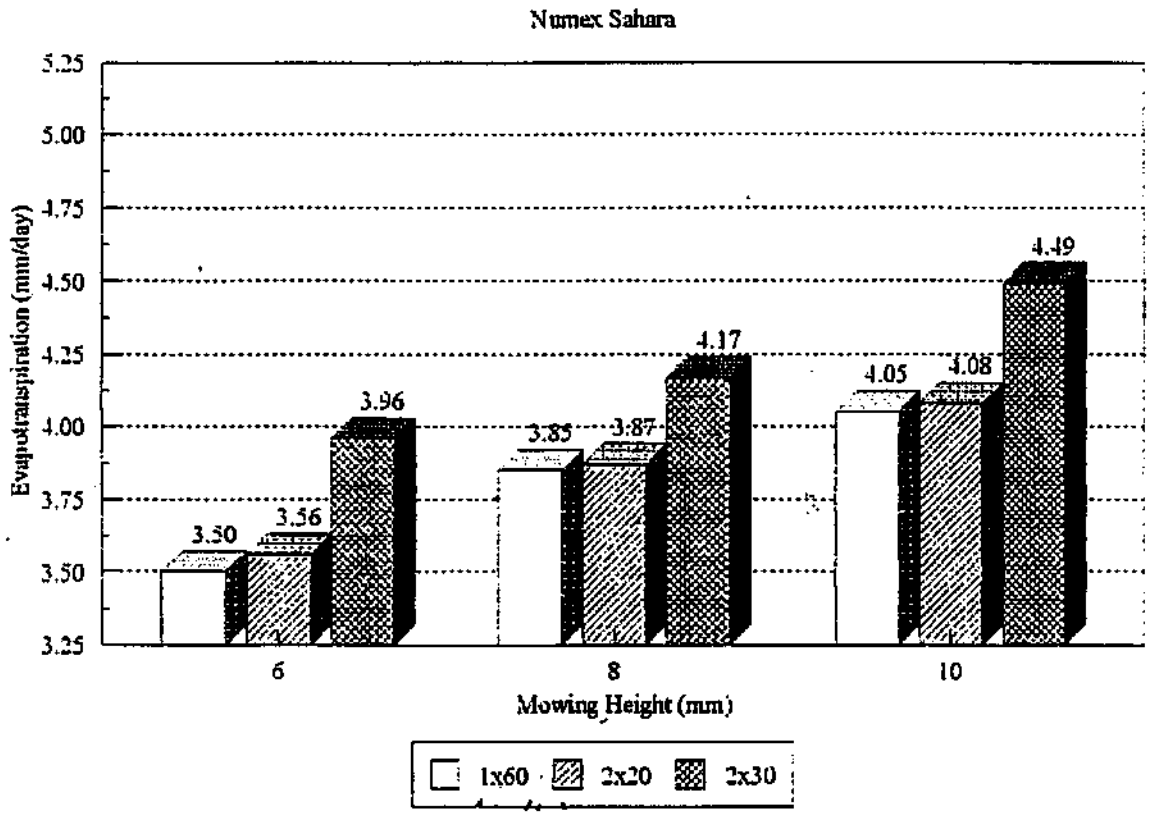

Figure 8. Average ET rates of Numex Saharagrass

3.2.2 Two fertiliser applications per month of 30 kg/ha (2x30kg N).

The ET of this grass showed an increase from 3.96 mmday^{-1} to 4.49 mmday^{-1} (Table 3), when this grass was mown to 10 mm instead of 6 mm. This increase of 12.50 % was significant ($p < 0.01$).

Evapotranspiration of the grass grown at 10 mm peaked at 8.07 mmday^{-1} and the lowest ET was recorded as 2.51 mmday^{-1}. The crop factor (CF) for the grasses mown to 10 mm was established at 0.79. There was a highly significant ($p < 0.001$) difference in the ET between the grass grown at 8 mm and 10 mm. The average ET of the grass grown at 10 mm was 6.59 % higher when compared to grass growing at 8 mm. The average ET was 4.17 mmday^{-1} (Table 3), with a highest value of 6.90 mmday^{-1} and lowest of 2.30 mmday^{-1}. The crop factor (CF) for this grass mown to 8 mm was established at 0.74 . Although the grass used 5.54 % more water when grown at 8 mm instead of 6 mm, this difference was not significant.

3.2.3 Two fertiliser applications per month of 20 kg/ha (2x20kg N)

The grass grown at 10 mm had a ET that was 5.38 % higher when compared with grass grown at 8 mm and 14.90 % higher than the grass grown at 6 mm. Both these differences were highly significant ($p < 0.001$). The average ET of the grass grown at 10 mm was 4.08 mmday^{-1}, compared to the 3.87 mmday^{-1} of the grass grown at 8 mm and the 3.56 mmday^{-1} of the grass with a 6 mm mowing height (Table 4). These three consecutive mowing heights had crop factors of 0.73, 0.69, & 0.63. The difference in ET between the grass grown at 6 and 8 mm was 9.03 % and highly significant ($p < 0.001$).

3.2.4 Comparing 2x30 kg N with 2x20kg N

As the amount of nitrogen applied per month increases, the water use rate of the turf increases (Table 1.1., App. A). The average ET increased with 11.57 % at 6 mm, 7.99% at 8 mm and 9.24 % at 10 mm mowing heights. All these increases were highly significant ($p < 0.001$).

3.2.5 Comparing 1x60 kg N with 2x30 kg N

More water was used by the grass when nitrogen was applied twice a month compared to once a month. When N was applied at 2x30 kg/ha the average ET was 13.73 %, 8.94 %, & 10.46 %

higher at 6, 8, & 10 mm mowing heights respectively, compared with one application of 60 kg/ha N per month.

3.3 Evapotranspiration of Creeping Bentgrass

The average ET rates over the range of treatments are listed in Table 2.1 (Appendix A), the average CF values are listed in Table 2.2 (Appendix A), the statistical analysis of the CF data is presented Table 2.3 (Appendix A), and the percentage changes in CF, due to variations in the treatment are listed in Table 2.4 (Appendix A).

Table 4 Average ET rates of Creeping Bent grass for the Test Period

Mowing Heights	Nitrogen Treatments			
	1x60 N	2x30 N	2x20 N	AVG
	Evapotranspiration (mmday^{-1})			
4 mm	3.74	4.30	3.79	3.94
6 mm	4.14	4.60	4.00	4.25
8 mm	4.38	4.76	4.18	4.44
AVG	4.09	4.55	3.99	4.21

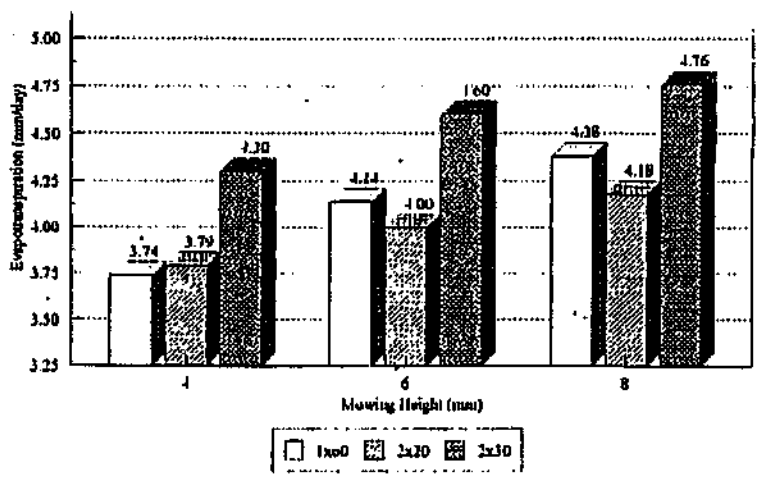

Figure 9. Average ET rates of Creeping Bentgrass

3.3.1 One fertiliser application per month of 60 kg/ha (1x60 kg N)

The average ET of the grass with a mowing height of 4 mm, was found to be 3.74 mmday^{-1} (Table 4). It peaked at 5.91 mmday^{-1} and the lowest ET was recorded as 2.28 mmday^{-1}. The crop factor (CF) was established at 0.67. The grass mown to 6 mm had an increase in the ET rate of 10.38% . This difference was not significant ($p = 0.04$). The average ET was 4.14 mmday^{-1}, (Table 5) with a highest value of 7.43 mmday^{-1} and lowest of 2.33 mmday^{-1}. The CF was found to be 0.73. The ET of the grass mown to 8 mm was 6.13 % higher than the grass mown to 6 mm. This difference was found to be not significant ($p = 0.046$). The ET of the grass mown to 8 mm peaked at 7.05 mmday^{-1} and the lowest ET was 2.57 mmday^{-1} . The average ET for the study period was 4.38 mmday^{-1} (Table 4). The grass mown to 8 mm had a ET rate of 17.14 % higher than when mown to 4 mm. This increase was found to be highly significant ($p < 0.001$).

3.3.2 Two fertiliser applications per month of 30 kg/ha (2x30kg N).

The ET of this grass showed increased from 4.30 mmday^{-1} to 4.60 mmday^{-1} (Table 5), when this grass was grown at 6 mm instead of 4 mm. This increase of 6.78 % was significant ($p < 0.01$). Evapotranspiration of the grass grown at 6 mm peaked at 7.65 mmday^{-1} and the lowest ET was recorded as 2.63 mmday^{-1}. The crop factor (CF) for the grasses mown to 6 mm was established at 0.82. There was a highly significant ($p < 0.001$) difference in the ET between the grass grown at 8 mm and 6 mm. The average ET of the grass grown at 8 mm was 3.54 % higher when compared to grass growing at 6 mm The average ET was 4.76 mmday^{-1} (Table 4), with a highest value of 8.10 mmday^{-1} and lowest of 2.74 mmday^{-1}. The crop factor (CF) for this grass mown to 8 mm was established at 0.85. The grass growing at 8 mm used 10.56 % more water when compared with the grass growing at 4 mm. This is a highly significant difference ($p < 0.001$).

3.3.3 Two fertiliser applications per month of 20 kg/ha (2x20kg N)

The grass grown at 8 mm had a ET that was 4.66 % higher when compared with grass grown at 6 mm and 9.62 % higher than the grass grown at 4 mm. The average ET of the grass grown at 8 mm was 4.18 mmday^{-1}, compared to the 4.00 mmday^{-1} of the grass grown at 6 mm and the 3.79 mmday^{-1} of the grass with a 4 mm mowing height (Table 4). These three consecutive mowing

heights had crop factors of 0.74, 0.71, & 0.68. The grass mown to 6 mm used 4.73 % more water than the grass grown at 4 mm. This increase was found to be significant ($p < 0.01$)

3.3.4 Comparing 2x30 kg N with 2x20kg N

The average ET increased with 13.46 % at 4 mm, 15.68% at 6 mm and 14.44 % at 8 mm mowing heights with an increase in the amount of N applied. All these increases were significant ($p < 0.01$).

3.3.5 Comparing 1x60 kg N with 2x30 kg N

More water was used by the grass when nitrogen was applied twice a month compared to once a month. When N was applied at 2x30 kg/ha the average ET increased with 15.34 %, 11.58 %, & 8.86 % at 4, 6, & 8 mm mowing height respectively, compared with one application of 60 kg/ha N per month. All these differences were highly significant ($p < 0.001$).

3.4 Evapotranspiration of Kikuyu grass

The average ET rates over the range of treatments are listed in Table 3.1 (Appendix A), the average CF values are listed in Table 3.2 (Appendix A), the statistical analysis of the CF data is presented Table 3.3 (Appendix A), and the percentage changes in CF, due to variations in the treatment are listed in Table 3.4 (Appendix A).

Table 5 Average ET rates of Kikuyu grass for the Test Period

Mowing Heights	Nitrogen Treatments			
	1x60 N	2x30 N	2x20 N	AVG
	Evapotranspiration ($mmday^{-1}$)			
8 mm	4.09	4.39	3.90	4.13
10 mm	4.41	4.80	4.31	4.51
12 mm	4.50	4.87	4.43	4.60
AVG	4.33	4.69	4.21	4.41

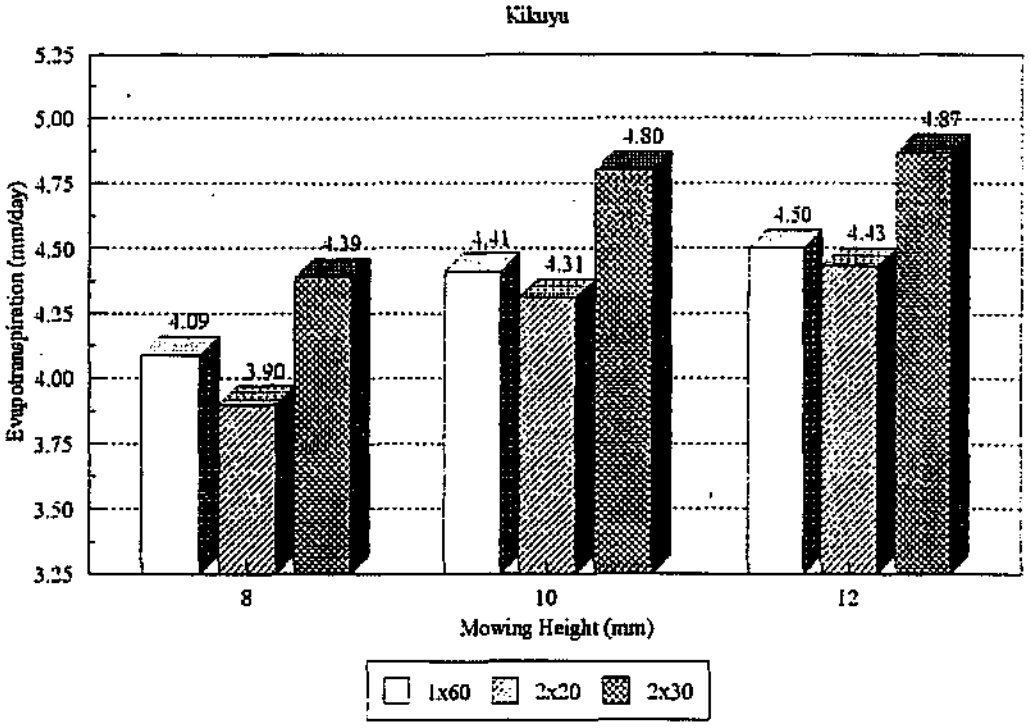

Figure 10. Average ET rates of Kikuyugrass

3.4.1 One fertiliser application per month of 60 kg/ha (1x60 kg N)

The average ET of the grass with a mowing height of 10 mm, was 4.41 mmday^{-1} (Table 5). It peaked at 7.74 mmday^{-1} and the lowest ET was recorded as 2.62 mmday^{-1}. The crop factor (CF) was established at 0.78. The grass mown to 12 mm had an increase in the ET rate of 2.17 % . This difference was highly significant ($p < 0.001$). The average ET was 4.50 mmday^{-1} (Table 5), with a highest value of 7.83 mmday^{-1} and lowest of 2.77 mmday^{-1}. The CF was found to be 0.80. The ET of the grass mown to 8 was 7.02% lower than the grass mown to 10 mm and 9.00% lower than the grass grown at 12 mm. This differences were found to be highly significant ($p = 0.001$). The ET of the grass mown to 8 mm peaked at 6.95 mmday^{-1} and the lowest ET was 2.36 mmday^{-1} . The average ET for the study period was 4.09 mmday^{-1} (Table 5).

3.4.2 Two fertiliser applications per month of 30 kg/ha (2x30kg N).

The ET of this grass showed increased from 4.80 mmday^{-1} to 4.87 mmday^{-1} (Table 5), when this grass was grown at 10 mm instead of 12 mm. This increase of 1.29 % was significant ($p < 0.01$). Evapotranspiration of the grass grown at 10 mm peaked at 8.63 mmday^{-1} and the lowest ET was recorded as 2.80 mmday^{-1}. The crop factor (CF) for the grasses mown to 10 mm was established at 0.85. There was a highly significant ($p < 0.001$) difference in the ET between the grass grown at 8 mm and 12 mm. The average ET of the grass grown at 12 mm was 10.63 % higher when compared to grass growing at 8 mm The average ET was 4.87 mmday^{-1} (Table 5), with a highest value of 8.20 mmday^{-1} and lowest of 2.93 mmday^{-1}. The crop factor (CF) for this grass mown to 12 mm was established at 0.86. The grass growing at 8 mm used 8.44 % less water when compared with the grass growing at 10 mm. This is a highly significant difference ($p < 0.001$). The grass grown at 8 mm had an average ET of 4.39 mmday^{-1} (Table 5).

3.4.3 Two fertiliser applications per month of 20 kg/ha (2x20kg N)

The grass grown at 12 mm had an ET that was 1.02 % higher when compared with grass grown at 10 mm and 12.50 % higher than the grass grown at 8 mm. The average ET of the grass grown at 12 mm was 4.43 mmday^{-1}, compared to the 4.31 mmday^{-1} of the grass grown at 10 mm and the 3.90 mmday^{-1} of the grass with a 8 mm mowing height (Table 5). These three consecutive mowing heights had crop factors of 0.79, 0.76, & 0.70. The grass mown to 10 mm used 9.77 % more water than the grass grown at 8 mm. This increase was found to be not significant ($p = 0.634$)

3.4.4 Comparing 2x30 kg N with 2x20kg N

The average ET increased with 12.21 % at 8 mm, 11.65 % at 10 mm and 9.23 % at 12 mm mowing heights when a higher level of N was applied. All these increases were highly significant ($p < 0.001$).

3.4.5 Comparing 1x60 kg N with 2x30 kg N

More water was used by the grass when nitrogen was applied twice a month compared to once a month. When N was applied at 2x30 kg/ha the average ET increased with 7.28 %, 8.94 %, & 8.00 % at 8, 10, & 12 mm mowing height respectively, compared with one application of 60 kg/ha N per month. All these differences were significant ($p < 0.01$).

3.5 Evapotranspiration of Bayviewgrass

The average ET rates over the range of treatments are listed in Table 4.1 (Appendix A), the average CF values are listed in Table 4.2 (Appendix A), the statistical analysis of the CF data is presented Table 4.3 (Appendix A), and the percentage changes in CF, due to variations in the treatment are listed in Table 4.4 (Appendix A).

Table 6 Average ET rates of Bayview grass for the Test Period

Mowing Heights	Nitrogen Treatments			
	1x60 N	2x30 N	2x20 N	AVG
	Evapotranspiration ($mmday^{-1}$)			
4 mm	3.98	4.20	3.79	3.99
6 mm	4.21	4.51	3.94	4.22
8 mm	4.63	5.02	4.37	4.67
AVG	4.27	4.58	4.03	4.29

3.5.1 One fertiliser application per month of 60 kg/ha (1x60 kg N)

The ET of the grass with a mowing height of 4 mm averaged 3.98 $mmday^{-1}$ (Table 6). It peaked at 6.71 $mmday^{-1}$ and the lowest ET was recorded as 2.31 $mmday^{-1}$. The crop factor (CF) was established at 0.71. The grass mown to 6 mm had an increase in the ET rate of 4.95 % . This difference was not significant ($p = 0.268$). The average ET was 4.21 $mmday^{-1}$, with a highest value of 7.28 $mmday^{-1}$ and lowest of 2.36 $mmday^{-1}$. The CF was found to be 0.74. The ET of

the grass mown to 8 was 10.24 % higher than the grass mown to 6 mm. This difference was found to be highly significant ($p < 0.001$). The ET of the grass mown to 8 mm peaked at 7.69 mmday^{-1} and the lowest ET was 2.57 mmday^{-1} . The average ET for the study period was 4.63 mmday^{-1} (Table 6). The grass mown to 8 mm had a ET rate of 15.7 % higher than when mown to 4 mm. This increase was found to be not significant ($p = 0.339$).

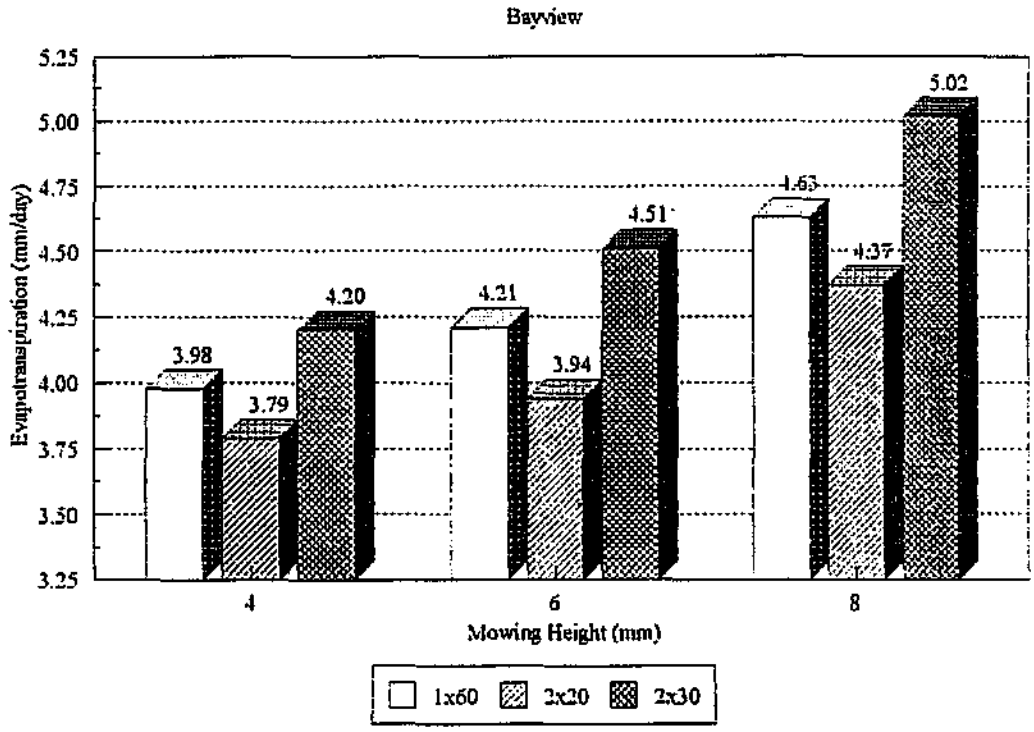

Figure 11. Average ET rates of Bayviewgrass

3.5.2 Two fertiliser applications per month of 30 kg/ha (2x30kg N).

The ET of this grass showed increased from 4.20 mmday^{-1} to 4.51 mmday^{-1} , when this grass was grown at 6 mm instead of 4 mm. This increase of 7.40 % was significant ($p < 0.01$). Evapotranspiration of the grass grown at 6 mm peaked at 7.75 mmday^{-1} and the lowest ET was recorded as 2.65 mmday^{-1}. The crop factor (CF) for the grasses mown to 6 mm was established at 0.80. The average ET of the grass grown at 8 mm was 11.28 % higher when compared to

growing at 6 mm The average ET was 5.02 mmday^{-1}, with a highest value of 8.34 mmday^{-1} and lowest of 2.72 mmday^{-1}. The crop factor (CF) for this grass mown to 8 mm was established at 0.89. The grass growing at 8 mm used 25.60 % more water when compared with the grass growing at 4 mm. This was a significant difference ($p < 0.01$).

3.5.3 Two fertiliser applications per month of 20 kg/ha (2x20kg N)

The grass grown at 8 mm had a ET that was 10.82 % higher when compared with grass grown at 6 mm and 15.49 % higher than the grass grown at 4 mm. The average ET of the grass grown at 8 mm was 4.37 mmday^{-1}, compared to the 3.94 mmday^{-1} of the grass grown at 6 mm and the 3.79 mmday^{-1} of the grass with a 4 mm mowing height (Table 6). These three consecutive mowing heights had crop factors of 0.77, 0.69, & 0.67. The grass mown to 6 mm used 4.21 % more water than the grass grown at 4 mm. This increase was found to be significant ($p < 0.01$).

3.5.4 Comparing 2x30 kg N with 2x20kg N

The average ET increased with 11.73 % at 4 mm, 15.15 % at 6 mm and 15.63 % at 8 mm mowing heights when a higher level of N was applied. Only the increase at 4 mm was significant ($p < 0.01$).

3.5.5 Comparing 1x60 kg N with 2x30 kg N

When N was applied at 2x30 kg/ha the average ET increased with 5.09 %, 7.55 %, & 8.56 % at 4, 6, & 8 mm mowing height respectively, compared with one application of 60 kg/ha N per month.

Only the difference at 4 mm was significant ($p < 0.01$).

3.6 Evapotranspiration of Speedy Royal grass

The average ET rates over the range of treatments are listed in Table 5.1 (Appendix A), the average CF values are listed in Table 5.2 (Appendix A), the statistical analysis of the CF data is presented Table 5.3 (Appendix A), and the percentage changes in CF, due to variations in the treatment are listed in Table 5.4 (Appendix A).

Table 7 Average ET rates of Speedy Royal grass for the Test Period

Mowing Heights	Nitrogen Treatments			
	1x60 N	2x30 N	2x20 N	AVG
	Evapotranspiration ($mmday^{-1}$)			
6 mm	3.87	4.32	3.82	4.00
8 mm	4.02	4.50	4.10	4.21
10 mm	4.34	4.80	4.28	4.47
AVG	4.08	4.54	4.07	4.23

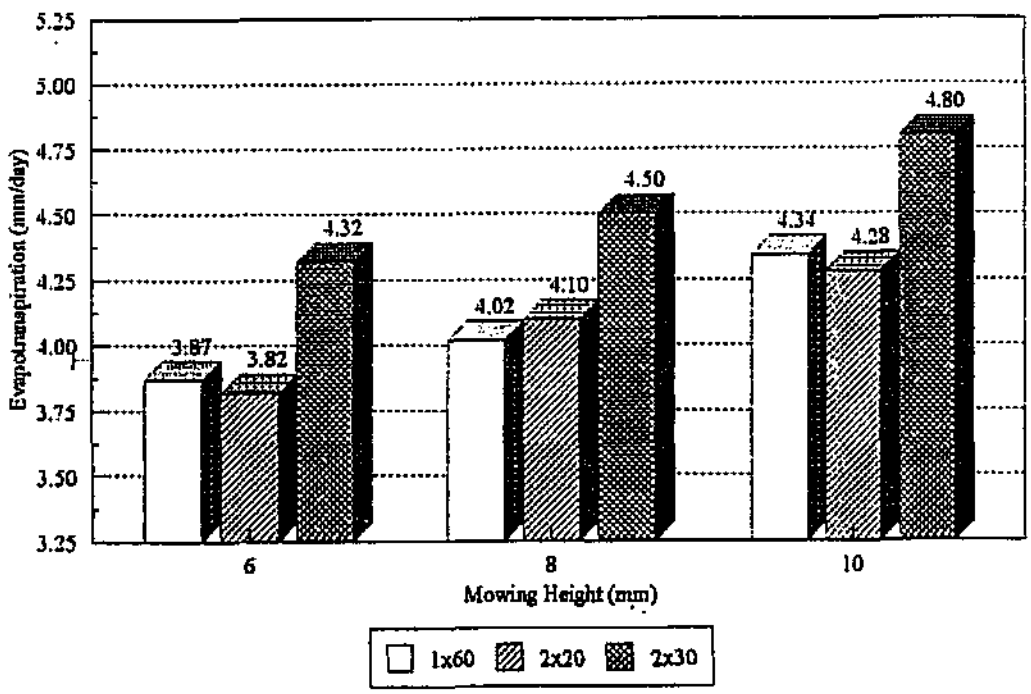

Figure 12. Average ET rates of Speedy Royal grass

3.6.1 One fertiliser application per month of 60 kg/ha (1x60 kg N)

The ET of the grass with a mowing height of 6 mm averaged 3.87 mmday^{-1} (Table 7). It peaked at 6.91 mmday^{-1} and the lowest ET was recorded as 2.16 mmday^{-1}. The crop factor (CF) was established at 0.69. The grass mowed 8 mm had an increase in the ET rate of 3.64% . This difference was not significant ($p = 0.041$). The average ET was 4.02 mmday^{-1} (Table 7), with a highest value of 6.95 mmday^{-1} and lowest of 3.25 mmday^{-1}. The CF was found to be 0.71. The ET of the grass mown to 10 mm was 8.86 % higher than the grass mown to 8 mm. The ET of the grass mown to 10 mm peaked at 7.22 mmday^{-1} and the lowest ET was 2.54 mmday^{-1} . The average ET for the study period was 4.34 mmday^{-1} (Table 7). The grass mown to 10 mm had a ET rate of 12.83 % higher than when mown to 6 mm. This increase was found to be highly significant ($p < 0.001$).

3.6.2 Two fertiliser applications per month of 30 kg/ha (2x30kg N).

The ET of this grass showed an increase from 3.96 mmday^{-1} to 4.49 mmday^{-1} (Table 4), when this grass was grown at 10 mm instead of 6 mm. This increase of 12.50 % was significant ($p < 0.01$). Evapotranspiration of the grass grown at 10 mm peaked at 8.07 mmday^{-1} and the lowest ET was recorded as 2.51 mmday^{-1}. The crop factor (CF) for the grasses mown to 10 mm was established at 0.79. There was a highly significant ($p < 0.001$) difference in the ET between the grass grown at 8 mm and 10 mm. The average ET of the grass grown at 10 mm was 6.59 % higher when compared to grass growing at 8 mm The average ET was 4.17 mmday^{-1} (Table 4), with a highest value of 6.90 mmday^{-1} and lowest of 2.30 mmday^{-1}. The crop factor (CF) for this grass mown to 8 mm was established at 0.74 . Although the grass used 5.54 % more water when grown at 8 mm instead of 6 mm, this difference was not significant.

3.6.3 Two fertiliser applications per month of 20 kg/ha (2x20kg N)

The grass grown at 10 mm had a ET that was 5.38 % higher when compared with grass grown at 8 mm and 14.90 % higher than the grass grown at 6 mm. Both these differences was highly significant ($p < 0.001$). The average ET of the grass grown at 10 mm was 4.08 mmday^{-1},

compared to the 3.87 mmday^{-1} of the grass grown at 8 mm and the 3.56 mmday^{-1} of the grass with a 6 mm mowing height (Table 4). These three consecutive mowing heights had crop factors of 0.73, 0.69, & 0.63. The difference in ET between the grass grown at 6 and 8 mm was 9.03 % and highly significant ($p < 0.001$).

3.6.4 Comparing 2x30 kg N with 2x20kg N

As the amount of nitrogen applied per month increases the water use rate of the turf increases (Table 1.1., App. A). The average ET increased with 11.57 % at 6 mm, 7.99% at 8 mm and 9.24 % at 10 mm mowing heights when the level of N applied increased. All these increases were highly significant ($p < 0.001$).

3.6.4 Comparing 1x60 kg N with 2x30 kg N

More water was used by the grass when nitrogen was applied twice a month compared to once a month. When N was applied at 2x30 kg/ha the average ET increased with 13.73 %, 8.94 %, & 10.46 % at 6, 8, & 10 mm mowing height respectively, compared with one application of 60 kg/ha N per month.

3.7 Evapotranspiration of Florida grass

The average ET rates over the range of treatments are listed in Table 6.1 (Appendix A), the average CF values are listed in Table 6.2 (Appendix A), the statistical analysis of the CF data is presented Table 6.3 (Appendix A), and the percentage changes in CF, due to variations in the treatment are listed in Table 6.4 (Appendix A).

Table 8 Average ET rates of Florida grass for the Test Period

Mowing Heights	Nitrogen Treatments			
	1x60 N	2x30 N	2x20 N	AVG
	Evapotranspiration (mmday^{-1})			
4 mm	3.52	3.91	3.57	**3.67**
6 mm	3.98	4.29	4.01	**4.09**
8 mm	4.16	4.32	4.12	**4.20**
AVG	**3.89**	**4.17**	**3.90**	**3.99**

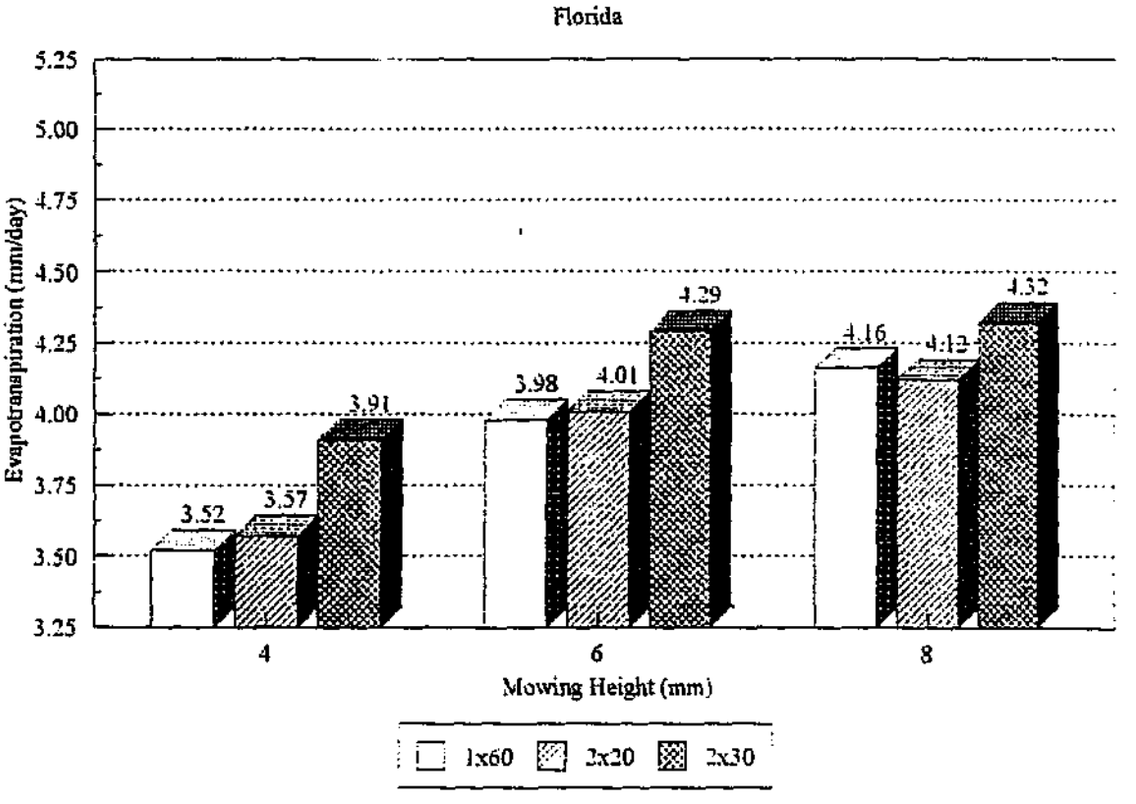

Figure 13 Average ET rates of Florida grass

3.7.1 One fertiliser application per month of 60 kg/ha (1x60 kg N)

The ET of the grass with a mowing height of 4 mm averaged 3.52 mmday^{-1} (Table 8). It peaked at 6.77 mmday^{-1} and the lowest ET was recorded as 1.91 mmday^{-1}. The crop factor (CF) was established at 0.62. The grass mowed 6 mm had an increase in the ET rate of 12.78 % . This difference was highly significant ($p < 0.001$). The average ET was 3.98 mmday^{-1}, with a highest value of 7.52 mmday^{-1} and lowest of 2.03 mmday^{-1}. The CF was found to be 0.70. The ET of the grass mown to 8 was 5.45 % higher than the grass mown to 6 mm. This difference was found to be highly significant ($p < 0.001$). The ET of the grass mown to 8 mm peaked at 7.46 mmday^{-1} and the lowest ET was 2.18 mmday^{-1} . The average ET for the study period was 4.16 mmday^{-1} (Table 8). The grass mown to 8 mm had a ET rate of 18.93 % higher than when mown to 4 mm. This increase was found to be highly significant ($p < 0.001$).

3.7.2 Two fertiliser applications per month of 30 kg/ha (2x30kg N).

The ET of this grass increased from 3.91 mmday^{-1} to 4.29 mmday^{-1} , grown at 6 mm instead of 4 mm. This increase of 9.58 % was highly significant ($p < 0.001$). Evapotranspiration of the grass grown at 6 mm peaked at 7.97 mmday^{-1} and the lowest ET was recorded as 2.24 mmday^{-1}. The crop factor (CF) for the grasses mown to 6 mm was established at 0.76. The average ET of the grass grown at 8 mm was 0.93 % higher when compared to growing at 6 mm The average ET was 4.32 mmday^{-1}, with a highest value of 7.21 mmday^{-1} and lowest of 2.36 mmday^{-1}. The crop factor (CF) for this grass mown to 8 mm was established at 0.76. The grass growing at 8 mm used 10.60 % more water when compared with the grass growing at 4 mm. This was a highly significant difference ($p < 0.001$).

3.7.3 Two fertiliser applications per month of 20 kg/ha (2x20kg N)

The grass grown at 8 mm had an ET that was 2.82 % higher when compared with grass grown at 6 mm and 15.74 % higher than the grass grown at 4 mm. The average ET of the grass grown at 8 mm was 4.12 mmday^{-1}, compared to the 4.01 mmday^{-1} of the grass grown at 6 mm and the 3.57 mmday^{-1} of the grass with a 4 mm mowing height (Table 8). These three consecutive mowing heights had crop factors of 0.73, 0.71, & 0.63. The grass mown to 6 mm used 12.56 % more water than the grass grown at 4 mm. This increase was found to be highly significant ($p < 0.001$).

3.7.4 Comparing 2x30 kg N with 2x20kg N

The average ET increased with 9.54 % at 4 mm, 6.64 % at 6 mm and 4.67 % at 8 mm mowing heights when the higher level of N was applied. All the increases were higly significant ($p < 0.001$).

3.7.5 Comparing 1x60 kg N with 2x30 kg N

When N was applied at 2x30 kg/ha the average ET increased with 11.49 %, 8.32 %, & 3.67 % at 4, 6, & 8 mm mowing height respectively, compared with one application of 60 kg/ha N per month. All the increases were higly significant ($p < 0.001$).

3.8 Comparative Water Use of Turfgrasses

Due to the fact that there was a common mowing height for all the turfgrasses, a direct comparison of water usage at this common height was possible. Such a comparison, though scientifically sound, does not always serve a usefull purpose due to the fact that all the turfgrasses are not utilized in the field at that specific mowing height. Comparisons will therefore be made at the common mowing height of 8 mm as well as the typical mowing height used for each of the grasses.

3.8.1 Common Mowing Height

A constant mowing height of 8 mm was used throughout the trials as one treatment. The comparative data are tabled in Table 9 and shown in Fig. 14.

Table 9 Comparative Water Use at a Constant Mowing Height of 8 mm

Turfgrass Type	1x60 kg N per ha	2x20 kg N per ha	2x30 kg N per ha	Average
	EVAPOTRANSPIRATION (mm/day)			
Numex Sahara	3.85	3.87	4.17	3.96
Creeping Bent	4.38	4.18	4.76	4.44
Kikuyu	4.09	3.90	4.39	4.13
Bayview	4.63	4.37	5.02	4.67
Speedy Royal	4.02	4.10	4.50	4.21
Florida	4.16	4.12	4.32	4.20

Bayview had an average ET rate of 4.67 mmday^{-1} (Table 9), compared to 4.44 mmday^{-1} used by Creeping Bent. The water use rate of Bayview is thus 5.2% higher than Creeping Bent. Florida and Speedy Royal had similar ET rates off 4.2 mmday^{-1} , which is 11.2 % less than Bayview. Kikuyu followed with an average ET rate of 4.13 mmday^{-1} and Numex Sahara used the least water at 3.96 mmday^{-1} . Both these grasses used 13 and 18 % respectively, less water than Bayview.

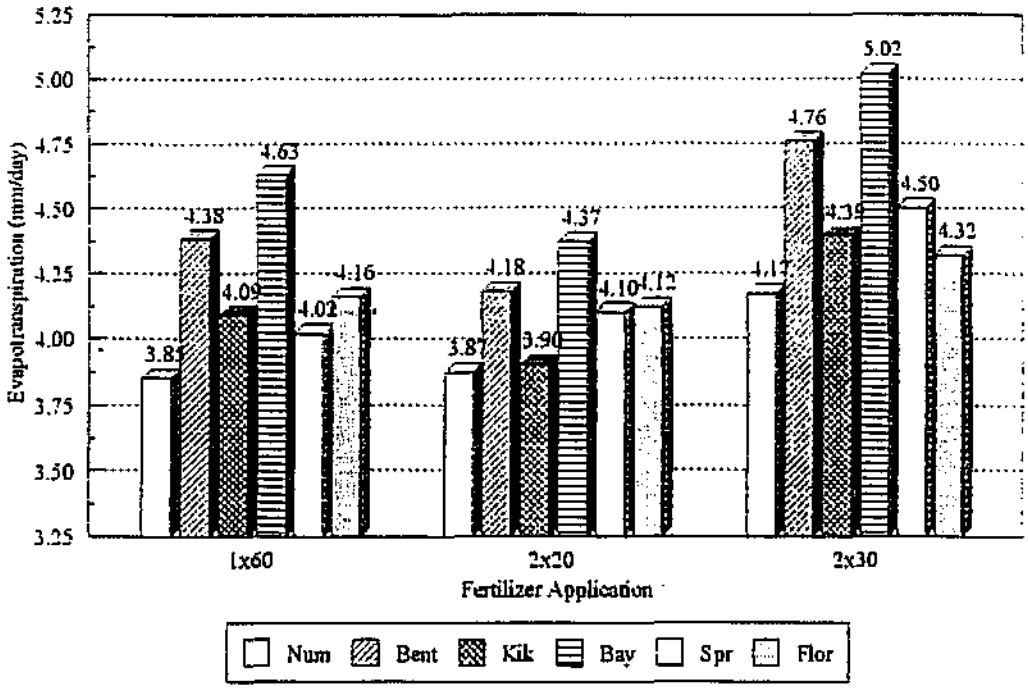

Figure 14. Comparative Water Use at 8 mm Mowing Height

3.8.2 Mowing Height Used in the Field

Comparative water use rates of the different turfgrasses should also be evaluated at the mowing heights usually applied in practice. Therefore the different turfgrasses will be compared accordingly in Table 10.

Table 10. Comparative Water use at Mowing Heights used in the Field

Turfgrass Type	Mowing Height	1x60 kg N per ha	2x20 kg N per ha	2x30 kg N per ha	Average
	(mm)	EVAPOTRANSPIRATION (mm/day)			
Numex Sahara	10	4.05	4.08	4.49	4.21
Creeping Bent	4	3.74	3.79	4.30	3.94
Kikuyu	12	4.50	4.43	4.87	4.60
Bayview	4	3.98	3.79	4.20	3.99
Speedy Royal	10	4.34	4.28	4.80	4.47
Florida	4	3.52	3.57	3.91	3.67

Kikuyu had an average ET rate of 4.60 mmday^{-1} (Table 10), compared to 4.47 mmday^{-1} used by Speedy Royal. The water use rate of Kikuyu is thus 3 % higher than Speedy Royal. Numex Sahara had an average ET of 4.21 mm which was 9.2 % less than for Kikuyu. Creeping Bent and Bayview had similar ET rates of approx. 3.97 mmday^{-1} , which is 16 % less than Kikuyu. Florida had the lowest ET rate of 3.67 mmday^{-1} which is 25 % less than for Kikuyu.

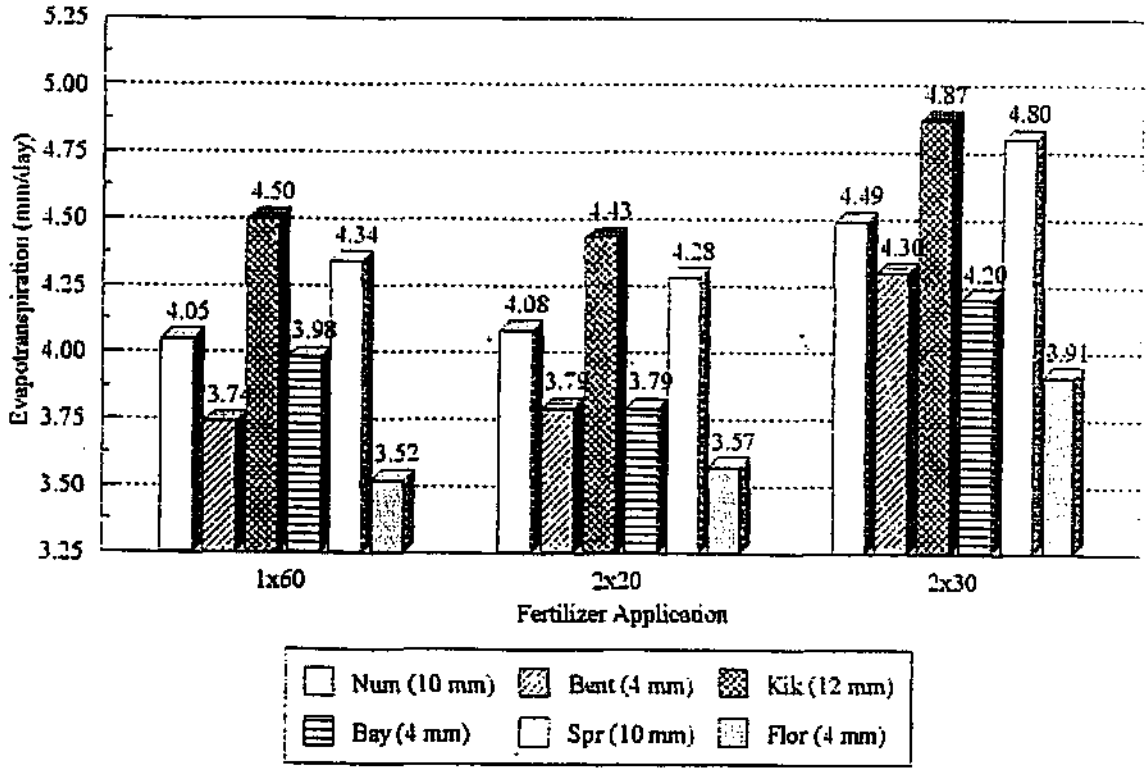

Figure 15 Comparative Water Use of Turfgrass at Mowing Heights Utilized in the Field

3.8.3 Influence of Mowing Height on Comparative Water Use

The influence of mowing height (ave of all the fertilizer applications) on the comparative water use of the turfgrasses tested is listed in Table 12 and shown in Figure 16

Table 11 Effect of Mowing Height on Turfgrass Water Use

Mowing Height (mm)	4	6	8	10	12	Average
Turfgrass Type	Evapotranspiration (mm/day)					
Numex Sahara		3.67	3.96	4.21		3.95
Creeping Bent	3.94	4.25	4.44			4.21
Kikuyu			4.13	4.51	4.60	4.41
Bayview	3.99	4.22	4.67			4.29
Speedy Royal		4.00	4.21	4.47		4.23
Florida	3.67	4.09	4.20			3.99
Average	3.87	4.05	4.27	4.40	4.60	4.18

The turfgrass mown to 8 mm had a ET rate that was 10 % more than those grown at 4 mm. The ET rate of the grasses grown at 6 mm were 5.15 % lower than those at 8 mm and 4.65 % higher than those grown at 4 mm.

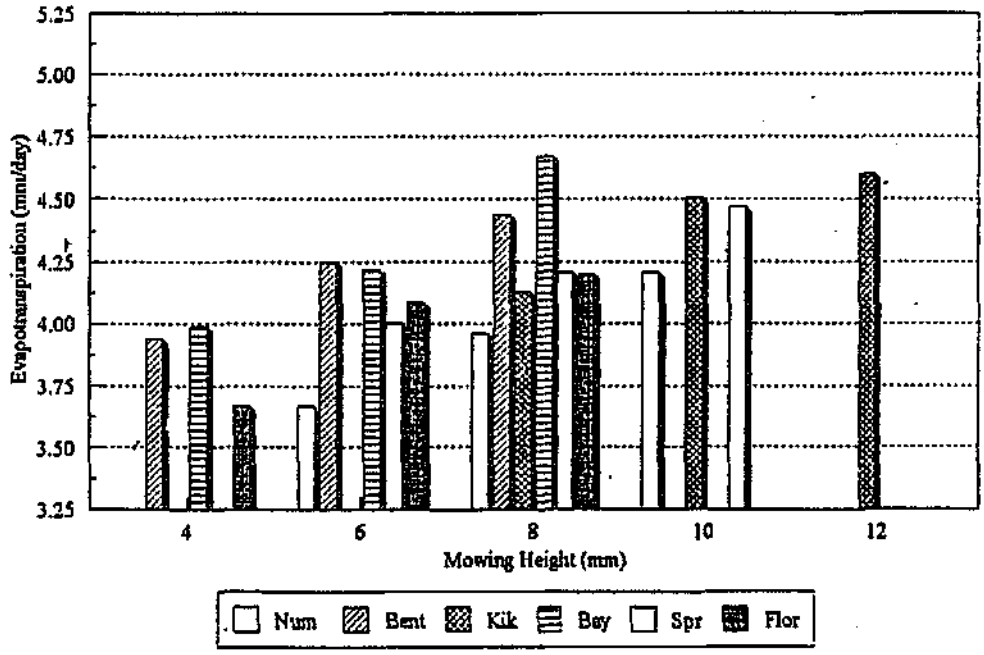

Figure 16. Effect of mowing height on comparative water use

3.8.4 Influence of Fertilizer on Comparative Water Use

The influence of fertilizer (N & K) application (ave of all the mowing heights) on the comparative water use of the turfgrasses listed in table 12 and shown in Figure 17.

Table 12 Effect of Fertilizer Application on Turfgrass Water Use

Turfgrass Type	1x60 kg N per ha	2x20 kg N per ha	2x30 kg N per ha	Average
	Evapotranspiration (mm/day)			
Numex Sahara	3.80	3.84	4.21	**3.95**
Creeping Bent	4.09	3.99	4.55	**4.21**
Kikuyu	4.33	4.21	4.69	**4.41**
Bayview	4.27	4.03	4.58	**4.29**
Speedy Royal	4.08	4.07	4.54	**4.23**
Florida	3.89	3.90	4.17	**3.99**
Average	**4.08**	**4.01**	**4.46**	**4.18**

The average ET of the six turfgrasses evaluated for water use was found to be 4.18 $mmday^{-1}$. The ET of turfgrass increases with an average of 11.2 % if the nitrogen application is increased from 2 applications per month of 20 kg/ha actual N to 2 applications of 30 kg/ha . The ET of the grass receiving 2 applications of 30kg/ha N per month is 9.2 % higher than when receiving 1 application of 60 kg/ha per month (Fig. 16).

The average ET of Kikuyu was the highest of all the turfgrasses evaluated at 4.41 $mmday^{-1}$ (Table 11) followed by Bayview at 4.29 $mmday^{-1}$. Kikuyu uses 2.8 % more water than Bayview. Creeping Bent and Speedy Royal had similar ET rates which was 4.5 % less than Kikuyu. Florida and Numex Sahara use the least water and had ET rates of 12 % lower than Kikuyu. Florida which is a similar type grass to Bayview used 7.5 % less water than Bayview. It must be pointed out that these comparisons of ET rates are for the average mowing heights used in this study, which differs from the one species to the next. They are, however, the mowing heights utilized in practice.

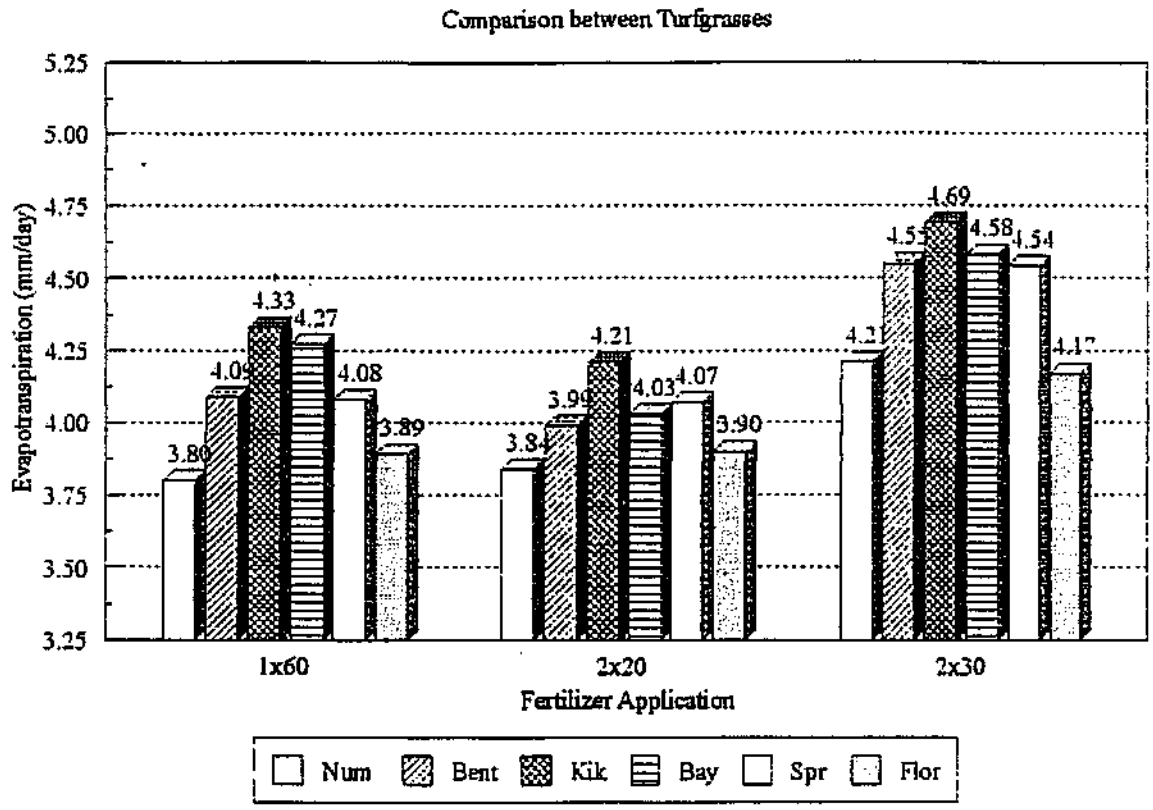

Figure 17 Comparative water use of Turfgrasses as affected by Fertilization

4 SUMMARY AND CONCLUSIONS

4.1 Turfgrass Water Use

Because water supplies are limited in amount or costly, water for turfgrass irrigation must be used efficiently. This requires irrigation systems capable of delivering water to the turf uniformly and in appropriate amounts. A further requirement is the ability to determine what water and management inputs relate to a realistic minimum water use.

Reviews of studies to date indicate that at any given location and time, water use by cool-season grasses will range from 65 to 85 % of Class-A evaporative pan losses while warm-season grasses are in the range of 55 to 70 %. Typical water use rates vary from 2.5 to 7.5 mmday^{-1} with a maximum of as high as 12 mmday^{-1} .

4.1.1 Bermuda grasses

Four Bermuda grasses were evaluated in this study, of which two belong to the *Cynodon dactylon* species and two to the *Cynodon transvaalensis* species. Numex Sahara grass which belongs to the *Cynodon dactylon* species, had the lowest ET rate of all the grasses evaluated. The average ET of the grass was found to be 3.95 mmday^{-1} and it had a crop factor 0.69. Florida grass, which is a strain of *Cynodon transvaalensis,* was the grass that had the second lowest ET rate of these grasses. The average ET rate of this grass was found to be 3.99 mmday^{-1} with a crop factor of 0.70. Speedy Royal another, *Cynodon dactylon,* followed with an average ET of 4.23 mmday^{-1} and had a CF of 0.75. Bayview is the bermuda grass with the highest water use rate with an average ET of 4.29 mmday^{-1} and a crop factor of 0.76.

Evapotranspiration rates of Bermuda grasses ranged from 1.32 to 8.81 mmday^{-1} . A broad range of canopy structure, shoot density, leaf area and vertical leaf extension rate exits among the commercially available bermuda grass cultivars. In comparisons among cultivars, higher nitrogen levels tended to have a stronger effect on increasing ET rate than a higher mowing height with the

ranges used. This response is probably associated with the enhanced vertical leaf extension rate associated with higher N applications.

The fact that Bayview grass used considerably more water than Florida grass, could probably be explained by its deeper green colour which reflects less energy in visible wavelengths, its more vigorous growth and its higher rootmass. It could also be due to the high potential of this grass to thatch. Bayview comes out dormancy faster than the other Cynodon spp. and cultivars considered and takes longer to reach dormancy in the winter. It thus has a longer growing season, which leads to an increase in the average ET rate.

The *Cynodon dactylon* spp. have a broader leaf texture than the *Cynodon transvaalensis* spp. This creates a relativly open canopy more condusive to convective air flow. This leads to a higher water use rate. An increase in mowing height causes an increase in water use for much the same reason.

Devitt, *et al*, 1995, found ET of Bermuda grass to be 1160 mm per year. Devitt, *et al*, 1995 found CF of Bermuda to be 0.65 under low fertility and 0.75-0.85 under high fertility. Bermuda grass could use up to 8 $mmday^{-1}$ if watered excessively (364 mm/week).

In this study it was found that Bermuda grass can use up to 8.81 $mmday^{-1}$. At this maximum level of water use , the crop factor is 0.95. It must be remembered that this study was conducted under non-limiting water conditions and the N levels were very high. It is believed that the use of average ET rates and crop factors for irrigation scheduling would be more realistic than the use of maximum rates.

4.1.2 Kikuyu grass

Kikuyu grass used the most water of all the turfgrasses evaluated. The average ET of Kikuyu grass in these tests was 4.41 $mmday^{-1}$, with a cop factor of 0.78. The maximum ET of Kikuyugrass was found to be 8.66 $mmday^{-1}$ with a crop factor of 0.97.

This is a very high crop factor for a warm season grass. The high potential ET rates of Kikuyu under non-limiting soil water conditions are possibly due to its rapid vertical leaf extension rate and high leaf area, plus its reduced horizontal leaf orientation. This is essentially similar to the explanation given for the higher water use rate of the *Cynodon dactylons*.

4.1.3 Creeping Bent grass

Penncross Creeping Bent grass has a potential ET of 7.9 to 9.7 $mmday^{-1}$ in summer months. Creeping Bent grass is a vigorous grass with fairly rapid vertical leaf extension rate (Beard, 1985). In this study the Creeping Bent grass had a average ET rate of 4.21 $mmday^{-1}$ and a crop factor of 0.75. The maximum ET recorded in this study was 8.17 $mmday^{-1}$ with a crop factor of 1.22. This is unrealistic high and could only be explained by the un limiting conditions or a measurement error.

4.2 Effect of Mowing Height on Turfgrass Water Use

This study confirmed the fact that increase in mowing height will lead to an increase in water use of turfgrass. Turf grown at 8 mm used 10 % more water when compared with turf grown at 4 mm. Tall grass transpires more than short grass since, while no more solar radiation is intercepted per unit area, more advective energy can be intercepted (Feldhake, *et al*, 1983). This has an implication for golf greens where the apron is grown at a higher mowing height than the rest of the green and therefore subjected to localized drying. A recommendation based on the results of this study would be to remove the apron and mow all the Bentgrass to the same height of 4 mm. The Kikuyu grass that is usually used as fairway grass can be mowed shorter to 8 mm to surround the green. Kikuyu grass mown to 8 mm uses approximately the amount of water as Bent grass mown to 4 mm.

The fact that an increase in mowing height leads to an increase in water use of turfgrass does not necessarily means that the average mowing height of turfgrasses should be reduced to conserve water. It would be impossible to reduce mowing height of certain grasses. Several of the

tall-type cool-season grasses (Tall Fescues and Ryegrasses), for instance, would not survive when mowed too short. It is also a known fact that there is no relationship between drought tolerance and water use efficiency of turfgrass. The longer the turf, the more drought tolerant it is (Beard, 1977). Frequent mowing to a height that will not affect the turf detrimentally will undoubtly promote water conservation confirmed by findings of Stout, (1992).

To conserve water, it is thus recommended to increase the frequency of mowing rather to reduce mowing height drastically.

4.3. Effect of Fertilizer Application on Water Use of Turfgrass

Increasing the amount of Nitrogen applied will lead to an increase of water use. Overall the turfgrass used 11 % more water when the N was increased from two applications of 20 $kg.ha^{-1}$ mo^{-1}. to 2 applications of 30 $kg.ha^{-1}$ mo^{-1}. The grass also used 9 % more water when two applications of 30 $kg.ha^{-1}$ mo^{-1}. was given instead of one application of 60 $kg.ha^{-1}$ mo^{-1}. The turfgrass used less water at two applications of 20 $kg.ha^{-1}$ mo^{-1}.

It is thus recommended to apply small quantities of fertilizer (especially N) more frequently.

4.4. Conclusions

It is concluded thus that frequent mowing and frequent fertilization with small quantities of fertilser should be used to reduce water use of turfgrass. From this research it became evident that Florida grass use the least amount of water and Kikuyu grass has the highest water use rate (Table 13). Average crop factors arrived at in this report are recommended for use with the respective mowing heights as a guideline when irrigating. The crop factors should be considered as making allowance for the maximum water use rate of these turfgrasses. If warm season grasses are irrigated at 60 % of the crop factor, no considerable loss in quality will occur. Cool-season grasses should, however, not be irrigated at less than 80% of these crop factors (Kneeborne, *et al*, 1992).

Table 13. Average Crop Factors of Several Turfgrasses

Mowing Height (mm)	4	6	8	10	12	Average
Turfgrass Type	Crop Factors					
Numex Sahara		0.64	0.70	0.74		0.69
Creeping Bent	0.69	0.75	0.79			0.74
Kikuyu			0.73	0.79	0.82	0.78
Bayview	0.71	0.75	0.83			0.76
Speedy Royal		0.70	0.75	0.79		0.75
Florida	0.65	0.72	0.74			0.70
Average	0.68	0.71	0.76	0.77	0.82	0.74

4.5. Technology Transfer

Results of this research have already been adopted in practice at several golf courses in the Witwatersrand area where the crop factor of Creeping Bent at a 4 mm mowing height and fertilisation at the rate of 2x20 kg N per month is being used for irrigation scheduling. No decrease in turf quality has occurred and the practice has led to a saving in water use which is still being quatified. Practical application of findings for Kikuyu has in addition led to an increase in the quality of turfgrass.

Several other golf courses will be encouraged to apply the crop factors in their irrigation planning and Class A evaporative pans will be installed at these locations. For the moment, the individual courses will be making use of Class A pan figures supplied by the Weather Bureau.

The fact that automatic weather stations are so expensive in South Africa will restrict the use of real time weather data for sportsfield irrigation scheduling. The use of such equipment and data would nevertheless be fundamentally sounder than the use of evaporation pans, which are prone to large errors if not sited properly. Consequently, further research is needed to relate automatic weather station data to measured ET data, thereby further refining irrigation scheduling technology for turfgrass applications.

4.6 Research Considerations

Turfgrass water use is a complex interaction of atmospheric, plant and soil phenomena and cultural management practices. Investigations in one of these areas generally require control of the others. These restraints generally make an unreal scenario for complete explanation of mechanisms incurred in drought or water use related research, especially under field conditions.

The degree of available soil water for turf varies considerably, and conditions will differ for the researchers studying potential water use, restricted water use, survival of turfgrass and drought tolerance of turfgrass.

More research is needed to explain the relationship, if any, between water use efficiency and drought tolerance. It is often being said that a grass with a high drought tolerance in not necessarily a turfgrass with a low water requirement.

Research is needed to relate physiological responses associated with water use, coupled with better understanding of morphological parameters that affects water use rate.

Probably the most needed research on water use of turfgrass will be the effect of elements other than Nitrogen and their interactions on water use .

The current study only evaluated one cool-season grass, Penncross Creeping Bentgrass, due to the fact that when the study was initiated it was the most widely used cool-season grass in South Africa . Since then many rugby and soccer fields have started to use perennial cool-season grasses such as Tall Fescues and Ryegrasses. It would be important to establish the crop factors of these grasses as well.

In proposing a future a plan for future research on turfgrass water use, the first phase should be to establish ET values and corresponding crop factors at an interspecies level with non-limiting water supplies. The same study should therefore be undertaken under water stressed conditions.

The second phase should be the development of ET rates and crop factors at an intraspecies level at both non-limiting water and deficit irrigation supplies. As soon as this has been accomplished, methods of water saving can be incorporated. Resistance to ET should be the major part of this study which would include other factors such as root development and growing media. The final phase of this research should be the development of cultural practices which will ensure a decrease in water use of turfgrass. Factors such as optimal mowing height, mowing frequency, amount, type and timing of fertilization, irrigation scheduling, growth regulators, antitranspirants, species selection and plant breeding should be investigated.

The knowledge gained with this project is a useful starting point for follow-up projects to develop computer programs for the irrigation scheduling and management of sport fields in South Africa.

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APPENDIX A

EVAPOTRANSPIRATION DATA

CROP FACTORS

STATISTICAL ANALYSIS

TREATMENT DIFFERENCES

Table 1.1. Evapotranspiration of Numex Sahara

Month	Nov92	Dec92	Jan93	Feb93	Mch93	Apr93	May93	Jun93	Jul93	Aug93	Sep93	Oct93	Jan94	Feb94	Mch94	Apr94	May94	Jun94	Jul94	Aug94	Jan95	Feb95	Mch95	Apr95	May95	Jun95	Min	Max	AVG
Evaporation	8.1	9.4	9.2	5.9	5.3	4.6	5	3.8	4.3	5.5	8.6	4.9	6.2	4.7	5.5	4.8	4.2	3.8	3.7	5.5	8.8	7.7	5.4	5.4	3.3	3.4	3.3	9.4	5.65
Mowing Height 10 mm																													
A111	5.71	7.48	6.83	4.27	3.72	3.25	2.98	1.88	2.80	4.66	6.03	3.83	4.53	3.39	3.83	3.19	3.07	2.37	2.28	3.98	5.53	5.62	3.80	3.70	2.41	2.50	1.88	7.48	3.99
A112	5.52	7.04	6.66	4.23	3.98	3.66	3.22	2.86	2.10	4.10	6.05	3.92	4.65	3.64	4.14	3.43	3.27	2.55	2.44	4.28	5.45	5.53	3.91	3.86	2.49	2.61	2.10	7.04	4.06
A113	5.46	7.24	6.89	4.53	4.08	3.57	3.80	3.24	3.15	4.22	5.85	3.96	4.67	3.59	3.95	3.38	2.92	2.51	2.17	4.22	5.55	5.68	3.76	3.69	2.30	2.47	2.17	7.24	4.11
Avg	**5.57**	**7.25**	**6.79**	**4.34**	**3.93**	**3.49**	**3.33**	**2.66**	**2.68**	**4.32**	**5.98**	**3.90**	**4.62**	**3.54**	**3.97**	**3.33**	**3.09**	**2.48**	**2.29**	**4.16**	**5.51**	**5.61**	**3.82**	**3.75**	**2.40**	**2.53**	**2.29**	**7.25**	**4.05**
A121	6.58	8.03	7.39	5.11	4.46	3.90	3.42	3.12	2.82	4.71	6.75	3.96	4.93	3.68	4.14	3.46	3.06	2.57	2.44	4.32	4.84	6.42	4.25	4.20	2.68	2.79	2.44	8.03	4.39
A122	7.12	7.99	7.84	4.94	4.60	4.00	3.52	3.24	2.70	4.73	7.17	4.00	5.11	3.78	4.18	3.56	3.39	2.64	2.51	4.44	5.39	6.20	4.43	4.40	2.83	2.91	2.51	7.99	4.52
A123	7.06	8.19	8.32	5.12	4.49	3.68	3.31	3.21	2.80	4.81	7.37	3.95	5.00	3.97	4.39	3.74	3.56	2.78	2.58	4.66	5.20	6.34	4.21	4.23	2.66	2.76	2.58	8.32	4.55
Avg	**6.92**	**8.07**	**7.85**	**5.06**	**4.52**	**3.86**	**3.42**	**3.19**	**2.77**	**4.75**	**7.10**	**3.97**	**5.01**	**3.81**	**4.24**	**3.59**	**3.34**	**2.67**	**2.51**	**4.48**	**5.14**	**6.32**	**4.30**	**4.28**	**2.72**	**2.82**	**2.51**	**8.07**	**4.49**
A131	5.83	7.10	6.74	4.46	4.24	3.95	2.40	2.06	2.36	4.20	6.29	4.28	4.60	3.87	4.26	3.64	3.12	2.71	2.51	4.55	4.68	5.81	3.84	3.82	2.44	2.54	2.06	7.10	4.09
A132	5.81	7.39	6.83	4.86	4.27	3.74	3.74	3.29	2.92	4.46	6.29	4.15	4.80	3.69	4.05	3.47	3.26	2.58	2.41	4.34	4.69	5.64	4.00	3.97	2.51	2.60	2.41	7.39	4.22
A133	5.78	6.07	6.69	4.85	4.33	3.82	2.39	2.14	2.94	4.43	6.12	4.03	4.46	3.29	3.64	3.10	2.95	2.30	2.14	3.87	4.76	5.75	3.87	3.88	2.42	2.48	2.14	6.69	3.94
Avg	**5.81**	**6.85**	**6.75**	**4.72**	**4.28**	**3.83**	**2.85**	**2.50**	**2.74**	**4.36**	**6.24**	**4.15**	**4.62**	**3.62**	**3.98**	**3.40**	**3.11**	**2.53**	**2.35**	**4.25**	**4.71**	**5.73**	**3.90**	**3.89**	**2.46**	**2.54**	**2.35**	**6.85**	**4.08**
Mowing Height 6 mm																													
A211	4.74	6.45	5.76	3.88	3.66	3.09	3.20	2.07	2.57	3.47	5.04	3.21	4.18	3.07	3.73	2.89	2.75	2.15	2.04	3.61	4.56	4.61	3.37	3.31	2.19	2.19	2.04	6.45	3.53
A212	5.43	6.44	5.76	4.12	3.54	3.09	3.43	2.12	1.84	3.22	5.06	3.36	4.09	2.91	3.21	2.74	2.77	2.04	1.89	3.42	4.70	4.69	3.26	3.09	2.04	2.10	1.84	6.44	3.47
A213	5.38	6.50	5.52	4.19	3.11	2.94	3.24	2.16	1.64	2.92	5.01	3.65	3.86	3.15	3.65	2.96	2.70	2.20	2.00	3.70	4.37	4.74	3.14	3.44	2.11	2.26	1.64	6.50	3.48
Avg	**5.18**	**6.46**	**5.68**	**4.06**	**3.44**	**3.04**	**3.29**	**2.12**	**2.02**	**3.20**	**5.05**	**3.40**	**4.04**	**3.04**	**3.53**	**2.86**	**2.74**	**2.13**	**1.98**	**3.58**	**4.55**	**4.68**	**3.26**	**3.28**	**2.11**	**2.18**	**1.98**	**6.46**	**3.50**
A221	5.62	6.81	6.66	4.50	3.72	3.26	4.39	2.57	2.70	4.25	6.02	3.92	4.53	3.34	3.67	3.14	2.72	2.34	2.16	3.92	4.63	5.46	3.83	3.93	2.49	2.60	2.16	6.81	3.97
A222	5.85	6.83	6.48	4.95	3.65	3.30	4.21	2.38	2.63	4.21	6.00	3.88	4.38	3.23	3.55	3.04	2.97	2.26	2.20	3.80	4.47	5.32	3.89	3.51	2.35	2.50	2.20	6.83	3.92
A223	5.79	6.75	6.44	4.59	3.73	3.27	4.35	2.52	2.75	4.14	5.97	3.86	4.29	3.52	3.78	3.31	3.16	2.46	2.23	4.14	4.54	5.61	3.57	3.80	2.58	2.69	2.23	6.75	3.99
Avg	**6.50**	**6.80**	**6.53**	**4.68**	**3.70**	**3.28**	**4.32**	**2.49**	**2.69**	**4.20**	**6.00**	**3.89**	**4.40**	**3.36**	**3.67**	**3.17**	**2.95**	**2.35**	**2.19**	**3.95**	**4.55**	**5.46**	**3.76**	**3.75**	**2.47**	**2.60**	**2.19**	**6.80**	**3.96**
A231	4.31	5.57	5.49	4.12	3.29	2.88	3.73	1.85	2.88	3.85	5.29	3.81	3.85	2.98	3.30	2.80	2.61	2.08	1.94	3.50	4.44	5.13	3.52	3.69	2.29	2.39	1.85	5.57	3.52
A232	5.02	6.01	5.74	3.92	3.41	2.99	3.01	1.85	2.24	3.88	5.77	3.67	4.09	3.15	3.46	2.96	2.56	2.20	1.90	3.70	4.28	4.89	3.66	3.30	2.25	2.35	1.85	6.01	3.55
A233	5.08	6.39	6.25	4.05	3.63	3.19	2.97	1.86	1.59	4.10	5.51	3.75	4.00	3.03	3.33	2.85	2.72	2.12	1.96	3.56	4.14	5.27	3.41	3.63	2.43	2.57	1.59	6.39	3.59
Avg	**4.80**	**5.99**	**5.83**	**4.03**	**3.45**	**3.02**	**3.24**	**1.86**	**2.23**	**3.94**	**5.53**	**3.75**	**3.98**	**3.05**	**3.36**	**2.87**	**2.63**	**2.14**	**1.93**	**3.59**	**4.29**	**5.10**	**3.53**	**3.54**	**2.32**	**2.44**	**1.86**	**5.99**	**3.56**
Mowing Height 0 mm																													
A311	5.97	6.96	6.43	4.40	3.93	3.50	3.27	2.88	2.25	3.79	6.34	3.84	4.25	3.36	3.69	3.16	2.88	2.35	2.17	3.95	5.03	5.40	3.75	3.79	2.30	2.41	2.17	6.96	3.92
A312	5.12	6.49	6.05	3.62	3.35	2.93	2.52	2.25	3.40	4.35	6.14	3.69	4.19	3.24	3.58	3.05	2.65	2.27	1.96	3.81	5.11	5.48	3.88	3.67	2.19	2.33	1.96	6.49	3.74
A313	5.45	6.93	6.49	4.55	4.19	3.81	2.70	2.30	2.95	3.95	5.24	3.58	4.33	3.49	3.49	3.28	3.13	2.44	2.05	4.10	5.38	5.24	3.33	3.90	2.49	2.50	2.05	6.93	3.90
Avg	**5.51**	**6.79**	**6.32**	**4.19**	**3.82**	**3.41**	**2.83**	**2.47**	**2.87**	**4.03**	**5.91**	**3.70**	**4.26**	**3.36**	**3.59**	**3.17**	**2.89**	**2.35**	**2.06**	**3.95**	**5.17**	**5.37**	**3.65**	**3.79**	**2.33**	**2.41**	**2.06**	**6.79**	**3.85**
A321	5.64	6.91	7.05	4.76	4.38	3.83	2.95	2.64	3.16	4.82	6.74	4.13	4.68	3.89	4.29	3.66	3.17	2.72	2.52	4.57	4.81	5.85	4.02	4.29	2.50	2.59	2.50	7.05	4.25
A322	5.73	6.93	6.78	4.55	3.76	3.29	3.14	2.69	3.55	4.26	6.60	4.05	4.89	3.67	4.03	3.45	2.98	2.57	2.21	4.31	4.88	6.24	4.21	4.00	2.41	2.67	2.21	6.93	4.15
A323	6.18	6.96	6.24	4.43	4.11	3.44	3.50	3.12	3.50	4.40	6.63	4.25	4.44	3.36	3.69	3.16	3.01	2.35	2.17	3.95	4.85	5.60	3.79	4.18	2.78	2.78	2.17	6.86	4.11
Avg	**5.85**	**6.90**	**6.69**	**4.58**	**4.09**	**3.52**	**3.20**	**2.81**	**3.40**	**4.49**	**6.66**	**4.14**	**4.67**	**3.64**	**4.00**	**3.43**	**3.06**	**2.55**	**2.30**	**4.28**	**4.84**	**5.90**	**4.01**	**4.16**	**2.56**	**2.68**	**2.30**	**6.90**	**4.17**
A331	5.46	6.32	6.60	4.05	3.87	3.30	3.07	2.74	2.49	3.97	6.18	3.94	4.29	3.26	3.58	3.07	2.92	2.28	2.17	3.83	4.80	5.90	4.04	4.06	2.64	2.67	2.17	6.60	3.90
A332	5.61	6.87	6.73	4.24	3.69	3.32	2.94	2.41	1.94	4.19	5.94	4.00	4.16	3.19	3.50	3.00	2.82	2.23	2.09	3.75	4.49	5.38	3.59	3.87	2.17	2.73	1.94	6.87	3.80
A333	5.85	6.40	6.04	4.14	4.14	3.62	3.42	3.01	2.69	4.31	5.72	3.75	4.38	3.39	3.79	3.19	2.80	2.37	2.08	3.98	4.42	5.17	3.71	4.13	2.61	2.52	2.08	6.40	3.91
Avg	**5.64**	**6.53**	**6.46**	**4.14**	**3.90**	**3.41**	**3.14**	**2.72**	**2.38**	**4.16**	**5.95**	**3.90**	**4.28**	**3.28**	**3.62**	**3.09**	**2.85**	**2.29**	**2.11**	**3.85**	**4.57**	**5.48**	**3.78**	**4.02**	**2.47**	**2.64**	**2.11**	**6.53**	**3.87**

Table 1.2. Crop Factor of Numex Sahara

Month	Nov92	Dec92	Jan93	Feb93	Mch93	Apr93	May93	Jun93	Jul93	Aug93	Sep93	Oct93	Jan94	Feb94	Mch94	Apr94	May94	Jun94	Jul94	Aug94	Jan95	Feb95	Mch95	Apr95	May95	Jun95	Min	Max	AVG
Mowing Height 10 mm																													
A111	0.71	0.80	0.74	0.72	0.70	0.71	0.60	0.49	0.65	0.85	0.70	0.78	0.73	0.72	0.70	0.66	0.73	0.62	0.62	0.72	0.68	0.73	0.70	0.69	0.73	0.74	0.49	0.85	0.70
A112	0.68	0.75	0.72	0.72	0.75	0.80	0.64	0.75	0.49	0.74	0.70	0.80	0.75	0.77	0.75	0.71	0.78	0.67	0.66	0.78	0.67	0.72	0.72	0.71	0.75	0.77	0.49	0.80	0.72
A113	0.67	0.77	0.75	0.77	0.77	0.78	0.76	0.85	0.73	0.77	0.68	0.81	0.75	0.76	0.72	0.70	0.70	0.66	0.59	0.77	0.68	0.74	0.70	0.68	0.70	0.73	0.59	0.85	0.73
Avg	**0.69**	**0.77**	**0.74**	**0.74**	**0.74**	**0.76**	**0.67**	**0.70**	**0.62**	**0.79**	**0.70**	**0.80**	**0.74**	**0.75**	**0.72**	**0.69**	**0.73**	**0.65**	**0.62**	**0.76**	**0.68**	**0.73**	**0.71**	**0.69**	**0.73**	**0.74**	**0.62**	**0.80**	**0.72**
A121	0.81	0.85	0.80	0.87	0.84	0.85	0.68	0.82	0.66	0.86	0.78	0.81	0.80	0.78	0.75	0.72	0.73	0.68	0.66	0.79	0.59	0.83	0.79	0.78	0.81	0.82	0.59	0.87	0.78
A122	0.88	0.85	0.85	0.84	0.87	0.87	0.70	0.85	0.63	0.86	0.83	0.82	0.82	0.80	0.76	0.74	0.81	0.70	0.68	0.81	0.66	0.81	0.82	0.81	0.86	0.86	0.63	0.88	0.80
A123	0.87	0.87	0.90	0.87	0.85	0.80	0.66	0.85	0.65	0.87	0.86	0.81	0.81	0.84	0.80	0.78	0.85	0.73	0.70	0.85	0.64	0.82	0.78	0.78	0.81	0.81	0.64	0.90	0.80
Avg	**0.85**	**0.86**	**0.85**	**0.86**	**0.85**	**0.84**	**0.68**	**0.84**	**0.65**	**0.86**	**0.83**	**0.81**	**0.81**	**0.81**	**0.77**	**0.75**	**0.79**	**0.70**	**0.68**	**0.81**	**0.63**	**0.82**	**0.80**	**0.79**	**0.83**	**0.83**	**0.63**	**0.86**	**0.79**
A131	0.72	0.76	0.73	0.76	0.80	0.86	0.48	0.54	0.55	0.76	0.73	0.87	0.74	0.82	0.77	0.76	0.74	0.71	0.68	0.83	0.57	0.75	0.71	0.71	0.74	0.75	0.48	0.87	0.73
A132	0.72	0.79	0.74	0.82	0.81	0.81	0.75	0.87	0.68	0.81	0.73	0.85	0.77	0.79	0.74	0.72	0.78	0.68	0.65	0.79	0.58	0.73	0.74	0.74	0.76	0.76	0.58	0.87	0.75
A133	0.71	0.65	0.73	0.82	0.82	0.83	0.48	0.56	0.68	0.81	0.71	0.82	0.72	0.70	0.66	0.65	0.70	0.61	0.58	0.70	0.58	0.75	0.72	0.72	0.73	0.73	0.48	0.83	0.70
Avg	**0.72**	**0.73**	**0.73**	**0.80**	**0.81**	**0.83**	**0.57**	**0.66**	**0.64**	**0.79**	**0.73**	**0.85**	**0.75**	**0.77**	**0.72**	**0.71**	**0.74**	**0.67**	**0.64**	**0.77**	**0.58**	**0.74**	**0.72**	**0.72**	**0.74**	**0.75**	**0.57**	**0.85**	**0.73**
Mowing Height 6 mm																													
A211	0.58	0.69	0.63	0.66	0.69	0.67	0.64	0.54	0.60	0.63	0.59	0.65	0.67	0.65	0.68	0.60	0.66	0.57	0.55	0.66	0.56	0.60	0.62	0.61	0.66	0.64	0.54	0.69	0.63
A212	0.67	0.68	0.63	0.70	0.67	0.67	0.69	0.56	0.43	0.59	0.59	0.69	0.66	0.62	0.58	0.57	0.66	0.54	0.51	0.62	0.58	0.61	0.60	0.57	0.62	0.62	0.43	0.70	0.61
A213	0.66	0.69	0.60	0.71	0.59	0.64	0.65	0.57	0.38	0.53	0.59	0.74	0.62	0.67	0.66	0.62	0.64	0.58	0.54	0.67	0.54	0.62	0.58	0.64	0.64	0.66	0.38	0.74	0.62
Avg	**0.64**	**0.69**	**0.62**	**0.69**	**0.65**	**0.66**	**0.66**	**0.56**	**0.47**	**0.58**	**0.59**	**0.69**	**0.65**	**0.65**	**0.64**	**0.60**	**0.65**	**0.56**	**0.53**	**0.65**	**0.56**	**0.61**	**0.60**	**0.61**	**0.64**	**0.64**	**0.47**	**0.69**	**0.62**
A221	0.69	0.71	0.72	0.76	0.70	0.71	0.88	0.68	0.63	0.77	0.70	0.80	0.73	0.71	0.67	0.65	0.65	0.61	0.58	0.71	0.57	0.71	0.71	0.70	0.75	0.76	0.57	0.88	0.70
A222	0.72	0.73	0.70	0.84	0.69	0.72	0.84	0.63	0.61	0.77	0.70	0.79	0.71	0.69	0.65	0.63	0.71	0.59	0.60	0.69	0.55	0.69	0.72	0.65	0.71	0.74	0.55	0.84	0.69
A223	0.71	0.72	0.70	0.78	0.70	0.71	0.87	0.66	0.64	0.75	0.69	0.79	0.69	0.75	0.69	0.69	0.75	0.65	0.60	0.75	0.56	0.73	0.66	0.70	0.78	0.79	0.56	0.87	0.71
Avg	**0.71**	**0.72**	**0.71**	**0.79**	**0.70**	**0.71**	**0.86**	**0.65**	**0.63**	**0.76**	**0.70**	**0.79**	**0.71**	**0.72**	**0.67**	**0.66**	**0.70**	**0.62**	**0.59**	**0.72**	**0.56**	**0.71**	**0.70**	**0.69**	**0.75**	**0.76**	**0.56**	**0.86**	**0.70**
A231	0.53	0.59	0.60	0.70	0.62	0.63	0.75	0.49	0.67	0.70	0.61	0.78	0.62	0.63	0.60	0.58	0.62	0.55	0.52	0.64	0.54	0.67	0.65	0.68	0.69	0.70	0.49	0.78	0.63
A232	0.62	0.64	0.62	0.66	0.64	0.65	0.60	0.49	0.52	0.71	0.67	0.75	0.66	0.67	0.63	0.62	0.61	0.58	0.51	0.67	0.53	0.64	0.68	0.61	0.68	0.69	0.49	0.75	0.63
A233	0.63	0.68	0.68	0.69	0.69	0.69	0.59	0.49	0.37	0.74	0.64	0.77	0.65	0.64	0.61	0.59	0.65	0.56	0.53	0.65	0.51	0.68	0.63	0.67	0.74	0.76	0.37	0.77	0.64
Avg	**0.59**	**0.64**	**0.63**	**0.68**	**0.65**	**0.66**	**0.65**	**0.49**	**0.52**	**0.72**	**0.64**	**0.76**	**0.64**	**0.65**	**0.61**	**0.60**	**0.63**	**0.56**	**0.52**	**0.65**	**0.53**	**0.66**	**0.65**	**0.66**	**0.70**	**0.72**	**0.49**	**0.76**	**0.63**
Mowing Height 3 mm																													
A311	0.74	0.74	0.70	0.75	0.74	0.76	0.65	0.76	0.52	0.69	0.74	0.78	0.69	0.71	0.67	0.66	0.69	0.62	0.59	0.72	0.62	0.70	0.69	0.70	0.70	0.71	0.52	0.78	0.69
A312	0.63	0.69	0.66	0.61	0.63	0.64	0.50	0.59	0.79	0.79	0.71	0.75	0.68	0.69	0.65	0.64	0.63	0.60	0.53	0.69	0.63	0.71	0.72	0.68	0.66	0.69	0.50	0.79	0.66
A313	0.67	0.74	0.71	0.77	0.79	0.83	0.54	0.60	0.69	0.72	0.61	0.73	0.70	0.74	0.63	0.68	0.75	0.64	0.55	0.75	0.66	0.68	0.62	0.72	0.75	0.74	0.54	0.83	0.69
Avg	**0.68**	**0.72**	**0.69**	**0.71**	**0.72**	**0.74**	**0.57**	**0.65**	**0.67**	**0.73**	**0.69**	**0.76**	**0.69**	**0.72**	**0.65**	**0.66**	**0.69**	**0.62**	**0.56**	**0.72**	**0.63**	**0.70**	**0.68**	**0.70**	**0.71**	**0.71**	**0.56**	**0.76**	**0.68**
A321	0.70	0.74	0.77	0.81	0.83	0.83	0.59	0.69	0.73	0.88	0.78	0.84	0.75	0.83	0.78	0.76	0.76	0.72	0.68	0.83	0.59	0.76	0.74	0.79	0.76	0.76	0.59	0.88	0.76
A322	0.71	0.74	0.74	0.77	0.71	0.72	0.63	0.71	0.83	0.78	0.77	0.83	0.79	0.78	0.73	0.72	0.71	0.68	0.60	0.78	0.60	0.81	0.78	0.74	0.73	0.79	0.60	0.83	0.74
A323	0.76	0.73	0.68	0.75	0.78	0.75	0.70	0.82	0.81	0.80	0.77	0.87	0.72	0.71	0.67	0.66	0.72	0.62	0.59	0.72	0.60	0.73	0.70	0.77	0.84	0.82	0.59	0.87	0.73
Avg	**0.72**	**0.73**	**0.73**	**0.78**	**0.77**	**0.77**	**0.64**	**0.74**	**0.79**	**0.82**	**0.77**	**0.85**	**0.75**	**0.77**	**0.73**	**0.71**	**0.73**	**0.67**	**0.62**	**0.78**	**0.59**	**0.77**	**0.74**	**0.77**	**0.78**	**0.79**	**0.59**	**0.85**	**0.74**
A331	0.67	0.67	0.72	0.69	0.73	0.72	0.61	0.72	0.58	0.72	0.72	0.80	0.69	0.69	0.65	0.64	0.70	0.60	0.59	0.70	0.59	0.77	0.75	0.75	0.80	0.79	0.58	0.80	0.69
A332	0.69	0.73	0.73	0.72	0.70	0.72	0.59	0.63	0.45	0.76	0.69	0.82	0.67	0.68	0.64	0.63	0.67	0.59	0.57	0.68	0.55	0.70	0.66	0.72	0.66	0.80	0.45	0.82	0.67
A333	0.72	0.68	0.66	0.70	0.78	0.79	0.68	0.79	0.63	0.78	0.67	0.77	0.71	0.72	0.69	0.66	0.67	0.62	0.56	0.72	0.54	0.67	0.69	0.76	0.79	0.74	0.54	0.79	0.70
Avg	**0.70**	**0.69**	**0.70**	**0.70**	**0.74**	**0.74**	**0.63**	**0.72**	**0.55**	**0.76**	**0.69**	**0.80**	**0.69**	**0.70**	**0.66**	**0.64**	**0.68**	**0.60**	**0.57**	**0.70**	**0.56**	**0.71**	**0.70**	**0.74**	**0.75**	**0.78**	**0.55**	**0.80**	**0.69**

Table 1.3. Statistical Analysis of Numex Saharagrass

p -values	M10N1x60	M10N2X30	M10N2X20	M6N1X60	M6N2X30	M6N2X20	M8N1X60	M8N2X30	M8N2X20	CF	SD
M10N1x60		**0.000**	**0.000**	**0.000**	**0.003**	**0.000**	**0.000**	**0.000**	**0.000**	0.717	0.045
M10N2X30	**0.000**		**0.000**	**0.000**	**0.008**	**0.000**	**0.000**	**0.000**	**0.000**	0.792	0.069
M10N2X20	**0.000**	**0.000**		**0.000**	0.027	**0.000**	**0.000**	**0.000**	**0.000**	0.725	0.069
M6N1X60	**0.000**	**0.000**	**0.000**		**0.000**	**0.000**	**0.008**	0.133	**0.000**	0.619	0.053
M6N2X30	**0.003**	**0.008**	0.027	**0.000**		**0.000**	0.059	0.014	**0.000**	0.704	0.064
M6N2X20	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**		**0.000**	**0.000**	**0.000**	0.631	0.066
M8N1X60	**0.000**	**0.000**	**0.000**	**0.008**	0.059	**0.000**		**0.000**	**0.000**	0.682	0.048
M8N2X30	**0.000**	**0.000**	**0.000**	0.133	0.014	**0.000**	**0.000**		**0.000**	0.743	0.057
M8N2X20	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**		0.688	0.063
CF	0.717	0.792	0.725	0.619	0.704	0.631	0.682	0.743	0.688		
SD	0.045	0.069	0.069	0.053	0.064	0.066	0.048	0.057	0.063		

All printed in Bold represents a significant difference ($p<0.01$)

Table 1.4. Percentage Treatment Differences

Treatments		M10N1x60	M10N2X30	M10N2X20	M6N1X60	M6N2X30	M6N2X20	M8N1X60	M8N2X30	M8N2X20
	CF	0.717	0.792	0.725	0.619	0.704	0.631	0.682	0.743	0.688
M10N1x60	0.717		10.46	1.12	-13.67	-1.81	-11.99	-4.88	3.63	-4.04
M10N2X30	0.792	-9.47		-8.46	-21.84	-11.11	-20.33	-13.89	-6.19	-13.13
M10N2X20	0.725	-1.10	9.24		-14.62	-2.90	-12.97	-5.93	2.48	-5.10
M6N1X60	0.619	15.83	27.95	17.12		13.73	1.94	10.18	20.03	11.15
M6N2X30	0.704	1.85	12.50	2.98	-12.07		-10.37	-3.13	5.54	-2.27
M6N2X20	0.631	13.63	25.52	14.90	-1.90	11.57		8.08	17.75	9.03
M8N1X60	0.682	5.13	16.13	6.30	-9.24	3.23	-7.48		8.94	0.88
M8N2X30	0.743	-3.50	6.59	-2.42	-16.69	-5.25	-15.07	-8.21		-7.40
M8N2X20	0.688	4.22	15.12	5.38	-10.03	2.33	-8.28	-0.87	7.99	

Table 2.1. Evapotranspiration of Bentgrass

Month	Nov92	Dec92	Jan93	Feb93	Mch93	Apr93	May93	Jun93	Jul93	Aug93	Sep93	Oct93	Jan94	Feb94	Mch94	Apr94	May94	Jun94	Jul94	Aug94	Jan95	Feb95	Mch95	Apr95	May95	Jun95	Min	Max	AVG
Evaporation	8.10	9.40	9.20	5.90	5.30	4.60	5.00	3.80	4.30	5.50	8.60	4.90	6.2	4.7	5.5	4.8	4.2	3.8	3.7	5.5	8.8	7.7	5.4	5.4	3.3	3.4	3.3	9.4	5.65
Mowing Height = 4 mm																													
B111	5.33	5.96	5.83	3.96	3.62	3.27	2.63	2.30	2.18	3.51	5.43	4.12	4.40	3.07	3.75	3.29	2.64	2.62	2.45	3.86	5.61	5.18	3.69	3.60	2.20	2.34	2.18	5.96	3.73
B112	5.10	6.07	5.66	4.10	3.42	2.43	2.80	2.40	4.05	3.98	5.06	4.07	4.10	2.95	3.60	3.10	2.60	2.53	2.17	3.49	5.86	5.30	3.57	3.68	2.14	2.39	2.14	6.07	3.72
B113	5.05	5.68	5.77	3.87	3.49	3.05	2.66	2.33	3.82	4.12	6.47	4.15	4.37	2.82	3.72	3.16	2.52	2.39	2.24	3.83	5.63	5.22	3.60	3.73	2.43	2.21	2.21	6.47	3.78
Avg	5.16	5.91	5.76	3.98	3.51	2.92	2.70	2.34	3.35	3.87	5.65	4.11	4.29	2.95	3.69	3.18	2.58	2.51	2.28	3.73	5.70	5.23	3.62	3.67	2.26	2.31	2.26	5.91	3.74
B121	6.33	7.13	7.08	4.91	4.55	3.80	4.34	3.80	3.90	4.53	6.36	4.56	4.69	3.37	4.11	3.55	2.97	2.89	2.48	4.00	5.70	5.85	3.99	4.10	2.50	2.64	2.48	7.13	4.39
B122	5.88	7.62	6.69	4.72	4.33	3.79	3.12	2.69	4.07	4.00	6.11	4.32	4.73	3.05	4.03	3.42	2.72	2.59	2.42	4.15	5.65	5.73	4.03	3.91	2.39	2.58	2.39	7.62	4.16
B123	5.48	6.85	6.79	5.04	4.37	3.87	3.61	3.10	4.05	5.26	7.41	4.51	4.66	3.35	4.09	3.52	2.95	2.87	2.46	3.97	5.78	5.64	3.89	4.21	2.67	2.39	2.39	7.41	4.34
Avg	5.90	7.20	6.85	4.89	4.42	3.82	3.69	3.20	4.01	4.60	6.62	4.47	4.69	3.26	4.08	3.50	2.88	2.78	2.46	4.04	5.71	5.74	3.97	4.07	2.52	2.54	2.46	7.20	4.30
B131	5.38	5.66	6.04	3.98	3.72	3.28	2.74	2.45	2.93	4.77	6.11	4.57	4.29	3.08	3.76	3.24	2.72	2.64	2.27	3.66	5.40	5.05	3.67	3.67	2.24	2.31	2.24	6.11	3.83
B132	5.24	6.01	5.84	3.93	3.32	2.91	3.28	2.48	3.62	3.65	5.42	4.34	4.52	2.92	3.85	3.27	2.60	2.47	2.31	3.96	5.17	5.24	3.48	3.49	2.06	2.30	2.06	6.01	3.76
B133	5.35	6.40	5.65	3.97	3.30	2.89	2.77	2.48	3.40	4.64	5.95	4.63	4.26	3.06	3.74	3.22	2.70	2.62	2.25	3.63	5.09	5.30	3.37	3.59	2.18	2.14	2.14	6.40	3.79
Avg	5.32	6.02	5.84	3.96	3.45	3.02	2.93	2.47	3.32	4.35	5.83	4.51	4.36	3.02	3.78	3.25	2.67	2.58	2.28	3.75	5.22	5.20	3.51	3.58	2.16	2.25	2.16	6.02	3.79
Mowing Height = 6 mm																													
B211	6.33	7.35	6.85	4.83	4.41	3.76	2.98	2.66	2.45	4.03	5.03	3.68	4.50	2.99	3.95	3.30	2.74	2.54	2.17	3.63	5.74	5.79	3.99	3.89	2.39	2.57	2.17	7.35	4.03
B212	5.92	7.56	6.45	4.20	3.69	3.23	3.83	3.24	3.98	4.70	5.98	3.60	4.40	3.07	3.75	3.29	2.64	2.62	2.45	3.86	5.68	5.73	3.81	4.06	2.31	2.49	2.31	7.56	4.10
B213	5.92	7.37	7.03	4.82	4.17	3.65	3.71	3.20	4.04	4.30	6.47	3.94	4.90	3.26	4.30	3.59	2.99	2.77	2.37	4.18	5.94	5.64	3.94	4.03	2.60	2.41	2.37	7.37	4.29
Avg	6.06	7.43	6.78	4.62	4.09	3.54	3.51	3.03	3.49	4.34	5.83	3.74	4.60	3.11	4.00	3.39	2.79	2.64	2.33	3.96	5.79	5.72	3.91	4.00	2.43	2.49	2.33	7.43	4.14
B221	5.80	7.61	7.47	4.90	4.48	3.92	4.10	3.46	3.97	4.97	6.55	4.31	4.88	3.15	4.16	3.53	2.81	2.67	2.50	4.28	6.13	6.63	4.54	4.46	2.77	2.96	2.50	7.61	4.50
B222	6.50	7.65	7.44	5.30	4.81	4.25	4.14	3.56	2.35	4.48	6.68	4.18	5.22	3.75	4.58	3.95	3.31	3.22	2.76	4.45	6.01	6.47	4.33	4.67	2.68	2.88	2.35	7.65	4.60
B223	6.74	7.70	7.35	5.35	4.61	4.03	4.30	3.40	4.83	4.59	7.38	4.18	5.19	3.45	4.55	3.80	3.16	2.93	2.62	4.55	6.26	6.55	4.62	4.59	2.89	2.76	2.62	7.70	4.71
Avg	6.35	7.65	7.42	5.18	4.63	4.07	4.18	3.47	3.72	4.68	6.87	4.26	5.10	3.45	4.43	3.76	3.09	2.94	2.63	4.43	6.13	6.55	4.50	4.57	2.78	2.87	2.63	7.65	4.60
B231	5.87	7.11	6.94	4.61	4.27	3.74	2.99	2.66	2.61	4.11	6.45	4.12	4.59	3.21	3.91	3.43	2.75	2.74	2.55	4.03	5.63	5.74	3.97	3.76	2.34	2.51	2.34	7.11	4.10
B232	5.71	5.93	6.26	4.13	4.20	3.50	2.78	2.39	3.51	3.90	6.16	3.54	4.28	2.84	3.75	3.13	2.61	2.42	2.07	3.65	5.85	5.49	3.76	3.94	2.39	2.43	2.07	6.26	3.87
B233	5.54	7.05	6.23	4.71	4.18	3.47	2.88	2.48	3.49	4.74	6.15	3.69	4.39	3.07	3.74	3.28	2.63	2.62	2.44	3.85	5.86	5.56	3.87	3.99	2.48	2.31	2.31	7.05	4.03
Avg	5.71	6.69	6.48	4.48	4.22	3.57	2.88	2.51	3.20	4.25	6.26	3.79	4.42	3.04	3.80	3.28	2.66	2.59	2.35	3.84	5.78	5.60	3.87	3.90	2.40	2.42	2.35	6.69	4.00
Mowing Height = 8 mm																													
B311	6.26	6.76	6.62	4.76	4.30	3.76	2.38	2.09	2.68	4.93	6.36	4.31	5.19	3.45	4.55	3.80	3.16	2.93	2.51	4.42	6.61	6.48	4.37	4.24	2.66	2.91	2.09	6.76	4.33
B312	5.90	7.19	6.80	4.60	3.87	3.39	4.36	3.02	3.70	4.90	6.03	4.39	5.10	3.56	4.35	3.81	3.06	3.04	2.84	4.47	6.57	6.27	4.46	4.58	2.51	2.78	2.51	7.19	4.44
B313	5.92	7.21	6.38	4.44	4.15	3.60	3.99	2.70	3.70	4.62	6.49	4.21	4.89	3.25	4.29	3.58	2.98	2.76	2.36	4.17	6.47	6.54	4.29	4.69	3.00	2.67	2.36	7.21	4.36
Avg	6.03	7.05	6.60	4.60	4.11	3.58	3.57	2.60	3.43	4.81	6.29	4.30	5.06	3.42	4.40	3.73	3.07	2.91	2.57	4.35	6.55	6.43	4.37	4.50	2.72	2.79	2.57	7.05	4.38
B321	6.76	8.00	7.31	5.22	4.59	4.01	3.74	3.30	3.18	5.02	6.93	4.76	5.60	3.91	4.77	4.19	3.36	3.34	3.12	4.91	6.80	6.79	4.56	4.68	2.94	3.08	2.94	8.00	4.80
B322	6.03	8.13	7.51	5.19	4.71	4.12	4.24	3.73	5.25	4.84	6.41	4.75	4.90	3.26	4.30	3.59	2.99	2.77	2.37	4.18	6.69	6.54	4.74	4.77	2.67	2.89	2.37	8.13	4.67
B323	6.38	8.17	7.56	5.06	4.28	3.74	4.01	3.44	4.27	5.35	7.09	4.60	5.40	3.59	4.74	3.96	3.29	3.05	2.73	4.74	6.57	7.02	4.68	5.00	3.11	2.95	2.73	8.17	4.80
Avg	6.39	8.10	7.46	5.16	4.52	3.96	3.99	3.49	4.23	5.07	6.81	4.70	5.30	3.59	4.60	3.91	3.21	3.05	2.74	4.61	6.69	6.78	4.67	4.82	2.91	2.97	2.74	8.10	4.76
B331	5.89	7.36	6.56	4.35	3.55	3.11	2.84	2.52	2.86	4.57	5.80	4.27	4.60	3.21	3.92	3.44	2.76	2.74	2.56	4.04	5.84	6.21	4.81	4.31	3.00	2.77	2.52	7.36	4.15
B332	5.90	7.02	6.83	4.85	4.42	3.69	2.50	2.20	1.78	3.79	5.48	4.01	4.51	3.00	3.96	3.30	2.75	2.55	2.18	3.84	6.32	6.77	4.37	4.91	2.60	2.97	1.78	7.02	4.10
B333	5.61	7.34	6.85	4.75	3.98	3.49	3.44	3.05	3.44	4.65	6.40	4.31	4.73	3.05	4.03	3.42	2.72	2.59	2.42	4.15	6.08	6.33	4.72	4.50	2.90	2.66	2.42	7.34	4.29
Avg	5.80	7.24	6.75	4.65	3.99	3.43	2.93	2.59	2.69	4.34	5.89	4.19	4.61	3.09	3.97	3.39	2.74	2.63	2.39	4.01	6.08	6.44	4.63	4.57	2.83	2.80	2.39	7.24	4.18

Table 2.2 Crop Factor of Bentgrass

Month	Nov92	Dec92	Jan93	Feb93	Mch93	Apr93	May93	Jun93	Jul93	Aug93	Sep93	Oct93	Jan94	Feb94	Mch94	Apr94	May94	Jun94	Jul94	Aug94	Jan95	Feb95	Mch95	Apr95	May95	Jun95	Min	Max	AVG
Mowing Height = 4 mm																													
B111	0.66	0.63	0.63	0.67	0.68	0.71	0.53	0.61	0.51	0.64	0.63	0.84	0.71	0.65	0.68	0.69	0.63	0.69	0.66	0.70	0.69	0.67	0.68	0.67	0.67	0.69	0.51	0.84	0.66
B112	0.63	0.65	0.62	0.70	0.65	0.53	0.56	0.63	0.94	0.72	0.59	0.83	0.66	0.63	0.65	0.65	0.62	0.66	0.59	0.64	0.72	0.69	0.66	0.68	0.65	0.70	0.53	0.94	0.66
B113	0.62	0.60	0.63	0.66	0.66	0.66	0.53	0.61	0.89	0.75	0.75	0.85	0.70	0.60	0.68	0.66	0.60	0.63	0.60	0.70	0.69	0.68	0.67	0.69	0.74	0.65	0.53	0.89	0.67
Avg	**0.64**	**0.63**	**0.63**	**0.67**	**0.66**	**0.63**	**0.54**	**0.62**	**0.78**	**0.70**	**0.66**	**0.84**	**0.69**	**0.63**	**0.67**	**0.66**	**0.62**	**0.66**	**0.62**	**0.68**	**0.70**	**0.68**	**0.67**	**0.68**	**0.68**	**0.68**	**0.54**	**0.84**	**0.67**
B121	0.78	0.76	0.77	0.83	0.86	0.83	0.87	1.00	0.91	0.82	0.74	0.93	0.76	0.72	0.75	0.74	0.71	0.76	0.67	0.73	0.70	0.76	0.74	0.76	0.76	0.78	0.67	1.00	0.79
B122	0.73	0.81	0.73	0.80	0.82	0.82	0.62	0.71	0.95	0.73	0.71	0.88	0.76	0.65	0.73	0.71	0.65	0.68	0.65	0.75	0.69	0.74	0.75	0.72	0.72	0.76	0.62	0.95	0.74
B123	0.68	0.73	0.74	0.85	0.82	0.84	0.72	0.82	0.94	0.96	0.86	0.92	0.75	0.71	0.74	0.73	0.70	0.76	0.67	0.72	0.71	0.73	0.72	0.76	0.81	0.70	0.67	0.96	0.77
Avg	**0.73**	**0.77**	**0.74**	**0.83**	**0.83**	**0.83**	**0.74**	**0.84**	**0.93**	**0.84**	**0.77**	**0.91**	**0.76**	**0.69**	**0.74**	**0.73**	**0.69**	**0.73**	**0.66**	**0.73**	**0.70**	**0.75**	**0.74**	**0.75**	**0.76**	**0.75**	**0.66**	**0.93**	**0.77**
B131	0.66	0.60	0.66	0.67	0.70	0.71	0.55	0.64	0.68	0.87	0.71	0.93	0.69	0.66	0.68	0.68	0.65	0.70	0.61	0.66	0.66	0.66	0.68	0.68	0.68	0.68	0.55	0.93	0.68
B132	0.65	0.64	0.64	0.67	0.63	0.63	0.66	0.65	0.84	0.66	0.63	0.89	0.73	0.62	0.70	0.68	0.62	0.65	0.63	0.72	0.63	0.68	0.64	0.65	0.62	0.68	0.62	0.89	0.67
B133	0.66	0.68	0.61	0.67	0.62	0.63	0.55	0.65	0.79	0.84	0.69	0.94	0.69	0.65	0.68	0.67	0.64	0.69	0.61	0.66	0.62	0.69	0.62	0.66	0.66	0.63	0.55	0.94	0.67
Avg	**0.66**	**0.64**	**0.64**	**0.67**	**0.65**	**0.66**	**0.59**	**0.65**	**0.77**	**0.79**	**0.68**	**0.92**	**0.70**	**0.64**	**0.69**	**0.68**	**0.64**	**0.68**	**0.62**	**0.68**	**0.64**	**0.67**	**0.65**	**0.66**	**0.65**	**0.66**	**0.59**	**0.92**	**0.68**
Mowing Height = 6 mm																													
B211	0.76	0.78	0.74	0.82	0.83	0.82	0.60	0.70	0.57	0.73	0.59	0.75	0.73	0.64	0.72	0.69	0.65	0.67	0.59	0.70	0.70	0.75	0.74	0.72	0.72	0.76	0.57	0.83	0.71
B212	0.73	0.80	0.70	0.71	0.70	0.70	0.77	0.85	0.93	0.85	0.70	0.74	0.71	0.65	0.68	0.69	0.63	0.69	0.66	0.70	0.70	0.74	0.71	0.76	0.70	0.73	0.63	0.93	0.73
B213	0.73	0.78	0.76	0.82	0.79	0.79	0.74	0.84	0.94	0.78	0.75	0.80	0.79	0.69	0.78	0.75	0.71	0.73	0.64	0.76	0.73	0.73	0.73	0.75	0.79	0.71	0.64	0.94	0.76
Avg	**0.75**	**0.79**	**0.74**	**0.78**	**0.77**	**0.77**	**0.70**	**0.80**	**0.81**	**0.79**	**0.68**	**0.76**	**0.74**	**0.66**	**0.73**	**0.71**	**0.66**	**0.70**	**0.63**	**0.72**	**0.71**	**0.74**	**0.72**	**0.74**	**0.74**	**0.73**	**0.63**	**0.81**	**0.73**
B221	0.72	0.81	0.81	0.83	0.85	0.85	0.82	0.91	0.92	0.90	0.76	0.90	0.79	0.67	0.76	0.74	0.67	0.70	0.68	0.78	0.75	0.86	0.84	0.83	0.84	0.87	0.67	0.92	0.80
B222	0.80	0.81	0.81	0.90	0.91	0.92	0.83	0.94	0.55	0.81	0.78	0.85	0.84	0.80	0.83	0.82	0.79	0.85	0.75	0.81	0.74	0.84	0.80	0.86	0.81	0.85	0.55	0.94	0.82
B223	0.83	0.82	0.80	0.91	0.87	0.88	0.86	0.89	1.12	0.83	0.86	0.85	0.84	0.73	0.83	0.79	0.75	0.77	0.71	0.83	0.77	0.85	0.86	0.85	0.86	0.81	0.71	1.12	0.84
Avg	**0.78**	**0.81**	**0.81**	**0.88**	**0.87**	**0.88**	**0.84**	**0.91**	**0.86**	**0.85**	**0.80**	**0.87**	**0.82**	**0.73**	**0.81**	**0.78**	**0.74**	**0.77**	**0.71**	**0.80**	**0.75**	**0.85**	**0.83**	**0.85**	**0.84**	**0.84**	**0.71**	**0.91**	**0.82**
B231	0.73	0.76	0.75	0.78	0.81	0.81	0.60	0.70	0.61	0.75	0.75	0.84	0.74	0.68	0.71	0.71	0.66	0.72	0.69	0.73	0.69	0.75	0.74	0.70	0.71	0.74	0.60	0.84	0.72
B232	0.71	0.63	0.68	0.70	0.79	0.76	0.56	0.63	0.82	0.71	0.72	0.72	0.69	0.61	0.68	0.65	0.62	0.64	0.56	0.66	0.72	0.71	0.70	0.73	0.72	0.71	0.56	0.82	0.69
B233	0.68	0.75	0.66	0.80	0.79	0.75	0.58	0.65	0.81	0.86	0.72	0.75	0.71	0.65	0.68	0.68	0.63	0.69	0.66	0.70	0.72	0.72	0.72	0.74	0.75	0.68	0.58	0.86	0.71
Avg	**0.70**	**0.71**	**0.70**	**0.76**	**0.80**	**0.78**	**0.58**	**0.66**	**0.74**	**0.77**	**0.73**	**0.77**	**0.71**	**0.65**	**0.69**	**0.68**	**0.63**	**0.68**	**0.64**	**0.70**	**0.71**	**0.73**	**0.72**	**0.72**	**0.73**	**0.71**	**0.58**	**0.80**	**0.71**
Mowing Height = 8 mm																													
B311	0.77	0.72	0.72	0.81	0.81	0.82	0.48	0.55	0.67	0.90	0.74	0.88	0.84	0.73	0.83	0.79	0.75	0.77	0.68	0.80	0.81	0.84	0.81	0.79	0.81	0.86	0.48	0.90	0.77
B312	0.73	0.76	0.74	0.78	0.73	0.74	0.67	0.80	0.86	0.89	0.70	0.90	0.82	0.76	0.79	0.79	0.73	0.80	0.77	0.81	0.81	0.81	0.83	0.85	0.76	0.82	0.70	0.90	0.79
B313	0.73	0.77	0.69	0.75	0.78	0.78	0.80	0.71	0.86	0.84	0.75	0.86	0.79	0.69	0.78	0.75	0.71	0.73	0.64	0.76	0.79	0.85	0.79	0.87	0.91	0.79	0.64	0.91	0.78
Avg	**0.74**	**0.75**	**0.72**	**0.78**	**0.77**	**0.78**	**0.71**	**0.68**	**0.80**	**0.88**	**0.73**	**0.88**	**0.82**	**0.73**	**0.80**	**0.78**	**0.73**	**0.77**	**0.69**	**0.79**	**0.80**	**0.84**	**0.81**	**0.83**	**0.83**	**0.82**	**0.68**	**0.88**	**0.78**
B321	0.83	0.85	0.79	0.88	0.87	0.87	0.75	0.87	0.74	0.91	0.61	0.97	0.90	0.83	0.87	0.87	0.80	0.86	0.84	0.89	0.83	0.88	0.85	0.87	0.89	0.91	0.74	0.97	0.86
B322	0.74	0.86	0.82	0.88	0.89	0.90	0.85	0.96	1.22	0.88	0.75	0.97	0.79	0.69	0.78	0.75	0.71	0.73	0.64	0.76	0.82	0.85	0.88	0.88	0.81	0.85	0.64	1.22	0.83
B323	0.79	0.87	0.82	0.86	0.81	0.81	0.80	0.91	0.99	0.97	0.82	0.94	0.87	0.76	0.86	0.82	0.78	0.80	0.74	0.86	0.81	0.91	0.87	0.93	0.94	0.87	0.74	0.99	0.85
Avg	**0.79**	**0.86**	**0.81**	**0.87**	**0.85**	**0.86**	**0.80**	**0.92**	**0.98**	**0.92**	**0.79**	**0.96**	**0.85**	**0.76**	**0.84**	**0.81**	**0.76**	**0.80**	**0.74**	**0.84**	**0.82**	**0.88**	**0.86**	**0.89**	**0.88**	**0.87**	**0.74**	**0.98**	**0.85**
B331	0.73	0.78	0.71	0.74	0.67	0.68	0.57	0.66	0.66	0.83	0.67	0.87	0.74	0.68	0.71	0.72	0.66	0.72	0.69	0.73	0.72	0.81	0.89	0.80	0.91	0.81	0.57	0.91	0.74
B332	0.73	0.75	0.74	0.82	0.83	0.80	0.50	0.58	0.41	0.69	0.64	0.82	0.73	0.64	0.72	0.69	0.65	0.67	0.59	0.70	0.78	0.88	0.81	0.91	0.79	0.87	0.41	0.91	0.72
B333	0.69	0.78	0.74	0.81	0.75	0.76	0.69	0.80	0.80	0.85	0.74	0.86	0.76	0.65	0.73	0.71	0.65	0.68	0.65	0.75	0.75	0.82	0.87	0.83	0.86	0.78	0.65	0.80	0.76
Avg	**0.72**	**0.77**	**0.73**	**0.79**	**0.75**	**0.75**	**0.59**	**0.68**	**0.63**	**0.79**	**0.69**	**0.86**	**0.74**	**0.66**	**0.72**	**0.71**	**0.65**	**0.69**	**0.64**	**0.73**	**0.75**	**0.84**	**0.86**	**0.85**	**0.86**	**0.82**	**0.59**	**0.86**	**0.74**

Table 2.3. Statistical analysis of Bentgrass

Treatments	M4N1X60	M4N2X30	M4N2X20	M6N2X30	M6M2X20	M6N2X20	M8N1X60	M8N2X30	M8N2X20	AVG	SD
M4N1X60	p-Values	**0.001**	**0.000**	0.040	0.141	**0.000**	**0.000**	**0.000**	**0.010**	0.665	0.054
M4N2X30	**0.001**		**0.000**	**0.000**	**0.000**	**0.000**	0.057	**0.000**	0.348	0.767	0.064
M4N2X20	**0.000**	**0.000**		0.032	0.087	**0.003**	**0.000**	**0.000**	0.096	0.676	0.064
M6N2X30	0.040	**0.000**	0.032		**0.000**	**0.000**	0.046	**0.000**	0.059	0.734	0.044
M6M2X20	0.141	**0.000**	0.087	**0.000**		**0.003**	0.063	**0.000**	0.032	0.819	0.049
M6N2X20	**0.000**	**0.000**	**0.003**	**0.000**	**0.003**		**0.003**	**0.000**	**0.000**	0.708	0.049
M8N1X60	**0.000**	0.057	**0.000**	0.046	0.063	**0.003**		**0.000**	**0.000**	0.779	0.050
M8N2X30	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**		**0.010**	0.848	0.058
M8N2X20	**0.010**	0.348	0.096	0.059	0.032	**0.000**	**0.000**	**0.010**		0.741	0.075
AVG	0.665	0.767	0.676	0.734	0.819	0.708	0.779	0.848	0.741		
SD	0.054	0.064	0.064	0.044	0.049	0.049	0.050	0.058	0.075		

All printed in Bold represents a significant difference ($p<0.01$)

Table 2.4 Percentage treatment differences

Treatments		M4N1X60	M4N2X30	M4N2X20	M6N2X30	M6M2X20	M6N2X20	M8N1X60	M8N2X30	M8N2X20
	CF	0.665	0.767	0.676	0.734	0.819	0.708	0.779	0.848	0.741
M4N1X60	0.665		15.34	1.65	10.38	23.16	6.47	17.14	27.52	11.43
M4N2X30	0.767	-13.30		-11.86	-4.30	6.78	-7.69	1.56	10.56	-3.39
M4N2X20	0.676	-1.63	13.46		8.58	21.15	4.73	15.24	25.44	9.62
M6N2X30	0.734	-9.40	4.50	-7.90		11.58	-3.54	6.13	15.53	0.95
M6M2X20	0.819	-18.80	-6.35	-17.46	-10.38		-13.55	-4.88	3.54	-9.52
M6N2X20	0.708	-6.07	8.33	-4.52	3.67	15.68		10.03	19.77	4.66
M8N1X60	0.779	-14.63	-1.54	-13.22	-5.78	5.13	-9.11		8.86	-4.88
M8N2X30	0.848	-21.58	-9.55	-20.28	-13.44	-3.42	-16.51	-8.14		-12.62
M8N2X20	0.741	-10.26	3.51	-8.77	-0.94	10.53	-4.45	5.13	14.44	

Table 3.1. Evapotranspiration of Kikuyugrass

Month	Nov92	Dec92	Jan93	Feb93	Mch93	Apr93	May93	Jun93	Jul93	Aug93	Sep93	Oct93	Jan94	Feb94	Mch94	Apr94	May94	Jun94	Jul94	Aug94	Jan95	Feb95	Mch95	Apr95	May95	Jun95	Min	Max	AVG
Evaporation	8.1	9.4	9.2	5.9	5.3	4.6	5	3.8	4.3	5.5	8.6	4.9	6.2	4.7	5.5	4.8	4.2	3.8	3.7	5.5	8.8	7.7	5.4	5.4	3.3	3.4	3.3	9.4	5.65
Mowing Height 10mm																													
C111	6.57	7.94	7.47	5.04	4.33	3.57	3.71	3.24	3.86	4.62	6.79	3.81	4.80	3.52	4.40	3.45	3.12	2.85	2.95	4.12	6.18	5.93	4.13	4.16	2.50	2.68	2.50	7.94	4.45
C112	6.56	7.76	7.42	4.53	4.42	3.64	3.65	2.92	3.76	4.34	6.20	3.51	4.96	3.61	4.42	3.82	3.28	3.00	2.82	4.14	6.22	6.20	3.99	4.00	2.69	2.81	2.69	7.76	4.41
C113	6.14	7.53	7.31	5.15	4.64	4.12	3.54	2.60	3.80	4.35	6.04	3.26	4.77	3.50	4.37	3.43	3.03	2.83	2.90	3.99	6.26	6.14	4.06	4.10	2.67	2.96	2.60	7.53	4.37
Avg	6.43	7.74	7.40	4.91	4.46	3.78	3.63	2.92	3.81	4.44	6.34	3.53	4.84	3.54	4.40	3.57	3.14	2.89	2.89	4.08	6.22	6.09	4.06	4.09	2.62	2.82	2.62	7.74	4.41
C121	6.80	8.57	7.19	5.45	4.54	3.54	4.37	3.87	4.30	4.93	6.43	3.63	5.06	3.68	4.90	3.89	3.73	3.07	3.05	4.79	7.00	6.55	4.56	4.45	2.68	3.36	2.68	8.57	4.78
C122	6.87	8.65	8.66	4.99	4.87	4.26	3.98	3.19	4.16	4.90	6.71	3.53	5.13	3.77	4.84	3.69	3.40	3.13	3.23	4.63	6.67	6.76	4.80	4.19	2.76	3.11	2.76	8.66	4.80
C123	7.50	8.66	8.24	5.72	4.57	4.00	3.74	3.23	4.27	4.72	6.83	3.54	4.90	3.57	4.74	3.77	3.41	2.97	3.29	4.78	6.87	6.59	4.34	4.66	2.95	3.17	2.95	8.66	4.81
Avg	7.06	8.63	8.03	5.39	4.66	3.93	4.03	3.43	4.24	4.85	6.66	3.56	5.03	3.67	4.83	3.78	3.51	3.06	3.19	4.73	6.85	6.63	4.57	4.43	2.80	3.21	2.80	8.63	4.80
C131	5.86	7.64	7.05	5.00	4.58	4.08	3.00	2.66	2.86	4.83	6.71	3.54	4.69	3.32	4.41	3.37	3.10	2.77	2.96	4.13	6.08	6.02	4.05	3.92	2.47	2.96	2.47	7.64	4.31
C132	6.35	7.71	7.48	4.96	4.34	3.80	2.82	2.50	2.21	3.67	5.67	3.16	4.52	3.55	4.27	3.46	3.30	2.96	2.69	4.42	6.40	5.91	4.40	3.84	2.34	2.81	2.21	7.71	4.21
C133	6.05	7.55	7.41	4.79	4.38	2.92	3.21	2.75	4.39	4.63	6.56	3.53	4.66	3.39	4.51	3.58	3.44	2.92	3.26	4.97	6.22	6.10	4.00	4.09	2.61	2.99	2.61	7.55	4.42
Avg	6.09	7.63	7.31	4.92	4.43	3.60	3.01	2.64	3.15	4.38	6.31	3.41	4.62	3.42	4.40	3.48	3.28	2.88	2.97	4.51	6.23	6.01	4.15	3.95	2.47	2.92	2.47	7.63	4.31
Mowing Height 12mm																													
C211	6.29	7.71	7.51	4.75	4.30	3.66	2.86	2.48	4.12	4.18	5.45	4.56	5.10	4.00	4.82	3.92	3.64	3.12	2.90	4.56	6.78	6.23	4.48	4.30	2.59	2.67	2.48	7.71	4.50
C212	6.40	7.87	7.52	4.87	4.33	3.79	2.99	2.58	4.08	4.28	6.61	4.19	5.04	3.57	4.74	3.63	3.33	2.97	2.77	4.03	6.39	6.73	4.19	4.14	2.82	3.05	2.58	7.87	4.50
C213	6.39	7.93	6.68	4.94	4.44	3.89	2.81	2.53	4.19	4.55	6.28	4.25	5.16	3.76	4.60	3.97	3.20	3.13	2.84	4.01	6.28	6.35	4.30	4.45	2.90	3.11	2.53	7.93	4.50
Avg	6.36	7.83	7.24	4.85	4.36	3.78	2.89	2.53	4.13	4.34	6.11	4.33	5.10	3.77	4.72	3.84	3.39	3.07	2.84	4.20	6.48	6.44	4.32	4.30	2.77	2.94	2.53	7.83	4.50
C221	6.77	8.46	8.05	5.52	4.91	4.47	2.86	2.46	3.91	4.88	7.16	4.45	5.26	3.72	4.83	3.76	3.36	3.10	3.26	4.46	6.87	6.90	4.94	4.74	2.85	2.72	2.46	8.46	4.80
C222	7.58	8.44	8.11	5.54	4.85	4.24	4.38	3.75	4.25	4.65	7.28	3.76	5.22	3.80	5.05	4.02	3.63	3.17	3.51	5.09	6.61	6.84	4.79	4.56	3.00	3.13	3.00	8.44	4.97
C223	6.60	7.69	8.22	5.47	4.27	3.74	4.26	3.00	4.20	4.94	7.25	3.71	5.34	3.92	5.04	3.84	3.54	3.26	3.36	4.82	6.53	7.05	4.74	4.86	2.94	3.10	2.94	8.22	4.83
Avg	6.98	8.20	8.12	5.51	4.68	4.15	4.36	3.40	4.12	4.82	7.23	3.97	5.27	3.81	4.98	3.88	3.51	3.18	3.38	4.79	6.67	6.93	4.82	4.72	2.93	2.98	2.93	8.20	4.87
C311	5.71	7.38	7.43	5.02	4.40	3.92	3.31	2.49	2.71	4.41	6.71	3.78	5.18	3.77	5.02	3.96	3.61	3.14	3.48	5.05	5.51	6.21	4.37	4.16	2.88	2.46	2.46	7.43	4.47
C312	6.45	7.66	7.11	5.17	4.44	3.89	3.40	2.96	5.75	4.89	6.88	3.81	5.11	4.01	4.83	3.93	3.65	3.12	2.91	4.57	5.59	6.30	4.30	4.04	2.72	2.71	2.71	7.66	4.62
C313	5.89	6.63	6.67	4.68	4.30	3.56	3.33	2.24	2.74	3.62	6.37	3.42	4.99	3.53	4.59	3.59	3.19	2.94	3.09	4.23	5.38	6.25	4.50	4.20	2.60	2.60	2.24	6.67	4.20
Avg	6.02	7.22	7.07	4.96	4.38	3.79	3.34	2.56	3.74	4.31	6.66	3.67	5.09	3.77	4.81	3.84	3.48	3.07	3.16	4.62	5.49	6.25	4.39	4.13	2.73	2.59	2.56	7.22	4.43
Mowing Height 8 mm																													
C311	5.06	7.10	6.87	4.25	3.82	3.15	3.96	2.50	2.76	3.63	6.20	3.55	4.36	3.42	4.12	3.35	3.18	2.67	2.89	4.37	6.07	5.42	3.79	3.70	2.19	2.32	2.19	7.10	4.03
C312	5.54	6.93	6.92	4.42	3.93	3.44	3.67	2.96	3.68	3.98	5.99	3.61	4.44	3.14	4.08	3.19	2.78	2.62	2.37	3.33	6.14	5.69	3.65	3.54	2.45	2.58	2.37	6.93	4.04
C313	6.10	6.81	6.50	4.50	4.10	3.64	3.78	3.36	3.75	4.13	5.85	3.17	4.48	3.26	4.34	3.45	3.30	2.72	3.10	4.65	6.16	5.52	3.64	3.81	2.45	2.71	2.45	6.81	4.20
AVG	5.57	6.95	6.76	4.39	3.95	3.41	3.80	2.94	3.40	3.91	6.02	3.45	4.43	3.27	4.18	3.33	3.09	2.67	2.79	4.12	6.12	5.54	3.69	3.68	2.36	2.54	2.36	6.95	4.09
C321	6.28	7.76	7.21	4.68	4.43	4.03	3.36	2.98	3.79	4.23	6.62	3.73	4.68	3.67	4.42	3.60	3.34	3.06	2.75	4.47	6.28	5.84	4.30	4.01	2.41	2.37	2.37	7.76	4.40
C322	6.23	7.37	7.12	4.94	4.41	3.82	4.68	3.70	4.18	4.80	6.68	3.75	4.60	3.25	4.33	3.31	3.04	2.80	2.95	4.19	6.20	5.95	4.05	3.94	2.61	2.65	2.61	7.37	4.44
C323	6.22	7.50	7.05	4.65	4.25	3.50	3.16	2.79	3.56	5.40	6.65	3.62	4.80	3.49	4.28	3.69	2.97	2.91	3.04	4.13	5.85	5.96	4.12	4.11	2.49	2.70	2.49	7.50	4.34
AVG	6.24	7.54	7.13	4.75	4.36	3.78	3.73	3.15	3.84	4.81	6.65	3.70	4.69	3.47	4.34	3.53	3.12	2.92	2.91	4.26	6.11	5.92	4.16	4.02	2.50	2.57	2.50	7.54	4.39
C331	5.93	6.83	6.58	4.66	3.97	3.47	3.98	3.38	3.39	4.20	5.81	3.13	4.18	2.96	3.93	3.01	2.76	2.46	2.29	3.34	5.75	5.40	3.70	3.62	2.44	2.14	2.14	6.83	3.97
C332	5.97	5.87	6.26	4.14	3.56	3.08	3.26	2.86	3.05	3.57	5.41	3.54	4.29	3.37	4.05	3.30	3.13	2.81	2.55	4.19	5.50	5.33	3.74	3.41	2.37	2.29	2.29	6.26	3.88
C333	5.09	4.82	5.70	4.09	4.14	3.63	3.09	2.63	3.50	4.46	5.65	3.68	4.35	3.08	4.09	3.13	2.67	2.65	2.42	3.60	5.77	5.44	3.81	3.65	2.20	2.24	2.20	5.77	3.84
AVG	5.66	5.84	6.18	4.29	3.89	3.39	3.44	2.96	3.31	4.08	5.62	3.45	4.27	3.13	4.03	3.15	2.92	2.64	2.42	3.71	5.67	5.39	3.75	3.56	2.34	2.22	2.22	6.18	3.90

Table 3.2. Crop Factor of Kikuyugrass

Month	Nov92	Dec92	Jan93	Feb93	Mch93	Apr93	May93	Jun93	Jul93	Aug93	Sep93	Oct93	Jan94	Feb94	Mch94	Apr94	May94	Jun94	Jul94	Aug94	Jan95	Feb95	Mch95	Apr95	May95	Jun95	Min	Max	AVG
Mowing Height 10mm																													
C111	0.81	0.85	0.81	0.85	0.82	0.78	0.74	0.85	0.90	0.84	0.79	0.78	0.77	0.75	0.80	0.72	0.74	0.75	0.80	0.75	0.76	0.77	0.76	0.77	0.76	0.79	0.72	0.90	0.79
C112	0.81	0.83	0.81	0.77	0.83	0.79	0.73	0.77	0.88	0.79	0.72	0.72	0.80	0.77	0.80	0.79	0.76	0.79	0.76	0.75	0.76	0.81	0.74	0.74	0.82	0.83	0.72	0.88	0.78
C113	0.76	0.80	0.79	0.87	0.88	0.90	0.71	0.68	0.88	0.79	0.70	0.66	0.77	0.74	0.79	0.71	0.72	0.74	0.78	0.73	0.77	0.80	0.75	0.76	0.81	0.87	0.66	0.90	0.78
AVG	0.79	0.82	0.80	0.83	0.84	0.82	0.73	0.77	0.89	0.81	0.74	0.72	0.78	0.75	0.80	0.74	0.75	0.76	0.78	0.74	0.76	0.79	0.75	0.76	0.79	0.83	0.72	0.89	0.78
C121	0.84	0.91	0.78	0.92	0.86	0.77	0.87	1.02	1.00	0.90	0.75	0.74	0.82	0.78	0.89	0.81	0.89	0.81	0.82	0.87	0.86	0.85	0.84	0.82	0.81	0.99	0.74	1.02	0.85
C122	0.85	0.92	0.94	0.85	0.92	0.93	0.80	0.84	0.97	0.89	0.78	0.72	0.83	0.80	0.88	0.77	0.81	0.82	0.87	0.84	0.82	0.86	0.89	0.78	0.84	0.91	0.72	0.97	0.85
C123	0.93	0.92	0.90	0.97	0.86	0.87	0.75	0.85	0.99	0.86	0.79	0.72	0.79	0.76	0.86	0.79	0.81	0.78	0.89	0.87	0.84	0.86	0.80	0.86	0.89	0.93	0.72	0.99	0.85
AVG	0.87	0.92	0.87	0.91	0.88	0.85	0.81	0.90	0.99	0.88	0.77	0.73	0.81	0.78	0.88	0.79	0.84	0.80	0.86	0.86	0.84	0.86	0.85	0.82	0.85	0.95	0.73	0.99	0.85
C131	0.71	0.81	0.77	0.85	0.86	0.89	0.60	0.70	0.66	0.88	0.78	0.72	0.76	0.71	0.80	0.70	0.74	0.73	0.80	0.75	0.75	0.78	0.75	0.73	0.75	0.87	0.60	0.89	0.76
C132	0.78	0.82	0.81	0.84	0.82	0.83	0.56	0.66	0.51	0.67	0.66	0.65	0.73	0.75	0.78	0.72	0.78	0.76	0.73	0.80	0.79	0.77	0.81	0.71	0.71	0.83	0.51	0.84	0.74
C133	0.75	0.80	0.81	0.81	0.83	0.64	0.64	0.72	1.02	0.84	0.76	0.72	0.75	0.72	0.82	0.75	0.82	0.77	0.89	0.90	0.76	0.79	0.74	0.76	0.79	0.88	0.64	1.02	0.79
AVG	0.75	0.81	0.79	0.83	0.84	0.78	0.60	0.69	0.73	0.80	0.73	0.70	0.75	0.73	0.80	0.72	0.78	0.76	0.80	0.82	0.76	0.78	0.77	0.73	0.75	0.86	0.60	0.86	0.76
Mowing Height 12mm																													
C211	0.78	0.82	0.82	0.80	0.81	0.80	0.57	0.65	0.96	0.76	0.63	0.93	0.82	0.85	0.88	0.82	0.87	0.82	0.78	0.83	0.83	0.81	0.83	0.80	0.78	0.79	0.57	0.96	0.80
C212	0.79	0.84	0.82	0.82	0.82	0.82	0.60	0.68	0.95	0.78	0.77	0.85	0.81	0.76	0.86	0.76	0.79	0.78	0.75	0.73	0.78	0.87	0.78	0.77	0.85	0.90	0.60	0.95	0.80
C213	0.79	0.84	0.73	0.84	0.84	0.84	0.56	0.67	0.97	0.83	0.73	0.87	0.83	0.80	0.84	0.83	0.76	0.82	0.77	0.73	0.77	0.82	0.80	0.82	0.88	0.91	0.56	0.97	0.80
AVG	0.79	0.83	0.79	0.82	0.82	0.82	0.58	0.67	0.96	0.79	0.71	0.88	0.82	0.80	0.86	0.80	0.81	0.81	0.77	0.76	0.80	0.84	0.80	0.80	0.84	0.87	0.58	0.96	0.80
C221	0.84	0.90	0.87	0.94	0.93	0.97	0.58	0.65	0.91	0.89	0.83	0.91	0.85	0.79	0.88	0.79	0.80	0.82	0.88	0.81	0.84	0.90	0.91	0.88	0.86	0.80	0.58	0.97	0.85
C222	0.94	0.90	0.88	0.94	0.91	0.92	0.88	0.99	0.99	0.85	0.85	0.77	0.84	0.81	0.92	0.84	0.87	0.83	0.95	0.93	0.81	0.89	0.89	0.84	0.91	0.92	0.77	0.99	0.89
C223	0.81	0.82	0.89	0.93	0.81	0.81	0.85	0.79	0.98	0.90	0.84	0.76	0.86	0.83	0.92	0.80	0.84	0.86	0.91	0.88	0.80	0.92	0.88	0.90	0.89	0.91	0.76	0.98	0.86
AVG	0.86	0.87	0.88	0.93	0.88	0.90	0.77	0.81	0.96	0.88	0.84	0.81	0.85	0.81	0.90	0.81	0.84	0.84	0.91	0.87	0.82	0.90	0.89	0.87	0.89	0.88	0.77	0.96	0.86
C231	0.70	0.79	0.81	0.85	0.83	0.85	0.66	0.66	0.63	0.80	0.78	0.77	0.84	0.80	0.91	0.83	0.86	0.83	0.94	0.92	0.68	0.81	0.81	0.77	0.87	0.72	0.63	0.94	0.80
C232	0.80	0.81	0.77	0.88	0.84	0.84	0.68	0.78	1.34	0.89	0.80	0.78	0.82	0.85	0.88	0.82	0.87	0.82	0.79	0.83	0.69	0.82	0.80	0.75	0.82	0.80	0.68	1.34	0.83
C233	0.73	0.71	0.73	0.79	0.81	0.77	0.67	0.59	0.64	0.66	0.74	0.70	0.80	0.75	0.83	0.75	0.76	0.77	0.84	0.77	0.66	0.81	0.63	0.78	0.79	0.76	0.59	0.84	0.75
AVG	0.74	0.77	0.77	0.84	0.83	0.82	0.67	0.67	0.87	0.78	0.77	0.75	0.82	0.80	0.87	0.80	0.83	0.81	0.85	0.84	0.67	0.81	0.81	0.77	0.83	0.76	0.67	0.87	0.79
Mowing Height 3 mm																													
C311	0.63	0.76	0.75	0.72	0.72	0.68	0.79	0.66	0.64	0.66	0.72	0.73	0.70	0.73	0.75	0.70	0.76	0.70	0.78	0.80	0.74	0.70	0.70	0.69	0.66	0.68	0.63	0.80	0.71
C312	0.68	0.74	0.75	0.75	0.74	0.75	0.73	0.78	0.85	0.72	0.70	0.74	0.72	0.67	0.74	0.67	0.66	0.69	0.64	0.61	0.75	0.74	0.68	0.66	0.74	0.76	0.61	0.85	0.72
C313	0.75	0.72	0.71	0.76	0.77	0.79	0.76	0.88	0.87	0.75	0.68	0.65	0.72	0.69	0.79	0.72	0.79	0.72	0.84	0.84	0.76	0.72	0.67	0.71	0.74	0.80	0.65	0.88	0.75
AVG	0.69	0.74	0.73	0.74	0.75	0.74	0.76	0.77	0.79	0.71	0.70	0.70	0.71	0.70	0.76	0.69	0.74	0.70	0.75	0.75	0.75	0.72	0.68	0.68	0.72	0.75	0.68	0.79	0.73
C321	0.78	0.83	0.78	0.79	0.84	0.88	0.67	0.78	0.88	0.77	0.77	0.76	0.75	0.78	0.80	0.75	0.80	0.81	0.74	0.81	0.77	0.76	0.80	0.74	0.73	0.70	0.67	0.88	0.78
C322	0.77	0.78	0.77	0.84	0.83	0.83	0.94	0.97	0.97	0.87	0.78	0.77	0.74	0.69	0.79	0.69	0.72	0.74	0.80	0.76	0.76	0.77	0.75	0.73	0.79	0.78	0.69	0.97	0.79
C323	0.77	0.80	0.77	0.79	0.80	0.76	0.63	0.73	0.83	0.98	0.77	0.74	0.77	0.74	0.78	0.77	0.71	0.77	0.62	0.75	0.72	0.77	0.76	0.76	0.75	0.79	0.63	0.98	0.77
AVG	0.77	0.80	0.77	0.81	0.82	0.82	0.75	0.83	0.89	0.87	0.77	0.75	0.76	0.74	0.79	0.74	0.74	0.77	0.79	0.78	0.75	0.77	0.77	0.74	0.76	0.76	0.74	0.89	0.78
C331	0.73	0.73	0.72	0.79	0.75	0.75	0.80	0.89	0.79	0.76	0.68	0.64	0.67	0.63	0.72	0.63	0.66	0.65	0.62	0.61	0.71	0.70	0.69	0.67	0.74	0.63	0.61	0.89	0.70
C332	0.74	0.62	0.68	0.70	0.67	0.67	0.65	0.75	0.71	0.65	0.63	0.72	0.69	0.72	0.74	0.69	0.74	0.74	0.69	0.76	0.67	0.69	0.69	0.63	0.72	0.67	0.62	0.76	0.69
C333	0.63	0.51	0.62	0.69	0.78	0.79	0.62	0.69	0.81	0.81	0.66	0.75	0.70	0.65	0.74	0.65	0.68	0.70	0.66	0.65	0.71	0.71	0.71	0.68	0.67	0.66	0.51	0.81	0.69
AVG	0.78	0.62	0.67	0.73	0.73	0.74	0.69	0.78	0.77	0.74	0.65	0.70	0.69	0.67	0.73	0.66	0.70	0.69	0.65	0.67	0.70	0.70	0.69	0.66	0.71	0.65	0.62	0.78	0.70

Tabel 3.3. Statistical analysis of Kikuyugrass

Treatments	M10N1X60	M10N2X30	M10N2X20	M12N1X60	M12N2X30	M12N2X20	M8N1X60	M8N2X30	M8N2X20	AVG	SD
M10N1X60	p -values	**0.000**	**0.000**	**0.000**	**0.000**	**0.040**	0.015	**0.000**	0.050	0.783	0.040
M10N2X30	**0.000**		**0.007**	0.128	**0.000**	0.307	**0.000**	**0.000**	0.084	0.853	0.056
M10N2X20	**0.000**	**0.007**		0.011	**0.000**	**0.000**	0.554	0.258	0.634	0.764	0.054
M12N1X60	**0.000**	0.128	0.011		**0.000**	**0.000**	0.938	0.240	0.516	0.800	0.070
M12N2X30	**0.000**	**0.000**	**0.000**	**0.000**		**0.000**	0.231	**0.000**	0.216	0.864	0.044
M12N2X20	**0.040**	0.307	**0.000**	**0.000**	**0.000**		0.915	0.236	0.664	0.791	0.055
M8N1X60	0.015	**0.000**	0.554	0.938	0.231	0.915		**0.010**	0.030	0.728	0.029
M8N2X30	**0.000**	**0.000**	0.258	0.240	**0.000**	0.236	**0.010**		**0.000**	0.781	0.040
M8N2X20	0.050	0.084	0.634	0.516	0.216	0.664	0.030	**0.000**		0.696	0.037
AVG	0.783	0.853	0.764	0.800	0.864	0.791	0.728	0.781	0.696		
SD	0.040	0.056	0.054	0.070	0.044	0.055	0.029	0.040	0.037		

All printed in Bold represents a significant difference ($p<0.01$)

Table 3.4. Percentage Treatment Differences

Treatments		M10N1X60	M10N2X30	M10N2X20	M12N1X60	M12N2X30	M12N2X20	M8N1X60	M8N2X30	M8N2X20
	CF	0.783	0.853	0.764	0.800	0.864	0.791	0.728	0.781	0.696
M10N1X60	0.783		8.94	-2.43	2.17	10.34	1.02	-7.02	-0.26	-11.11
M10N2X30	0.853	-8.21		-10.43	-6.21	1.29	-7.27	-14.65	-8.44	-18.41
M10N2X20	0.764	2.49	11.65		4.71	13.09	3.53	-4.71	2.23	-8.90
M12N1X60	0.800	-2.13	6.62	-4.50		8.00	-1.13	-9.00	-2.38	-13.00
M12N2X30	0.864	-9.38	-1.27	-11.57	-7.41		-8.45	-15.74	-9.61	-19.44
M12N2X20	0.791	-1.01	7.84	-3.41	1.14	9.23		-7.96	-1.26	-12.01
M8N1X60	0.728	7.55	17.17	4.95	9.89	18.68	8.65		7.28	-4.40
M8N2X30	0.781	0.26	9.22	-2.18	2.43	10.63	1.28	-6.79		-10.88
M8N2X20	0.696	12.50	22.56	9.77	14.94	24.14	13.65	4.60	12.21	

Table 4.1. Evapotranspiration of Bayview

Month	Nov'92	Dec'92	Jan'93	Feb'93	Mch'93	Apr'93	May'93	Jun'93	Jul'93	Aug'93	Sep'93	Oct'93	Jan'94	Feb'94	Mch'94	Apr'94	May'94	Jun'94	Jul'94	Aug'94	Jan'95	Feb'95	Mch'95	Apr'95	May'95	Jun'95	Min	Max	AVG
Evaporation	8.10	9.40	9.20	5.90	5.30	4.60	5.00	3.80	4.30	5.50	8.60	4.90	6.20	4.70	5.50	4.80	4.20	3.80	3.70	5.50	8.80	7.70	5.40	5.40	3.30	3.40	3.30	9.40	5.65
Mowing Height = 4 mm																													
D111	5.05	6.06	5.70	4.34	3.80	3.26	4.38	3.04	3.00	4.47	5.13	3.60	4.21	3.11	3.74	3.25	2.79	2.52	2.56	3.81	6.42	5.60	3.91	3.95	2.39	2.45	2.39	6.42	3.94
D112	6.27	6.71	6.13	4.04	3.66	3.20	2.80	3.08	3.20	3.88	5.02	4.12	4.26	3.00	3.67	3.16	2.89	2.56	2.63	3.75	6.25	5.52	3.80	3.90	2.31	2.50	2.31	6.71	3.93
D113	5.64	7.36	6.48	4.26	3.80	3.32	3.30	2.91	2.63	4.57	5.84	4.42	4.38	3.24	3.86	3.50	2.85	2.67	2.64	3.99	6.30	5.45	3.75	3.84	2.24	2.40	2.24	7.36	4.06
AVG	**5.65**	**6.71**	**6.10**	**4.21**	**3.75**	**3.26**	**3.49**	**3.01**	**2.94**	**4.30**	**5.33**	**4.05**	**4.28**	**3.12**	**3.76**	**3.31**	**2.84**	**2.59**	**2.61**	**3.85**	**6.32**	**5.52**	**3.82**	**3.90**	**2.31**	**2.45**	**2.31**	**6.71**	**3.98**
D121	6.37	7.41	7.38	4.38	4.19	2.99	2.71	2.23	3.15	4.37	6.37	3.85	4.53	3.19	3.90	3.36	3.08	2.54	2.80	3.86	6.73	5.82	4.14	4.16	2.52	2.57	2.23	7.41	4.18
D122	6.19	6.63	6.20	4.38	3.67	3.21	2.63	2.30	3.07	4.39	5.44	4.15	4.65	3.44	4.13	3.74	3.03	2.89	2.81	4.28	6.55	5.74	4.01	4.08	2.43	2.62	2.30	6.63	4.10
D123	6.03	7.22	6.97	4.60	4.62	4.14	4.61	3.85	3.25	3.60	5.66	3.61	4.70	3.30	4.05	3.49	3.19	2.64	2.90	4.00	6.50	5.90	4.09	4.20	2.38	2.70	2.38	7.22	4.32
AVG	**6.20**	**7.08**	**6.85**	**4.45**	**4.16**	**3.45**	**3.32**	**2.79**	**3.16**	**4.12**	**5.82**	**3.87**	**4.63**	**3.31**	**4.03**	**3.53**	**3.10**	**2.69**	**2.84**	**4.05**	**6.59**	**5.82**	**4.08**	**4.15**	**2.44**	**2.63**	**2.44**	**7.08**	**4.20**
D131	5.30	6.75	6.22	3.74	3.72	3.25	2.76	1.96	2.31	4.10	5.74	3.71	3.97	2.79	3.42	2.95	2.70	2.23	2.45	3.38	5.82	5.03	3.67	3.60	2.23	2.20	1.96	6.75	3.69
D132	5.87	6.84	6.40	4.60	3.95	3.20	3.78	3.33	2.56	4.00	5.57	3.28	4.03	2.98	3.58	3.11	2.67	2.47	2.50	3.73	5.71	4.94	3.49	3.52	2.10	2.32	2.10	6.84	3.87
D133	5.97	7.02	6.44	4.48	3.90	3.41	3.23	2.36	2.46	3.65	5.66	3.48	3.88	2.87	3.45	3.12	2.71	2.32	2.44	3.44	5.67	5.13	3.54	3.63	2.15	2.40	2.15	7.02	3.80
AVG	**5.71**	**6.87**	**6.35**	**4.27**	**3.86**	**3.29**	**3.26**	**2.55**	**2.44**	**3.92**	**5.66**	**3.49**	**3.96**	**2.88**	**3.49**	**3.06**	**2.69**	**2.34**	**2.46**	**3.52**	**5.73**	**5.03**	**3.57**	**3.58**	**2.16**	**2.31**	**2.16**	**6.87**	**3.79**
Mowing Height = 6 mm																													
D211	6.04	7.24	6.81	4.24	4.09	3.56	3.24	2.58	3.18	4.00	6.96	3.77	4.76	3.52	4.23	3.83	3.32	2.85	2.93	4.17	6.73	5.84	4.05	4.10	2.41	2.54	2.41	7.24	4.27
D212	6.01	7.41	6.46	4.50	3.38	3.52	3.25	2.40	2.92	3.93	5.92	3.69	4.88	3.61	4.30	3.90	3.17	3.04	3.00	4.54	6.54	5.76	3.96	4.02	2.36	2.62	2.36	7.41	4.20
D213	6.06	7.19	7.15	4.63	4.47	3.46	3.09	2.59	3.04	4.15	6.34	3.36	4.63	3.26	4.03	3.45	3.16	2.61	2.87	3.96	6.59	5.68	3.89	3.96	2.30	2.48	2.30	7.19	4.17
AVG	**6.04**	**7.28**	**6.81**	**4.46**	**3.98**	**3.52**	**3.19**	**2.53**	**3.05**	**4.03**	**6.41**	**3.60**	**4.76**	**3.46**	**4.18**	**3.73**	**3.22**	**2.83**	**2.94**	**4.22**	**6.62**	**5.76**	**3.97**	**4.03**	**2.36**	**2.55**	**2.36**	**7.28**	**4.21**
D221	6.27	7.69	6.89	4.83	4.30	3.76	3.21	2.68	4.24	4.92	6.88	3.83	5.11	3.78	4.54	3.95	3.51	3.02	3.13	4.62	7.13	6.17	4.29	4.41	2.67	2.80	2.67	7.69	4.56
D222	6.92	7.54	7.25	4.95	4.66	4.04	4.46	3.94	2.07	4.36	5.98	3.57	4.92	3.46	4.26	3.92	3.41	2.91	3.07	4.24	7.01	6.08	4.23	4.49	2.54	2.69	2.07	7.54	4.49
D223	6.63	8.03	7.44	5.09	4.55	4.08	3.30	2.86	2.09	4.19	5.92	3.58	5.00	3.70	4.40	3.84	3.31	3.07	3.09	4.63	6.97	6.13	4.34	4.38	2.73	2.87	2.09	8.03	4.47
AVG	**6.61**	**7.75**	**7.19**	**4.95**	**4.50**	**3.96**	**3.66**	**3.16**	**2.80**	**4.49**	**6.23**	**3.66**	**5.01**	**3.65**	**4.41**	**3.87**	**3.41**	**2.97**	**3.10**	**4.50**	**7.04**	**6.13**	**4.29**	**4.43**	**2.65**	**2.79**	**2.65**	**7.75**	**4.51**
D231	5.41	6.91	7.14	4.45	4.16	3.16	3.61	3.21	2.60	3.99	6.05	3.62	4.19	2.95	3.64	3.13	2.86	2.36	2.60	3.59	6.26	5.34	3.95	3.90	2.37	2.37	2.36	7.14	3.99
D232	5.58	7.04	6.75	4.31	3.94	2.59	2.50	2.22	2.51	4.24	5.98	3.74	4.26	3.15	3.78	3.42	2.97	2.55	2.62	3.88	6.26	5.39	3.71	3.74	2.26	2.47	2.22	7.04	3.92
D233	5.22	6.80	6.71	4.52	3.55	2.80	2.57	2.25	3.06	4.28	6.10	3.75	4.33	3.04	3.73	3.21	2.82	2.55	2.65	3.75	6.09	5.55	3.83	3.68	2.33	2.60	2.23	6.80	3.91
AVG	**5.41**	**6.91**	**6.87**	**4.43**	**3.88**	**2.85**	**2.89**	**2.55**	**2.72**	**4.17**	**6.04**	**3.70**	**4.26**	**3.05**	**3.72**	**3.25**	**2.88**	**2.49**	**2.62**	**3.74**	**6.21**	**5.43**	**3.83**	**3.77**	**2.32**	**2.48**	**2.32**	**6.91**	**3.94**
Mowing Height = 8 mm																													
D311	6.80	7.83	7.66	5.12	4.50	3.94	3.48	2.82	5.33	4.24	7.23	4.88	5.19	3.65	4.51	3.87	3.54	2.93	3.22	4.44	7.23	6.31	4.38	4.44	2.69	2.73	2.69	7.83	4.73
D312	6.51	7.44	7.70	5.24	4.74	4.15	4.05	3.12	1.78	4.29	7.00	4.70	5.22	3.67	4.54	3.89	3.41	3.06	3.13	4.65	7.00	6.22	4.27	4.37	2.54	2.84	1.78	7.70	4.60
D313	6.54	7.78	7.19	4.88	4.47	3.98	3.24	2.50	2.88	3.92	6.41	4.70	5.34	3.95	4.70	4.27	3.70	3.18	3.34	4.71	7.09	6.14	4.21	4.28	2.49	2.69	2.49	7.78	4.56
AVG	**6.61**	**7.69**	**7.51**	**5.08**	**4.57**	**4.02**	**3.59**	**2.81**	**3.33**	**4.15**	**6.88**	**4.76**	**5.25**	**3.76**	**4.58**	**4.01**	**3.55**	**3.06**	**3.23**	**4.60**	**7.11**	**6.22**	**4.29**	**4.36**	**2.57**	**2.75**	**2.57**	**7.69**	**4.63**
D321	7.57	8.51	8.56	4.95	4.31	3.88	3.79	3.05	3.62	5.20	8.18	4.77	5.46	3.84	4.75	4.07	3.56	3.20	3.35	4.73	7.56	6.50	4.61	4.65	2.82	2.89	2.82	8.56	4.94
D322	7.68	8.42	7.78	5.23	5.03	4.44	5.00	3.73	4.82	5.34	7.27	4.62	5.49	4.06	4.88	4.24	3.77	3.25	3.44	4.83	7.38	6.45	4.52	4.52	2.71	2.96	2.71	8.42	5.07
D323	7.51	8.09	8.17	5.52	5.15	4.50	4.81	3.24	3.45	5.32	7.26	5.05	5.50	4.07	4.84	4.40	3.81	3.27	3.37	4.80	7.26	6.64	4.68	4.73	2.64	3.09	2.64	8.17	5.04
AVG	**7.59**	**8.34**	**8.17**	**5.23**	**4.83**	**4.27**	**4.53**	**3.34**	**3.96**	**5.29**	**7.57**	**4.81**	**5.48**	**3.99**	**4.82**	**4.24**	**3.71**	**3.24**	**3.39**	**4.79**	**7.40**	**6.53**	**4.60**	**4.63**	**2.72**	**2.98**	**2.72**	**8.34**	**5.02**
D331	6.77	7.77	7.79	5.31	4.26	3.73	2.83	2.27	2.63	3.76	6.90	5.02	4.74	3.33	4.12	3.54	3.09	2.78	3.91	4.11	6.54	5.63	4.14	4.05	2.51	2.46	2.27	7.79	4.35
D332	6.85	7.71	6.48	5.13	4.43	3.88	3.15	2.50	3.59	4.19	6.53	4.77	4.91	3.45	4.27	3.81	3.41	3.05	3.06	4.41	6.39	5.47	3.93	3.95	2.34	2.61	2.34	7.71	4.40
D333	6.61	8.22	7.23	4.66	4.36	3.89	3.86	3.06	2.54	3.14	7.06	4.83	4.66	3.45	4.10	3.73	3.03	2.84	2.81	4.24	6.33	5.97	3.98	4.12	2.46	2.73	2.46	8.22	4.38
AVG	6.74	7.90	7.17	5.03	4.35	3.83	3.28	2.61	2.92	3.70	6.83	4.87	4.77	3.41	4.16	3.69	3.18	2.89	2.93	4.26	6.42	5.66	4.02	4.04	2.44	2.60	2.44	7.90	4.37

Table 4.2. Crop Factor of Bayview

Month	Nov'92	Dec'92	Jan'93	Feb'93	Mch'93	Apr'93	May'93	Jun'93	Jul'93	Aug'93	Sep'93	Oct'93	Jan'94	Feb'94	Mch'94	Apr'94	May'94	Jun'94	Jul'94	Aug'94	Jan'95	Feb'95	Mch'95	Apr'95	May'95	Jun'95	Min	Max	AVG
Mowing Height = 4 mm																													
D111	0.62	0.64	0.62	0.73	0.72	0.71	0.88	0.80	0.70	0.81	0.60	0.73	0.68	0.66	0.68	0.68	0.66	0.66	0.69	0.69	0.73	0.73	0.72	0.73	0.72	0.72	0.60	0.99	0.71
D112	0.77	0.71	0.67	0.68	0.69	0.70	0.56	0.81	0.74	0.70	0.58	0.84	0.69	0.64	0.67	0.66	0.69	0.67	0.71	0.68	0.71	0.72	0.70	0.72	0.70	0.74	0.56	0.84	0.70
D113	0.70	0.78	0.70	0.72	0.72	0.72	0.66	0.77	0.61	0.83	0.68	0.90	0.71	0.69	0.70	0.73	0.68	0.70	0.71	0.73	0.72	0.71	0.69	0.71	0.68	0.71	0.61	0.90	0.72
AVG	**0.70**	**0.71**	**0.66**	**0.71**	**0.71**	**0.71**	**0.70**	**0.79**	**0.68**	**0.78**	**0.62**	**0.83**	**0.69**	**0.66**	**0.68**	**0.69**	**0.68**	**0.68**	**0.71**	**0.70**	**0.72**	**0.72**	**0.71**	**0.72**	**0.70**	**0.72**	**0.62**	**0.83**	**0.71**
D121	0.79	0.79	0.80	0.74	0.79	0.65	0.54	0.59	0.73	0.79	0.74	0.79	0.73	0.68	0.71	0.70	0.73	0.67	0.76	0.70	0.76	0.76	0.77	0.77	0.76	0.76	0.54	0.80	0.73
D122	0.76	0.70	0.67	0.74	0.69	0.70	0.53	0.61	0.71	0.80	0.63	0.85	0.75	0.73	0.75	0.78	0.72	0.76	0.76	0.78	0.74	0.75	0.74	0.76	0.74	0.77	0.53	0.85	0.73
D123	0.74	0.77	0.76	0.78	0.87	0.90	0.92	1.01	0.76	0.65	0.66	0.74	0.76	0.70	0.74	0.73	0.76	0.69	0.78	0.73	0.74	0.77	0.76	0.78	0.72	0.78	0.65	1.01	0.77
AVG	**0.77**	**0.75**	**0.74**	**0.75**	**0.79**	**0.75**	**0.66**	**0.74**	**0.73**	**0.75**	**0.68**	**0.79**	**0.75**	**0.70**	**0.73**	**0.74**	**0.74**	**0.71**	**0.77**	**0.74**	**0.75**	**0.76**	**0.76**	**0.77**	**0.74**	**0.77**	**0.66**	**0.79**	**0.74**
D131	0.65	0.72	0.68	0.63	0.70	0.71	0.55	0.52	0.54	0.75	0.67	0.76	0.64	0.59	0.62	0.61	0.64	0.59	0.66	0.61	0.66	0.65	0.68	0.67	0.68	0.65	0.52	0.76	0.65
D132	0.72	0.73	0.70	0.78	0.75	0.69	0.76	0.88	0.59	0.73	0.65	0.67	0.65	0.63	0.65	0.65	0.64	0.65	0.68	0.68	0.65	0.64	0.65	0.65	0.62	0.68	0.59	0.88	0.68
D133	0.74	0.75	0.70	0.76	0.74	0.74	0.65	0.62	0.57	0.66	0.66	0.71	0.63	0.61	0.63	0.65	0.64	0.61	0.66	0.63	0.64	0.67	0.66	0.67	0.65	0.71	0.57	0.76	0.67
AVG	**0.71**	**0.73**	**0.69**	**0.72**	**0.73**	**0.71**	**0.65**	**0.67**	**0.57**	**0.71**	**0.66**	**0.71**	**0.64**	**0.61**	**0.63**	**0.64**	**0.64**	**0.62**	**0.67**	**0.64**	**0.65**	**0.65**	**0.66**	**0.66**	**0.65**	**0.68**	**0.57**	**0.73**	**0.67**
Mowing Height = 6 mm																													
D211	0.75	0.77	0.74	0.72	0.77	0.77	0.65	0.68	0.74	0.73	0.81	0.77	0.77	0.75	0.77	0.80	0.79	0.75	0.79	0.76	0.76	0.76	0.75	0.76	0.73	0.75	0.65	0.81	0.75
D212	0.74	0.79	0.70	0.76	0.64	0.77	0.65	0.63	0.69	0.72	0.69	0.75	0.79	0.77	0.78	0.81	0.75	0.80	0.81	0.63	0.74	0.75	0.73	0.74	0.72	0.77	0.63	0.81	0.74
D213	0.75	0.77	0.79	0.79	0.84	0.75	0.62	0.68	0.71	0.75	0.74	0.69	0.75	0.69	0.73	0.72	0.75	0.69	0.78	0.72	0.75	0.74	0.73	0.73	0.70	0.73	0.62	0.84	0.73
AVG	**0.75**	**0.77**	**0.74**	**0.76**	**0.75**	**0.76**	**0.64**	**0.66**	**0.71**	**0.73**	**0.74**	**0.74**	**0.77**	**0.74**	**0.76**	**0.78**	**0.77**	**0.75**	**0.79**	**0.77**	**0.75**	**0.75**	**0.73**	**0.75**	**0.71**	**0.75**	**0.64**	**0.79**	**0.74**
D221	0.77	0.82	0.75	0.82	0.81	0.82	0.64	0.70	0.99	0.89	0.80	0.78	0.92	0.80	0.81	0.82	0.83	0.79	0.85	0.84	0.81	0.80	0.79	0.82	0.81	0.82	0.64	0.99	0.81
D222	0.85	0.80	0.79	0.84	0.98	0.86	0.89	1.04	0.48	0.79	0.68	0.75	0.79	0.74	0.73	0.80	0.81	0.74	0.83	0.77	0.86	0.79	0.78	0.83	0.77	0.79	0.48	1.04	0.80
D223	0.82	0.85	0.81	0.86	0.86	0.89	0.66	0.75	0.49	0.76	0.69	0.73	0.81	0.79	0.80	0.80	0.79	0.81	0.84	0.84	0.79	0.80	0.80	0.81	0.83	0.84	0.49	0.89	0.79
AVG	**0.82**	**0.82**	**0.78**	**0.84**	**0.85**	**0.86**	**0.73**	**0.83**	**0.65**	**0.82**	**0.72**	**0.75**	**0.81**	**0.78**	**0.80**	**0.81**	**0.81**	**0.78**	**0.84**	**0.82**	**0.80**	**0.80**	**0.79**	**0.82**	**0.80**	**0.82**	**0.65**	**0.86**	**0.80**
D231	0.67	0.73	0.78	0.75	0.76	0.69	0.72	0.84	0.60	0.73	0.70	0.74	0.69	0.63	0.66	0.65	0.68	0.62	0.70	0.65	0.71	0.69	0.73	0.72	0.72	0.70	0.60	0.84	0.70
D232	0.69	0.75	0.73	0.73	0.74	0.56	0.50	0.59	0.50	0.77	0.69	0.76	0.69	0.67	0.69	0.71	0.71	0.67	0.71	0.71	0.71	0.70	0.69	0.69	0.68	0.73	0.50	0.77	0.69
D233	0.64	0.72	0.73	0.77	0.67	0.61	0.51	0.59	0.71	0.78	0.71	0.77	0.70	0.65	0.68	0.67	0.67	0.67	0.72	0.68	0.69	0.72	0.71	0.68	0.71	0.76	0.51	0.78	0.69
AVG	**0.67**	**0.74**	**0.75**	**0.75**	**0.73**	**0.62**	**0.58**	**0.67**	**0.63**	**0.76**	**0.70**	**0.76**	**0.69**	**0.65**	**0.68**	**0.68**	**0.69**	**0.65**	**0.71**	**0.68**	**0.71**	**0.70**	**0.71**	**0.70**	**0.70**	**0.73**	**0.58**	**0.76**	**0.69**
Mowing Height = 8 mm																													
D311	0.84	0.83	0.83	0.87	0.95	0.86	0.70	0.74	1.24	0.77	0.84	1.00	0.84	0.78	0.82	0.81	0.94	0.77	0.87	0.81	0.82	0.82	0.81	0.82	0.82	0.80	0.70	1.24	0.84
D312	0.80	0.79	0.84	0.89	0.89	0.90	0.81	0.82	0.41	0.78	0.81	0.96	0.84	0.78	0.83	0.81	0.81	0.81	0.85	0.85	0.90	0.81	0.79	0.81	0.77	0.84	0.41	0.96	0.81
D313	0.81	0.63	0.78	0.83	0.84	0.86	0.65	0.66	0.67	0.71	0.74	0.96	0.86	0.84	0.85	0.89	0.86	0.84	0.90	0.86	0.81	0.80	0.78	0.79	0.75	0.79	0.65	0.96	0.81
AVG	**0.82**	**0.82**	**0.82**	**0.86**	**0.86**	**0.87**	**0.72**	**0.74**	**0.77**	**0.75**	**0.80**	**0.97**	**0.85**	**0.80**	**0.83**	**0.84**	**0.85**	**0.80**	**0.87**	**0.84**	**0.81**	**0.81**	**0.79**	**0.81**	**0.78**	**0.81**	**0.72**	**0.97**	**0.82**
D321	0.93	0.90	0.93	0.84	0.81	0.84	0.76	0.90	0.84	0.95	0.95	0.97	0.88	0.82	0.86	0.85	0.85	0.84	0.91	0.86	0.86	0.84	0.85	0.86	0.85	0.85	0.76	0.97	0.87
D322	0.95	0.90	0.85	0.89	0.95	0.96	1.00	0.98	1.12	0.97	0.95	0.94	0.89	0.86	0.89	0.88	0.90	0.85	0.93	0.88	0.84	0.84	0.84	0.84	0.82	0.87	0.82	1.12	0.90
D323	0.93	0.86	0.89	0.93	0.97	0.98	0.96	0.85	0.80	0.97	0.94	1.03	0.89	0.87	0.88	0.92	0.91	0.86	0.91	0.87	0.83	0.86	0.87	0.89	0.80	0.91	0.80	1.03	0.89
AVG	**0.94**	**0.89**	**0.89**	**0.89**	**0.91**	**0.93**	**0.91**	**0.88**	**0.92**	**0.96**	**0.88**	**0.98**	**0.88**	**0.85**	**0.88**	**0.88**	**0.88**	**0.85**	**0.91**	**0.87**	**0.84**	**0.85**	**0.85**	**0.86**	**0.83**	**0.88**	**0.83**	**0.98**	**0.89**
D331	0.84	0.83	0.85	0.90	0.80	0.81	0.57	0.60	0.61	0.68	0.80	1.02	0.76	0.71	0.75	0.74	0.74	0.73	0.79	0.75	0.74	0.73	0.77	0.75	0.76	0.72	0.57	1.02	0.76
D332	0.85	0.82	0.70	0.87	0.84	0.84	0.63	0.66	0.83	0.76	0.76	0.97	0.79	0.73	0.78	0.79	0.81	0.80	0.83	0.80	0.73	0.71	0.73	0.73	0.71	0.77	0.63	0.97	0.78
D333	0.82	0.87	0.79	0.79	0.82	0.84	0.77	0.81	0.59	0.57	0.82	0.98	0.75	0.73	0.75	0.78	0.72	0.75	0.76	0.77	0.72	0.76	0.74	0.76	0.75	0.80	0.57	0.98	0.77
AVG	**0.83**	**0.84**	**0.78**	**0.85**	**0.82**	**0.83**	**0.66**	**0.69**	**0.68**	**0.67**	**0.79**	**0.99**	**0.77**	**0.73**	**0.76**	**0.77**	**0.76**	**0.76**	**0.79**	**0.77**	**0.73**	**0.73**	**0.74**	**0.75**	**0.74**	**0.76**	**0.66**	**0.99**	**0.77**

Table 4.3. Statistical analysis of Bayview

Treatments	M4N1x60	M4N2X30	M4N2X20	M6N1X60	M6N2X30	M6N2X20	M8N1X60	M8N2X30	M8N2X20	AVG	SD
M4N1x60	p -values	**0.004**	0.028	0.268	0.209	0.089	0.339	0.017	0.269	0.707	0.041
M4N2X30	**0.004**		**0.008**	0.018	**0.005**	**0.000**	**0.002**	0.203	**0.010**	0.743	0.029
M4N2X20	0.028	**0.008**		0.490	0.032	**0.002**	0.083	0.012	**0.002**	0.665	0.038
M6N1X60	0.268	0.018	0.490		0.026	0.040	**0.000**	0.818	**0.010**	0.742	0.003
M6N2X30	0.209	**0.005**	0.032	0.026		0.110	0.175	0.732	0.264	0.798	0.004
M6N2X20	0.089	**0.000**	**0.002**	0.040	0.110		**0.042**	0.548	0.023	0.693	0.004
M8N1X60	0.339	**0.002**	0.083	**0.000**	0.175	**0.042**		0.098	**0.000**	0.818	0.048
M8N2X30	0.017	0.203	0.012	0.818	0.732	0.548	0.098		0.043	0.888	0.036
M8N2X20	0.269	**0.010**	**0.002**	**0.010**	0.264	0.023	**0.000**	0.043		0.768	0.066
AVG	0.707	0.743	0.665	0.742	0.798	0.693	0.818	0.888	0.768		
SD	0.041	0.029	0.038	0.003	0.004	0.004	0.048	0.036	0.066		

All printed in Bold represents a significant difference ($p < 0.01$)

Table 4.4. Percentage Treatment Differences

Treatments		M4N1x60	M4N2X30	M4N2X20	M6N1X60	M6N2X30	M6N2X20	M8N1X60	M8N2X30	M8N2X20
	CF	0.707	0.743	0.665	0.742	0.798	0.693	0.818	0.888	0.768
M4N1x60	0.707		5.09	-5.94	4.95	12.87	-1.98	15.70	25.60	8.63
M4N2X30	0.743	-4.85		-10.50	-0.13	7.40	-6.73	10.09	19.52	3.36
M4N2X20	0.665	6.32	11.73		11.58	20.00	4.21	23.01	33.53	15.49
M6N1X60	0.742	-4.72	0.13	-10.38		7.55	-6.60	10.24	19.68	3.50
M6N2X30	0.798	-11.40	-6.89	-16.67	-7.02		-13.16	2.51	11.28	-3.76
M6N2X20	0.693	2.02	7.22	-4.04	7.07	15.15		18.04	28.14	10.82
M8N1X60	0.818	-13.57	-9.17	-18.70	-9.29	-2.44	-15.28		8.56	-6.11
M8N2X30	0.888	-20.38	-16.33	-25.11	-16.44	-10.14	-21.96	-7.88		-13.51
M8N2X20	0.768	-7.94	-3.26	-13.41	-3.39	3.91	-9.77	6.51	15.63	

Table 5.1 Evapotranspiration of Speedy Royalgrass

Month	Nov92	Dec92	Jan93	Feb93	Mch93	Apr93	May93	Jun93	Jul93	Aug93	Sep93	Oct93	Jan94	Feb94	Mch94	Apr94	May94	Jun94	Jul94	Aug94	Jan95	Feb95	Mch95	Apr95	May95	Jun95	Min	Max	AVG
Evaporation	8.1	9.4	9.2	5.9	5.3	4.6	5	3.8	4.3	5.5	8.6	4.9	6.2	4.7	5.5	4.8	4.2	3.8	3.7	5.5	8.8	7.7	5.4	5.4	3.3	3.4	3.3	9.4	5.65
Mowing Height 10 mm																													
E111	5.06	6.27	6.11	4.66	4.17	3.63	3.71	2.51	3.59	4.69	5.83	3.95	4.81	3.56	4.27	3.71	3.19	2.88	2.92	4.36	6.45	5.59	4.07	4.00	2.39	2.45	2.39	6.45	4.19
E112	6.18	7.69	6.70	4.67	3.80	3.32	4.47	3.49	3.18	4.91	6.38	4.44	4.86	3.42	4.19	3.61	3.10	2.92	3.00	4.28	6.57	5.99	4.24	4.29	2.79	2.59	2.59	7.69	4.43
E113	6.48	7.70	7.60	4.94	4.32	3.77	4.79	3.86	2.41	4.05	5.49	3.45	4.78	3.54	4.21	3.82	3.11	2.92	2.88	4.35	6.41	5.79	4.33	4.15	2.51	2.58	2.41	7.70	4.39
AVG	5.91	7.22	6.81	4.76	4.09	3.58	4.26	3.29	3.06	4.55	5.90	3.95	4.82	3.50	4.22	3.72	3.20	2.91	2.93	4.33	6.48	5.79	4.21	4.15	2.56	2.54	2.54	7.22	4.34
E121	6.41	8.36	7.32	5.28	4.71	3.76	3.76	3.23	2.19	5.10	7.20	4.45	5.38	3.78	4.64	3.99	3.65	3.02	3.33	4.58	7.16	6.10	4.44	4.36	2.65	2.72	2.19	8.36	4.68
E122	7.45	8.72	7.75	5.30	4.98	4.39	3.82	3.49	4.07	4.42	7.22	3.80	5.31	3.93	4.72	4.27	3.46	3.30	2.81	4.59	7.17	6.65	4.71	4.76	3.10	2.87	2.81	8.72	4.89
E123	7.30	8.81	8.16	5.44	4.90	4.33	4.24	3.60	4.30	3.84	7.04	3.54	5.27	3.71	4.54	3.91	3.58	2.96	3.26	4.49	6.99	6.32	4.81	4.53	2.74	2.81	2.74	8.81	4.82
AVG	7.05	8.63	7.74	5.34	4.86	4.16	4.26	3.44	3.52	4.45	7.15	3.93	5.32	3.81	4.63	4.06	3.56	3.09	3.13	4.55	7.11	6.35	4.65	4.55	2.83	2.80	2.80	8.63	4.90
E131	6.19	7.73	7.01	4.28	4.05	3.54	4.81	2.86	2.21	4.32	6.74	3.94	4.60	3.23	3.96	3.41	3.12	2.58	2.84	3.92	6.73	5.64	4.17	4.03	2.45	2.51	2.21	7.73	4.27
E132	6.49	8.13	7.09	4.82	4.07	3.56	3.33	1.89	2.20	3.71	6.24	3.78	4.53	3.35	4.02	3.50	3.00	2.78	2.81	4.20	6.74	6.25	4.35	4.48	2.91	2.70	1.89	8.13	4.27
E133	6.16	6.90	6.73	4.78	4.32	3.50	3.51	2.10	4.76	4.26	5.56	3.86	4.68	3.46	4.16	3.76	3.26	2.80	2.94	4.15	6.46	5.84	4.52	4.18	2.57	2.60	2.10	6.90	4.30
AVG	6.28	7.58	6.95	4.63	4.15	3.54	4.26	2.28	3.06	4.10	6.18	3.86	4.60	3.35	4.05	3.56	3.13	2.72	2.87	4.09	6.64	5.91	4.35	4.23	2.65	2.61	2.28	7.58	4.28
Mowing Height 6 mm																													
E211	5.35	6.86	6.24	4.18	3.83	3.24	2.90	2.51	3.15	3.82	5.75	4.85	4.36	3.23	3.87	3.50	3.04	2.61	2.68	3.82	5.55	4.65	3.43	3.44	2.02	2.07	2.02	6.86	3.88
E212	5.43	6.93	6.26	4.20	3.85	3.37	2.21	1.95	1.67	4.35	5.36	4.22	4.38	3.24	3.86	3.50	3.17	2.88	2.77	4.25	5.47	5.15	3.53	3.62	2.40	2.18	1.67	6.93	3.85
E213	5.46	6.94	6.14	4.03	3.83	3.35	2.48	1.97	3.50	4.35	6.10	4.88	4.29	3.02	3.73	3.20	2.93	2.42	2.66	3.67	5.33	4.82	3.72	3.50	2.12	2.21	1.97	6.94	3.87
AVG	5.41	6.91	6.21	4.13	3.84	3.32	4.26	2.15	2.77	4.17	5.74	4.65	4.34	3.16	3.82	3.40	3.05	2.64	2.71	3.91	5.45	4.87	3.56	3.52	2.18	2.16	2.15	6.91	3.87
E221	6.36	6.51	6.94	4.68	4.18	3.66	3.49	3.09	2.64	4.46	5.77	5.14	4.85	3.59	4.31	3.75	3.33	2.87	2.97	4.39	6.04	5.24	3.74	3.61	2.24	2.34	2.24	6.93	4.24
E222	6.26	7.30	6.93	4.63	4.31	3.77	4.26	3.61	2.79	4.87	6.22	5.70	4.93	3.47	4.29	3.83	3.42	2.81	3.07	4.25	6.16	5.61	4.05	3.96	2.66	2.39	2.39	7.30	4.44
E223	6.02	7.50	6.97	4.96	4.16	3.64	2.80	2.43	2.36	4.44	6.71	5.35	4.88	3.61	4.30	3.75	3.23	3.00	3.02	4.52	5.90	5.33	4.05	3.89	2.28	2.34	2.28	7.50	4.28
AVG	6.21	7.10	6.94	4.76	4.22	3.69	4.26	3.04	2.60	4.59	6.23	5.40	4.89	3.55	4.30	3.77	3.32	2.89	3.02	4.38	6.03	5.39	3.95	3.83	2.39	2.36	2.36	7.10	4.32
E231	5.66	6.75	6.42	4.50	4.03	3.52	3.65	3.17	2.37	4.25	5.76	4.66	4.22	2.97	3.67	3.15	2.88	2.38	2.62	3.61	5.67	4.75	3.47	3.35	2.11	2.16	2.11	6.75	3.92
E232	5.35	6.02	6.33	4.45	4.07	3.59	2.40	2.11	3.00	2.82	4.90	4.31	4.14	3.06	3.68	3.33	2.89	2.48	2.55	3.77	5.68	5.26	3.74	3.85	2.45	2.25	2.11	6.33	3.78
E233	5.51	6.92	6.28	4.55	3.90	3.42	2.17	1.86	2.07	3.79	5.19	4.37	4.23	2.97	3.65	3.14	2.75	2.49	2.58	3.66	5.56	5.02	3.76	3.48	2.17	2.19	1.86	6.92	3.76
AVG	5.51	6.56	6.38	4.50	4.00	3.51	2.74	2.38	2.48	3.62	5.28	4.45	4.20	3.00	3.66	3.21	2.84	2.45	2.58	3.68	5.64	4.99	3.66	3.56	2.24	2.20	2.20	6.56	3.82
Mowing Height 8 mm																													
E311	5.33	6.63	7.28	4.66	3.77	3.36	2.48	1.32	3.17	4.02	6.01	3.43	4.50	3.16	3.91	3.36	3.07	2.54	2.79	3.85	6.00	5.12	3.88	3.54	2.12	2.26	1.32	7.28	3.91
E312	6.35	7.29	6.22	4.58	4.35	3.78	2.82	2.47	2.88	4.30	5.47	3.09	4.55	3.20	3.96	3.39	2.97	2.67	2.73	4.06	6.18	5.57	3.75	4.09	2.59	2.29	2.29	7.29	4.06
E313	6.12	6.93	7.01	4.50	4.31	3.77	3.06	2.67	3.30	4.70	5.93	3.38	4.38	3.24	3.86	3.50	3.04	2.61	2.74	3.86	5.67	5.12	4.03	3.81	2.39	2.51	2.39	7.01	4.09
AVG	5.93	6.95	6.83	4.58	4.14	3.64	4.26	2.15	3.11	4.34	5.80	3.30	4.48	3.20	3.91	3.42	3.03	2.61	2.76	3.92	5.95	5.27	3.89	3.82	2.37	2.35	2.15	6.95	4.02
E321	6.80	7.59	7.39	4.57	4.63	4.05	3.45	2.97	3.50	4.47	6.70	3.86	5.06	3.56	4.40	3.77	3.30	2.97	3.10	4.39	6.60	5.93	3.93	4.10	2.35	2.64	2.35	7.59	4.46
E322	6.56	7.76	7.30	5.15	4.52	3.67	2.99	2.58	2.68	5.78	6.56	3.85	5.09	3.77	4.52	3.93	3.49	3.01	3.19	4.47	6.97	6.13	4.38	4.36	3.01	2.54	2.54	7.76	4.55
E323	6.33	7.30	7.17	5.33	4.86	4.38	2.58	2.31	2.64	5.28	7.21	3.99	5.15	3.61	4.53	4.12	3.57	3.07	3.16	4.49	6.19	5.59	4.58	4.01	2.51	2.58	2.31	7.30	4.49
AVG	6.57	7.55	7.29	5.02	4.67	4.03	4.26	2.62	2.94	5.18	6.82	3.90	5.10	3.71	4.48	3.94	3.45	3.01	3.15	4.45	6.58	5.88	4.30	4.16	2.62	2.59	2.59	7.55	4.50
E331	5.77	7.33	6.52	4.46	4.20	3.68	2.58	2.28	2.48	4.41	6.01	3.39	4.64	3.26	4.03	3.46	3.03	2.72	2.85	4.02	5.96	5.37	3.69	3.79	2.17	2.44	2.17	7.33	4.02
E332	6.03	7.05	6.42	4.37	4.04	3.35	3.58	3.11	3.09	4.49	6.64	3.51	4.69	3.30	4.08	3.64	3.25	2.91	2.92	4.22	6.21	5.72	4.04	4.16	2.77	2.48	2.48	7.05	4.24
E333	5.64	6.09	6.83	4.87	4.32	3.81	2.60	2.25	1.76	4.57	6.39	3.73	4.58	3.39	4.03	3.66	2.98	2.79	2.76	4.17	6.28	5.17	4.25	3.70	2.37	2.30	1.76	6.83	4.05
AVG	5.82	6.82	6.59	4.57	4.19	3.61	4.26	2.55	2.44	4.49	6.35	3.56	4.64	3.32	4.05	3.59	3.09	2.81	2.84	4.14	6.15	5.42	4.00	3.89	2.44	2.41	2.41	6.82	4.10

Table 5.2. Crop Factor of Speedy Royalgrass

Month	Nov92	Dec92	Jan93	Feb93	Mch93	Apr93	May93	Jun93	Jul93	Aug93	Sep93	Oct93	Jan94	Feb94	Mch94	Apr94	May94	Jun94	Jul94	Aug94	Jan95	Feb95	Mch95	Apr95	May95	Jun95	Min	Max	AVG
Mowing Height 10 mm																													
E111	0.62	0.67	0.66	0.79	0.79	0.79	0.74	0.66	0.83	0.85	0.68	0.81	0.78	0.76	0.78	0.77	0.76	0.76	0.79	0.79	0.79	0.73	0.75	0.74	0.72	0.72	0.62	0.85	0.75
E112	0.76	0.82	0.73	0.79	0.72	0.72	0.89	0.92	0.74	0.89	0.74	0.91	0.78	0.73	0.76	0.75	0.79	0.77	0.81	0.78	0.81	0.78	0.79	0.79	0.85	0.76	0.72	0.92	0.79
E113	0.80	0.82	0.83	0.84	0.81	0.82	0.96	1.01	0.56	0.74	0.64	0.70	0.77	0.75	0.77	0.80	0.74	0.77	0.78	0.79	0.79	0.75	0.80	0.77	0.76	0.76	0.56	1.01	0.78
AVG	0.73	0.77	0.74	0.81	0.77	0.78	0.86	0.86	0.71	0.83	0.69	0.81	0.78	0.75	0.77	0.77	0.76	0.76	0.79	0.79	0.79	0.75	0.78	0.77	0.78	0.75	0.69	0.86	0.77
E121	0.79	0.89	0.80	0.89	0.89	0.82	0.75	0.85	0.51	0.93	0.84	0.91	0.87	0.80	0.84	0.83	0.87	0.79	0.90	0.83	0.88	0.79	0.82	0.81	0.80	0.80	0.51	0.93	0.83
E122	0.92	0.93	0.84	0.90	0.94	0.95	0.76	0.92	0.95	0.80	0.84	0.78	0.86	0.84	0.86	0.89	0.82	0.87	0.76	0.83	0.88	0.86	0.87	0.88	0.94	0.85	0.76	0.95	0.87
E123	0.90	0.94	0.89	0.92	0.93	0.94	0.85	0.95	1.00	0.70	0.82	0.72	0.85	0.79	0.83	0.82	0.85	0.78	0.88	0.82	0.86	0.82	0.89	0.84	0.83	0.83	0.70	1.00	0.85
AVG	0.87	0.92	0.84	0.91	0.92	0.90	0.79	0.90	0.82	0.81	0.83	0.80	0.86	0.81	0.84	0.85	0.85	0.81	0.85	0.83	0.87	0.83	0.86	0.84	0.86	0.82	0.79	0.92	0.85
E131	0.76	0.83	0.76	0.73	0.76	0.77	0.96	0.75	0.51	0.78	0.78	0.80	0.74	0.69	0.72	0.71	0.74	0.68	0.77	0.71	0.83	0.73	0.77	0.75	0.74	0.74	0.51	0.96	0.75
E132	0.80	0.86	0.77	0.82	0.77	0.77	0.67	0.50	0.51	0.68	0.73	0.77	0.73	0.71	0.73	0.73	0.71	0.73	0.76	0.76	0.83	0.81	0.81	0.83	0.88	0.79	0.50	0.88	0.75
E133	0.76	0.73	0.73	0.81	0.81	0.76	0.70	0.55	1.11	0.77	0.65	0.79	0.75	0.74	0.76	0.78	0.78	0.74	0.80	0.75	0.79	0.76	0.84	0.77	0.78	0.76	0.55	1.11	0.77
AVG	0.78	0.81	0.76	0.78	0.78	0.77	0.78	0.60	0.71	0.74	0.72	0.79	0.74	0.71	0.74	0.74	0.75	0.72	0.77	0.74	0.82	0.77	0.80	0.78	0.80	0.77	0.60	0.82	0.76
Mowing Height 6 mm																													
E211	0.66	0.73	0.68	0.71	0.72	0.70	0.58	0.66	0.73	0.69	0.67	0.99	0.70	0.69	0.70	0.73	0.72	0.69	0.73	0.69	0.68	0.60	0.64	0.64	0.61	0.61	0.58	0.99	0.69
E212	0.67	0.74	0.68	0.71	0.73	0.73	0.44	0.51	0.39	0.79	0.62	0.86	0.71	0.69	0.70	0.73	0.75	0.76	0.75	0.77	0.67	0.67	0.65	0.67	0.73	0.64	0.39	0.86	0.68
E213	0.67	0.74	0.67	0.68	0.72	0.73	0.50	0.52	0.81	0.79	0.71	0.99	0.69	0.64	0.68	0.67	0.70	0.64	0.72	0.67	0.65	0.63	0.69	0.65	0.64	0.65	0.50	0.99	0.69
AVG	0.67	0.74	0.68	0.70	0.72	0.72	0.51	0.56	0.64	0.76	0.67	0.95	0.70	0.67	0.69	0.71	0.73	0.69	0.73	0.71	0.67	0.63	0.66	0.65	0.66	0.63	0.51	0.95	0.69
E221	0.79	0.69	0.75	0.79	0.79	0.80	0.70	0.81	0.61	0.81	0.67	1.05	0.78	0.76	0.78	0.78	0.79	0.75	0.80	0.80	0.74	0.68	0.69	0.67	0.68	0.69	0.61	1.05	0.76
E222	0.77	0.78	0.75	0.79	0.81	0.82	0.85	0.95	0.65	0.89	0.72	1.16	0.80	0.74	0.78	0.80	0.81	0.74	0.83	0.77	0.76	0.73	0.75	0.73	0.81	0.70	0.65	1.16	0.80
E223	0.74	0.80	0.76	0.84	0.79	0.79	0.56	0.64	0.55	0.81	0.78	1.09	0.79	0.77	0.78	0.78	0.77	0.79	0.82	0.82	0.72	0.69	0.75	0.72	0.69	0.69	0.55	1.09	0.76
AVG	0.77	0.76	0.75	0.81	0.80	0.80	0.70	0.80	0.60	0.83	0.72	1.10	0.79	0.76	0.78	0.79	0.79	0.76	0.82	0.80	0.74	0.70	0.73	0.71	0.73	0.69	0.60	1.10	0.77
E231	0.70	0.72	0.71	0.76	0.76	0.77	0.73	0.83	0.55	0.77	0.67	0.95	0.68	0.63	0.67	0.66	0.69	0.63	0.71	0.66	0.70	0.62	0.64	0.62	0.64	0.64	0.55	0.95	0.70
E232	0.66	0.64	0.69	0.75	0.77	0.78	0.48	0.55	0.70	0.51	0.57	0.88	0.67	0.65	0.67	0.69	0.69	0.65	0.69	0.69	0.70	0.68	0.69	0.71	0.74	0.66	0.48	0.88	0.68
E233	0.68	0.74	0.68	0.77	0.74	0.74	0.43	0.49	0.48	0.69	0.60	0.89	0.68	0.63	0.66	0.65	0.66	0.65	0.70	0.67	0.68	0.65	0.70	0.64	0.66	0.65	0.43	0.89	0.66
AVG	0.68	0.70	0.69	0.76	0.75	0.76	0.55	0.63	0.58	0.66	0.61	0.91	0.68	0.64	0.67	0.67	0.68	0.64	0.70	0.67	0.69	0.65	0.68	0.66	0.68	0.65	0.55	0.91	0.68
Mowing Height 8 mm																													
E311	0.66	0.71	0.79	0.79	0.71	0.73	0.50	0.35	0.74	0.73	0.70	0.70	0.73	0.67	0.71	0.70	0.73	0.67	0.76	0.70	0.74	0.66	0.72	0.66	0.64	0.66	0.35	0.79	0.69
E312	0.78	0.78	0.68	0.78	0.82	0.82	0.56	0.65	0.67	0.78	0.64	0.63	0.73	0.68	0.72	0.71	0.71	0.70	0.74	0.74	0.76	0.72	0.69	0.76	0.79	0.67	0.56	0.82	0.72
E313	0.76	0.74	0.76	0.76	0.81	0.82	0.61	0.70	0.77	0.86	0.69	0.69	0.71	0.69	0.70	0.73	0.72	0.69	0.74	0.70	0.70	0.67	0.75	0.71	0.72	0.74	0.61	0.86	0.73
AVG	0.73	0.74	0.74	0.78	0.78	0.79	0.56	0.57	0.72	0.79	0.67	0.67	0.72	0.68	0.71	0.71	0.72	0.69	0.74	0.71	0.73	0.68	0.72	0.71	0.72	0.69	0.56	0.79	0.71
E321	0.84	0.81	0.80	0.77	0.87	0.88	0.69	0.78	0.81	0.81	0.78	0.79	0.82	0.76	0.80	0.79	0.79	0.78	0.84	0.80	0.81	0.77	0.73	0.76	0.71	0.78	0.69	0.88	0.79
E322	0.81	0.83	0.79	0.87	0.85	0.80	0.60	0.68	0.62	1.05	0.76	0.79	0.82	0.80	0.82	0.81	0.83	0.79	0.86	0.81	0.85	0.80	0.81	0.81	0.91	0.75	0.60	1.05	0.81
E323	0.78	0.78	0.78	0.90	0.92	0.95	0.52	0.61	0.61	0.96	0.84	0.81	0.83	0.81	0.82	0.86	0.85	0.81	0.85	0.82	0.76	0.73	0.85	0.74	0.76	0.76	0.52	0.96	0.80
AVG	0.81	0.80	0.79	0.85	0.88	0.88	0.60	0.69	0.68	0.94	0.79	0.80	0.81	0.79	0.82	0.82	0.82	0.79	0.85	0.81	0.81	0.76	0.80	0.77	0.79	0.76	0.60	0.94	0.80
E331	0.71	0.78	0.71	0.76	0.79	0.80	0.52	0.60	0.58	0.80	0.70	0.69	0.75	0.69	0.73	0.72	0.72	0.72	0.77	0.73	0.73	0.70	0.68	0.70	0.66	0.72	0.52	0.80	0.71
E332	0.74	0.75	0.70	0.74	0.76	0.73	0.72	0.82	0.72	0.82	0.77	0.72	0.76	0.70	0.74	0.76	0.77	0.77	0.79	0.77	0.76	0.74	0.75	0.77	0.84	0.73	0.70	0.84	0.76
E333	0.70	0.65	0.74	0.83	0.82	0.83	0.52	0.59	0.41	0.83	0.74	0.77	0.74	0.72	0.73	0.76	0.71	0.74	0.75	0.76	0.77	0.67	0.79	0.69	0.72	0.68	0.41	0.83	0.72
AVG	0.72	0.73	0.72	0.77	0.79	0.79	0.58	0.67	0.57	0.82	0.74	0.73	0.75	0.71	0.74	0.75	0.73	0.74	0.77	0.75	0.75	0.70	0.74	0.72	0.74	0.71	0.57	0.82	0.73

Table 5.3. Statistical analysis of Speedy Royalgrass

Treatments	M10N1X60	M10N2X30	M10N2X20	M6N1X60	M6N2X30	M6N2X20	M8N1X60	M8N2X30	M8N2X20	AVG	SD
M10N1X60	p-Values	0.681	0.741	0.676	0.059	0.589	0.095	0.056	0.915	0.774	0.039
M10N2X30	0.681		0.617	0.968	0.957	0.102	0.056	0.103	0.059	0.849	0.036
M10N2X20	0.741	0.617		0.165	0.769	0.039	0.015	0.161	0.147	0.756	0.043
M6N1X60	0.676	0.968	0.165		**0.000**	**0.000**	**0.008**	**0.000**	**0.000**	0.686	0.075
M6N2X30	0.059	0.957	0.769	**0.000**		0.000	0.717	0.041	0.023	0.770	0.083
M6N2X20	0.589	0.102	0.039	**0.000**	0.000		0.020	**0.000**	**0.000**	0.677	0.067
M8N1X60	0.095	0.056	0.015	**0.008**	0.717	0.020		**0.000**	**0.000**	0.711	0.054
M8N2X30	0.056	0.103	0.161	**0.000**	0.041	**0.000**	**0.000**		**0.000**	0.797	0.066
M8N2X20	0.915	0.059	0.147	**0.000**	0.023	**0.000**	**0.000**	**0.000**		0.727	0.054
AVG	0.774	0.849	0.756	0.686	0.770	0.677	0.711	0.797	0.727		
SD	0.039	0.036	0.043	0.075	0.083	0.067	0.054	0.066	0.054		

All printed in Bold represents a significant difference ($p<0.01$)

Table 5.4. Percentage Treatment Differences

Treatments		M10N1X60	M10N2X30	M10N2X20	M6N1X60	M6N2X30	M6N2X20	M8N1X60	M8N2X30	M8N2X20
	CF	0.774	0.849	0.756	0.686	0.770	0.677	0.711	0.797	0.727
M10N1X60	0.774		9.69	-2.33	-11.37	-0.52	-12.53	-8.14	2.97	-6.07
M10N2X30	0.849	-8.83		-10.95	-19.20	-9.31	-20.26	-16.25	-6.12	-14.37
M10N2X20	0.756	2.38	12.30		-9.26	1.85	-10.45	-5.95	5.42	-3.84
M6N1X60	0.686	12.83	23.76	10.20		12.24	-1.31	3.64	16.18	5.98
M6N2X30	0.770	0.52	10.26	-1.82	-10.91		-12.08	-7.66	3.51	-5.58
M6N2X20	0.677	14.33	25.41	11.67	1.33	13.74		5.02	17.73	7.39
M8N1X60	0.711	8.86	19.41	6.33	-3.52	8.30	-4.78		12.10	2.25
M8N2X30	0.797	-2.89	6.52	-5.14	-13.93	-3.39	-15.06	-10.79		-8.78
M8N2X20	0.727	6.46	16.78	3.99	-5.64	5.91	-6.88	-2.20	9.63	

Table 6.1 Evapotranspiration of Florida

Month	Nov92	Dec92	Jan93	Feb93	Mch93	Apr93	May93	Jun93	Jul93	Aug93	Sep93	Oct93	Jan94	Feb94	Mch94	Apr94	May94	Jun94	Jul94	Aug94	Jan95	Feb95	Mch95	Apr95	May95	Jun95	Min	Max	AVG
Evaporation	8.1	9.4	9.2	5.9	5.3	4.6	5	3.8	4.3	5.5	8.6	4.9	6.2	4.7	5.5	4.8	4.2	3.8	3.7	5.5	8.8	7.7	5.4	5.4	3.3	3.4	3.3	9.4	5.65
Mowing Height 4 mm																													
F111	5.21	6.72	6.32	4.10	3.57	2.50	2.57	2.27	2.01	3.58	5.13	4.43	3.67	2.45	3.18	2.67	2.37	2.05	2.20	3.19	4.41	4.54	3.17	3.07	1.90	1.99	1.90	6.72	3.43
F112	5.78	6.78	6.41	4.11	3.74	3.39	3.08	2.69	1.88	2.72	5.04	4.11	3.65	2.57	3.15	2.72	2.51	2.21	2.21	3.19	4.72	4.71	3.16	3.30	1.82	1.93	1.82	6.78	3.52
F113	5.83	6.81	6.02	4.30	3.84	2.68	2.63	2.33	2.37	3.84	5.65	4.39	3.72	2.75	3.27	2.98	2.55	2.23	2.27	3.38	4.78	4.65	3.27	3.19	2.02	2.09	2.02	6.81	3.61
AVG	5.61	6.77	6.25	4.17	3.72	2.86	2.76	2.43	2.09	3.38	5.27	4.31	3.68	2.59	3.20	2.79	2.47	2.16	2.23	3.25	4.64	4.63	3.18	3.19	1.91	2.00	1.91	6.77	3.52
F121	6.20	7.41	7.11	4.41	4.11	3.42	3.25	2.82	2.63	4.71	6.35	5.14	4.10	2.88	3.63	3.09	2.83	2.34	2.57	3.54	4.87	4.75	3.24	3.34	1.97	2.19	1.97	7.41	3.96
F122	6.23	6.72	6.84	4.56	4.28	3.83	2.36	2.09	2.63	2.92	4.95	4.33	4.11	2.91	3.65	3.24	2.80	2.52	2.51	3.78	5.06	5.20	3.31	3.64	2.08	2.10	2.08	6.84	3.79
F123	5.89	7.69	7.43	4.97	4.20	3.67	3.83	3.42	1.95	3.31	5.37	4.65	4.14	2.91	3.57	3.07	2.69	2.37	2.53	3.54	5.26	5.06	3.58	3.50	2.19	2.30	1.95	7.69	3.97
AVG	6.11	7.27	7.13	4.64	4.20	3.64	3.15	2.78	2.40	3.65	5.62	4.71	4.12	2.90	3.62	3.13	2.77	2.41	2.53	3.62	5.06	5.00	3.38	3.49	2.08	2.19	2.08	7.27	3.91
F131	5.59	6.81	6.00	4.36	3.64	3.18	2.71	2.24	1.89	3.62	4.81	4.40	3.62	2.54	3.20	2.73	2.52	2.05	2.22	3.09	4.66	4.94	3.07	3.37	1.97	1.99	1.89	6.81	3.51
F132	4.88	5.81	6.53	4.17	3.92	3.41	2.43	2.21	2.58	3.86	6.19	4.81	3.43	2.54	3.05	2.65	2.39	2.16	2.16	3.24	4.97	4.68	3.40	3.33	2.03	2.18	2.03	6.53	3.58
F133	5.74	7.18	6.31	4.20	3.44	2.89	3.43	3.08	2.58	3.28	5.20	5.17	3.51	2.60	3.18	2.85	2.48	2.12	2.18	3.10	4.85	4.75	3.12	3.31	1.93	2.03	1.93	7.18	3.63
AVG	5.40	6.60	6.28	4.24	3.67	3.16	2.86	2.51	2.35	3.59	5.40	4.80	3.52	2.56	3.14	2.74	2.46	2.11	2.18	3.14	4.83	4.79	3.20	3.34	1.97	2.07	1.97	6.60	3.57
Mowing Height 6 mm																													
F211	6.34	7.97	7.05	4.99	4.50	3.93	2.09	1.77	3.62	5.08	6.61	4.49	4.05	2.70	3.51	2.95	2.61	2.26	2.42	3.51	5.16	4.86	3.34	3.39	2.02	2.23	1.77	7.97	3.98
F212	6.36	7.44	7.06	5.05	4.47	3.91	3.14	2.60	2.30	3.93	5.54	4.17	4.19	2.95	3.62	3.12	2.88	2.54	2.54	3.67	5.02	4.97	3.24	3.51	1.95	2.31	1.95	7.44	3.94
F213	6.60	7.14	7.74	5.27	4.33	3.79	2.90	2.58	2.48	3.73	6.83	4.56	4.10	3.04	3.61	3.29	2.81	2.46	2.51	3.73	4.83	4.94	3.45	3.36	2.11	2.16	2.11	7.74	4.01
AVG	6.43	7.52	7.28	5.10	4.43	3.88	2.71	2.32	2.80	4.25	6.33	4.41	4.12	2.90	3.58	3.12	2.77	2.42	2.49	3.64	5.00	4.92	3.34	3.42	2.03	2.24	2.03	7.52	3.98
F221	6.86	7.73	7.48	4.89	4.44	3.89	2.61	2.32	3.16	5.23	6.96	5.28	4.33	3.05	3.84	3.27	2.99	2.47	2.71	3.74	5.77	5.49	3.67	3.52	2.17	2.53	2.17	7.73	4.25
F222	6.28	8.07	8.02	5.04	4.55	3.98	3.58	3.18	3.45	4.57	6.89	4.80	4.28	3.03	3.80	3.37	2.91	2.63	2.61	3.93	5.47	5.56	3.56	3.57	2.23	2.41	2.23	8.07	4.30
F223	6.36	8.10	7.85	5.25	4.75	4.16	4.23	3.55	2.62	5.32	6.55	4.73	4.40	3.10	3.79	3.27	2.86	2.51	2.69	3.76	5.43	5.34	3.81	3.65	2.31	2.31	2.31	8.10	4.33
AVG	6.50	7.97	7.78	5.06	4.58	4.01	3.48	3.02	3.08	5.04	6.80	4.94	4.34	3.06	3.81	3.30	2.92	2.54	2.67	3.81	5.56	5.46	3.68	3.58	2.24	2.42	2.24	7.97	4.29
F231	6.76	7.21	6.72	4.76	4.69	4.23	3.32	2.93	2.67	3.81	5.99	5.13	3.70	2.60	3.28	2.79	2.58	2.10	2.27	3.15	5.30	5.19	3.46	3.55	2.08	2.34	2.08	7.21	3.95
F232	6.95	7.62	6.43	4.81	4.50	3.98	5.54	4.79	2.48	4.98	8.01	4.41	3.65	2.70	3.24	2.81	2.54	2.29	2.29	3.45	5.23	5.13	3.59	3.56	2.14	2.30	2.14	8.01	4.21
F233	5.19	6.78	6.16	4.96	3.61	3.12	3.68	3.27	2.79	4.66	6.70	4.43	3.80	2.81	3.44	3.08	2.68	2.29	2.35	3.36	5.45	5.05	3.30	3.49	2.20	2.23	2.20	6.78	3.88
AVG	6.30	7.21	6.43	4.84	4.27	3.78	4.18	3.66	2.65	4.48	6.90	4.66	3.71	2.70	3.32	2.90	2.60	2.23	2.31	3.32	5.33	5.12	3.45	3.53	2.14	2.29	2.14	7.21	4.01
Mowing Height 8 mm																													
F311	6.37	7.35	6.41	4.63	4.19	3.75	3.89	2.29	2.53	3.54	6.29	3.72	4.50	3.00	3.90	3.27	2.90	2.51	2.60	3.84	5.71	5.16	3.61	3.50	2.16	2.27	2.16	7.35	4.00
F312	6.34	7.34	7.34	4.90	4.60	4.12	4.23	3.74	2.52	4.28	6.80	3.78	4.60	3.24	4.35	3.60	3.23	2.72	2.89	4.32	5.41	5.37	3.53	3.77	2.07	2.20	2.07	7.34	4.28
F313	6.31	7.70	6.88	4.93	4.52	3.96	3.70	3.26	1.99	4.93	6.76	4.04	4.46	3.31	3.93	3.57	3.06	2.67	2.63	3.99	5.38	5.30	3.72	3.63	2.30	2.38	1.99	7.70	4.20
AVG	6.34	7.46	6.88	4.82	4.51	3.94	3.94	3.09	2.35	4.25	6.62	3.85	4.52	3.18	4.06	3.48	3.06	2.64	2.71	4.05	5.50	5.28	3.62	3.63	2.18	2.28	2.18	7.46	4.16
F321	6.01	6.21	6.35	4.52	3.99	3.62	2.77	2.28	3.61	4.53	7.40	4.47	4.63	3.26	4.10	3.49	3.20	2.64	2.90	4.26	5.74	5.43	3.67	3.81	2.24	2.49	2.24	7.40	4.14
F322	6.88	7.93	7.28	5.26	4.76	4.43	4.04	3.61	2.48	5.29	7.16	4.31	4.66	3.30	4.42	3.81	3.22	2.82	2.83	4.24	5.94	5.93	3.79	4.06	2.37	2.38	2.37	7.93	4.51
F323	6.14	7.48	7.32	5.05	4.34	3.85	2.93	2.79	2.84	5.11	8.17	3.60	4.61	3.24	3.97	3.42	3.00	2.63	2.82	4.20	5.83	5.75	3.91	3.99	2.47	2.53	2.47	8.17	4.31
AVG	6.34	7.21	6.98	4.94	4.36	3.97	3.25	2.90	2.98	4.98	7.58	4.13	4.63	3.27	4.16	3.57	3.14	2.70	2.85	4.23	5.84	5.70	3.79	3.95	2.36	2.47	2.36	7.58	4.32
F331	6.14	7.57	6.45	4.44	4.25	3.72	3.64	2.33	3.20	5.11	6.54	4.04	4.16	2.92	3.93	3.25	3.03	2.44	2.56	3.61	5.62	5.47	3.41	3.74	2.20	2.21	2.20	7.57	4.08
F332	6.61	7.58	6.97	5.11	4.45	3.89	3.49	3.07	2.45	4.34	6.25	4.25	4.06	3.00	3.61	3.19	2.83	2.55	2.55	3.84	5.39	5.18	3.61	3.79	2.27	2.33	2.27	7.58	4.10
F333	6.09	7.75	6.74	4.83	4.28	3.75	3.88	3.45	3.32	4.85	6.68	4.03	4.21	3.12	4.07	3.55	3.11	2.63	2.62	4.04	5.22	5.37	3.47	3.68	2.13	2.27	2.13	7.75	4.20
AVG	6.28	7.63	6.72	4.79	4.32	3.78	3.67	2.95	2.99	4.77	6.49	4.11	4.14	3.01	3.87	3.31	2.99	2.54	2.58	3.83	5.41	5.34	3.50	3.74	2.20	2.27	2.20	7.63	4.12

Table 6.2. Crop Factor of Florida

Month	Nov92	Dec92	Jan93	Feb93	Mch93	Apr93	May93	Jun93	Jul93	Aug93	Sep93	Oct93	Jan94	Feb94	Mch94	Apr94	May94	Jun94	Jul94	Aug94	Jan95	Feb95	Mch95	Apr95	May95	Jun95	Min	Max	AVG
Mowing Height 4 mm																													
F111	0.64	0.71	0.69	0.70	0.67	0.54	0.51	0.60	0.47	0.65	0.60	0.90	0.59	0.52	0.58	0.56	0.56	0.54	0.59	0.58	0.54	0.59	0.59	0.57	0.58	0.59	0.47	0.90	0.60
F112	0.71	0.72	0.70	0.70	0.71	0.74	0.62	0.71	0.44	0.50	0.59	0.84	0.59	0.55	0.57	0.57	0.60	0.58	0.60	0.58	0.58	0.61	0.57	0.61	0.55	0.57	0.44	0.84	0.62
F113	0.72	0.72	0.65	0.73	0.72	0.58	0.53	0.61	0.55	0.70	0.66	0.90	0.60	0.59	0.60	0.62	0.61	0.59	0.61	0.61	0.59	0.60	0.61	0.59	0.61	0.61	0.53	0.90	0.63
AVG	**0.69**	**0.72**	**0.68**	**0.71**	**0.70**	**0.62**	**0.55**	**0.64**	**0.48**	**0.61**	**0.61**	**0.88**	**0.59**	**0.55**	**0.58**	**0.58**	**0.59**	**0.57**	**0.60**	**0.59**	**0.57**	**0.60**	**0.59**	**0.59**	**0.58**	**0.59**	**0.48**	**0.88**	**0.62**
F121	0.77	0.79	0.77	0.75	0.78	0.74	0.65	0.74	0.61	0.86	0.74	1.05	0.66	0.61	0.66	0.64	0.67	0.61	0.69	0.64	0.60	0.62	0.60	0.62	0.60	0.64	0.60	1.05	0.70
F122	0.77	0.72	0.74	0.77	0.81	0.83	0.47	0.51	0.61	0.53	0.58	0.88	0.66	0.62	0.66	0.67	0.67	0.66	0.68	0.69	0.62	0.68	0.61	0.67	0.63	0.62	0.47	0.88	0.67
F123	0.73	0.82	0.81	0.84	0.79	0.80	0.77	0.90	0.45	0.60	0.65	0.95	0.67	0.62	0.65	0.64	0.64	0.62	0.68	0.64	0.61	0.66	0.66	0.65	0.66	0.68	0.45	0.95	0.70
AVG	**0.75**	**0.77**	**0.77**	**0.79**	**0.79**	**0.79**	**0.63**	**0.73**	**0.56**	**0.66**	**0.65**	**0.96**	**0.66**	**0.62**	**0.66**	**0.65**	**0.66**	**0.63**	**0.69**	**0.66**	**0.62**	**0.65**	**0.63**	**0.65**	**0.63**	**0.65**	**0.56**	**0.96**	**0.69**
F131	0.69	0.72	0.65	0.74	0.69	0.69	0.54	0.59	0.44	0.66	0.56	0.90	0.58	0.54	0.58	0.57	0.60	0.54	0.60	0.56	0.57	0.64	0.57	0.62	0.60	0.59	0.44	0.90	0.62
F132	0.60	0.62	0.71	0.71	0.74	0.74	0.49	0.58	0.60	0.70	0.72	0.98	0.55	0.54	0.55	0.55	0.57	0.57	0.58	0.59	0.61	0.61	0.63	0.62	0.61	0.64	0.49	0.98	0.63
F133	0.71	0.76	0.69	0.71	0.65	0.63	0.69	0.81	0.60	0.60	0.60	1.06	0.57	0.55	0.58	0.59	0.59	0.56	0.59	0.56	0.60	0.62	0.58	0.61	0.58	0.60	0.55	1.06	0.64
AVG	**0.67**	**0.70**	**0.68**	**0.72**	**0.69**	**0.69**	**0.57**	**0.66**	**0.55**	**0.65**	**0.63**	**0.98**	**0.57**	**0.54**	**0.57**	**0.57**	**0.59**	**0.56**	**0.59**	**0.57**	**0.59**	**0.62**	**0.59**	**0.62**	**0.60**	**0.61**	**0.54**	**0.98**	**0.63**
Mowing Height 6 mm																													
F211	0.78	0.85	0.77	0.85	0.85	0.86	0.42	0.47	0.84	0.92	0.77	0.92	0.65	0.57	0.64	0.61	0.62	0.59	0.65	0.64	0.63	0.63	0.62	0.63	0.61	0.66	0.42	0.92	0.69
F212	0.78	0.79	0.77	0.86	0.84	0.85	0.63	0.68	0.53	0.71	0.64	0.85	0.68	0.63	0.66	0.65	0.69	0.67	0.69	0.67	0.62	0.65	0.60	0.65	0.59	0.68	0.53	0.86	0.69
F213	0.81	0.76	0.84	0.89	0.82	0.82	0.58	0.68	0.58	0.68	0.79	0.93	0.66	0.65	0.66	0.68	0.67	0.65	0.68	0.68	0.59	0.64	0.64	0.61	0.64	0.64	0.58	0.93	0.70
AVG	**0.79**	**0.80**	**0.79**	**0.87**	**0.84**	**0.84**	**0.54**	**0.61**	**0.65**	**0.77**	**0.74**	**0.90**	**0.66**	**0.62**	**0.65**	**0.65**	**0.66**	**0.64**	**0.67**	**0.66**	**0.61**	**0.64**	**0.62**	**0.63**	**0.61**	**0.66**	**0.54**	**0.90**	**0.70**
F221	0.85	0.82	0.81	0.83	0.84	0.84	0.52	0.61	0.73	0.95	0.81	1.08	0.70	0.65	0.70	0.68	0.71	0.65	0.73	0.68	0.71	0.71	0.68	0.65	0.66	0.74	0.52	1.08	0.74
F222	0.78	0.86	0.87	0.85	0.86	0.87	0.72	0.84	0.80	0.83	0.80	0.98	0.69	0.64	0.69	0.70	0.69	0.69	0.71	0.72	0.67	0.72	0.66	0.66	0.68	0.71	0.64	0.98	0.76
F223	0.79	0.86	0.85	0.89	0.90	0.90	0.85	0.93	0.61	0.97	0.76	0.97	0.71	0.66	0.69	0.68	0.68	0.66	0.73	0.68	0.67	0.69	0.71	0.68	0.70	0.68	0.61	0.97	0.76
AVG	**0.80**	**0.85**	**0.85**	**0.86**	**0.86**	**0.87**	**0.70**	**0.79**	**0.72**	**0.92**	**0.79**	**1.01**	**0.70**	**0.65**	**0.69**	**0.69**	**0.70**	**0.67**	**0.72**	**0.69**	**0.68**	**0.71**	**0.68**	**0.66**	**0.69**	**0.71**	**0.65**	**1.01**	**0.76**
F231	0.83	0.77	0.73	0.81	0.89	0.92	0.66	0.77	0.62	0.69	0.70	1.05	0.60	0.55	0.60	0.58	0.61	0.55	0.61	0.57	0.65	0.67	0.64	0.66	0.63	0.69	0.55	1.05	0.69
F232	0.86	0.81	0.70	0.81	0.85	0.87	1.11	1.26	0.58	0.91	0.93	0.90	0.59	0.57	0.59	0.59	0.61	0.60	0.62	0.63	0.64	0.67	0.67	0.66	0.65	0.68	0.57	1.26	0.74
F233	0.64	0.72	0.67	0.84	0.68	0.68	0.74	0.86	0.65	0.85	0.78	0.91	0.61	0.60	0.62	0.64	0.64	0.60	0.64	0.61	0.67	0.66	0.61	0.65	0.67	0.66	0.60	0.91	0.69
AVG	**0.78**	**0.77**	**0.70**	**0.82**	**0.81**	**0.82**	**0.84**	**0.96**	**0.62**	**0.81**	**0.80**	**0.95**	**0.60**	**0.57**	**0.60**	**0.60**	**0.62**	**0.59**	**0.62**	**0.60**	**0.65**	**0.67**	**0.64**	**0.65**	**0.65**	**0.67**	**0.57**	**0.96**	**0.71**
Mowing Height 8 mm																													
F311	0.79	0.78	0.70	0.78	0.80	0.81	0.78	0.60	0.59	0.64	0.73	0.76	0.73	0.64	0.71	0.68	0.69	0.66	0.70	0.70	0.70	0.67	0.67	0.63	0.66	0.67	0.59	0.83	0.70
F312	0.78	0.78	0.80	0.83	0.87	0.90	0.85	0.98	0.59	0.78	0.79	0.77	0.74	0.69	0.79	0.75	0.77	0.72	0.78	0.79	0.66	0.70	0.65	0.70	0.63	0.65	0.59	0.98	0.76
F313	0.78	0.82	0.75	0.84	0.85	0.86	0.74	0.86	0.46	0.90	0.79	0.82	0.72	0.70	0.71	0.74	0.73	0.70	0.71	0.72	0.66	0.69	0.69	0.67	0.70	0.70	0.46	0.90	0.74
AVG	**0.78**	**0.79**	**0.75**	**0.82**	**0.85**	**0.86**	**0.79**	**0.81**	**0.55**	**0.77**	**0.77**	**0.78**	**0.73**	**0.68**	**0.74**	**0.73**	**0.73**	**0.69**	**0.73**	**0.74**	**0.67**	**0.69**	**0.67**	**0.67**	**0.66**	**0.67**	**0.55**	**0.86**	**0.74**
F321	0.74	0.66	0.69	0.77	0.75	0.79	0.55	0.60	0.84	0.82	0.86	0.91	0.75	0.69	0.75	0.73	0.76	0.69	0.78	0.78	0.70	0.70	0.68	0.71	0.68	0.73	0.55	0.91	0.74
F322	0.85	0.84	0.79	0.89	0.90	0.96	0.81	0.95	0.58	0.96	0.83	0.88	0.75	0.70	0.80	0.79	0.77	0.74	0.76	0.77	0.73	0.77	0.70	0.75	0.72	0.70	0.58	0.96	0.80
F323	0.76	0.80	0.80	0.86	0.82	0.84	0.59	0.74	0.66	0.93	0.95	0.73	0.74	0.69	0.72	0.71	0.71	0.69	0.76	0.76	0.72	0.75	0.72	0.74	0.75	0.74	0.59	0.95	0.76
AVG	**0.78**	**0.77**	**0.76**	**0.84**	**0.82**	**0.86**	**0.65**	**0.76**	**0.69**	**0.91**	**0.88**	**0.84**	**0.75**	**0.69**	**0.76**	**0.74**	**0.75**	**0.71**	**0.77**	**0.77**	**0.72**	**0.74**	**0.70**	**0.73**	**0.71**	**0.73**	**0.65**	**0.91**	**0.76**
F331	0.76	0.80	0.70	0.75	0.80	0.81	0.73	0.61	0.74	0.93	0.76	0.83	0.67	0.62	0.71	0.68	0.72	0.64	0.69	0.66	0.69	0.71	0.63	0.69	0.67	0.65	0.61	0.93	0.72
F332	0.82	0.81	0.76	0.87	0.84	0.85	0.70	0.81	0.57	0.79	0.73	0.87	0.65	0.64	0.66	0.65	0.67	0.67	0.69	0.70	0.66	0.67	0.67	0.70	0.69	0.69	0.57	0.87	0.72
F333	0.75	0.82	0.73	0.82	0.81	0.81	0.78	0.91	0.77	0.88	0.78	0.82	0.68	0.66	0.74	0.74	0.74	0.69	0.71	0.73	0.64	0.70	0.64	0.68	0.65	0.67	0.64	0.91	0.74
AVG	**0.78**	**0.81**	**0.73**	**0.81**	**0.82**	**0.82**	**0.73**	**0.78**	**0.69**	**0.87**	**0.75**	**0.84**	**0.67**	**0.64**	**0.70**	**0.69**	**0.71**	**0.67**	**0.70**	**0.70**	**0.66**	**0.69**	**0.65**	**0.69**	**0.67**	**0.67**	**0.64**	**0.87**	**0.73**

Table 6.3. Statistical analysis of Floridagrass

Treatments	M4N1X60	M4N2X30	M4N2X20	M6N1X60	M6N2X30	M6N2X20	M8N1X60	M8N2X30	M8N2X20	AVG	SD
M4N1X60	p -values	**0.000**	**0.000**	**0.000**	**0.000**	0.040	**0.000**	**0.000**	**0.000**	0.618	0.074
M4N2X30	**0.000**		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	0.689	0.083
M4N2X20	**0.000**	**0.000**		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	0.629	0.086
M6N1X60	**0.000**	**0.000**	**0.000**		**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	0.697	0.092
M6N2X30	**0.000**	**0.000**	**0.000**	**0.000**		**0.000**	**0.000**	**0.000**	**0.000**	0.755	0.093
M6N2X20	0.040	**0.000**	**0.000**	**0.000**	**0.000**		**0.000**	**0.000**	**0.000**	0.708	0.111
M8N1X60	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**		**0.000**	**0.000**	0.735	0.068
M8N2X30	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**		**0.000**	0.762	0.061
M8N2X20	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**		0.728	0.064
AVG	0.618	0.689	0.629	0.697	0.755	0.708	0.735	0.762	0.728		
SD	0.074	0.083	0.086	0.092	0.093	0.111	0.068	0.061	0.064		

All printed in Bold represents a significant difference ($p<0.01$)

Table 6.4. Percentage Treatment Differences

Treatments		M4N1X60	M4N2X30	M4N2X20	M6N1X60	M6N2X30	M6N2X20	M8N1X60	M8N2X30	M8N2X20
	CF	0.618	0.689	0.629	0.697	0.755	0.708	0.735	0.762	0.728
M4N1X60	0.618		11.49	1.78	12.78	22.17	14.56	18.93	23.30	17.80
M4N2X30	0.689	-10.30		-8.71	1.16	9.58	2.76	6.68	10.60	5.66
M4N2X20	0.629	-1.75	9.54		10.81	20.03	12.56	16.85	21.14	15.74
M6N1X60	0.697	-11.33	-1.15	-9.76		8.32	1.58	5.45	9.33	4.45
M6N2X30	0.755	-18.15	-8.74	-16.69	-7.68		-6.23	-2.65	0.93	-3.58
M6N2X20	0.708	-12.71	-2.68	-11.16	-1.55	6.64		3.81	7.63	2.82
M8N1X60	0.735	-15.92	-6.26	-14.42	-5.17	2.72	-3.67		3.67	-0.95
M8N2X30	0.762	-18.90	-9.58	-17.45	-8.53	-0.92	-7.09	-3.54		-4.46
M8N2X20	0.728	-15.11	-5.36	-13.60	-4.26	3.71	-2.75	0.96	4.67	

APPENDIX B

CLIMATIC DATA

Climatological Information for October 1992

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	26.50	16.90	0.00	5.00	4.50	225.50	93.00	45.00	21.70
2	28.40	16.30	0.00	"	11.00	"	93.00	45.00	22.40
3	31.50	15.00	0.00	"	"	"	90.00	26.00	23.30
4	30.50	17.30	0.00	"	"	"	98.00	25.00	23.90
5	25.10	14.50	0.00	7.50	8.10	359.90	87.00	47.00	19.80
6	29.30	13.00	0.00	11.00	10.40	337.40	80.00	36.00	21.20
7	29.30	15.00	0.00	9.50	6.40	175.90	56.00	35.00	22.20
8	28.80	13.00	0.00	8.50	6.80	345.30	88.00	33.00	20.90
9	26.50	13.60	7.60	5.10	7.70	291.40	96.00	43.00	20.10
10	24.70	12.60	0.00	4.50	4.30	224.40	86.00	47.00	18.70
11	26.30	14.50	0.80	3.30	0.40	224.50	96.00	45.00	20.40
12	22.50	9.80	0.00	7.00	11.10	145.80	100.00	31.00	16.20
13	28.50	6.30	0.00	7.50	11.90	140.10	96.00	25.00	17.40
14	31.60	7.40	0.00	9.00	11.90	247.30	85.00	27.00	19.50
15	32.20	16.70	0.00	9.00	11.20	415.00	53.00	31.00	24.50
16	32.50	18.10	0.00	"	11.90	"	50.00	28.00	25.30
17	29.00	8.00	0.00	"	"	"	50.00	23.00	18.50
18	33.00	6.50	0.00	"	"	"	55.00	23.00	19.80
19	34.00	13.90	0.00	16.00	7.50	495.20	60.00	33.00	24.00
20	34.80	19.60	0.60	16.10	5.80	383.20	70.00	27.00	27.20
21	30.60	8.00	0.00	8.50	11.20	128.70	60.00	29.00	19.30
22	35.00	9.60	0.00	14.00	11.00	416.80	61.00	26.00	22.30
23	33.00	18.40	7.30	13.80	7.70	603.30	97.00	38.00	25.70
24	31.00	16.60	0.00	16.00	7.80	452.80	85.00	33.00	23.80
25	23.60	4.60	0.00	7.50	12.30	136.10	84.00	28.00	14.10
26	27.60	5.50	0.00	6.00	12.20	137.50	83.00	27.00	16.60
27	30.70	8.60	0.00	7.00	9.90	393.60	76.00	32.00	19.70
28	32.30	16.80	1.70	9.20	6.40	484.40	88.00	40.00	24.60
29	28.70	11.00	0.00	11.00	10.30	177.80	88.00	28.00	19.90
30	30.90	8.10	0.00	**********	11.90	**********	75.00	26.00	19.50
31	28.50	15.00	25.00	**********	1.90	**********	96.00	48.00	21.80
Avg	29.58	12.59	1.39	6.84	7.53	223.93	79.84	33.23	21.11
Min	22.50	4.60	0.00	0.00	0.00	0.00	50.00	23.00	14.10
Max	35.00	19.60	25.00	16.10	12.30	603.30	100.00	48.00	27.20
Total	916.90	390.20	43.00	212.00	233.50	6941.90	2475.00	1030.00	654.30

Climatological Information for November 1992

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	26.30	13.80	21.10	*	6.50	403.50	100.00	48.00	20.10
2	27.00	13.60	0.00	9.50	10.80	348.60	96.00	43.00	20.30
3	30.20	14.50	0.00	10.50	10.30	253.30	84.00	32.00	22.40
4	26.50	16.50	48.80	*	1.50	236.50	96.00	50.00	21.50
5	19.00	13.60	6.30	3.80	0.00	107.20	96.00	80.00	16.30
6	26.60	12.60	0.00	6.00	8.50	151.20	97.00	38.00	19.60
7	29.40	15.50	0.00	7.00	11.70	206.00	88.00	34.00	22.50
8	27.50	17.50	7.40	6.40	2.70	398.90	96.00	50.00	22.50
9	23.40	15.00	3.60	3.60	6.00	338.40	96.00	55.00	19.20
10	30.70	14.00	15.00	10.00	7.60	369.90	97.00	43.00	22.40
11	24.50	13.80	0.00	4.50	0.00	217.20	97.00	49.00	19.20
12	29.20	14.60	10.00	6.50	8.30	288.10	95.00	40.00	21.90
13	28.80	15.00	30.20	*	9.50	343.80	97.00	43.00	21.90
14	28.90	14.00	9.00	6.00	8.10	241.70	96.00	40.00	21.50
15	29.80	14.30	0.00	8.50	11.90	153.50	95.00	30.00	22.10
16	27.20	13.90	0.00	10.50	12.30	176.10	90.00	27.00	20.60
17	28.50	9.30	0.00	9.00	10.80	220.50	93.00	24.00	18.90
18	25.20	14.60	0.00	8.00	6.90	458.40	92.00	46.00	19.90
19	22.50	14.60	5.00	5.00	2.30	383.50	96.00	56.00	18.60
20	27.60	11.60	0.00	12.00	12.70	222.90	97.00	26.00	19.60
21	27.50	11.50	0.00	8.50	11.70	145.50	77.00	30.00	19.50
22	31.70	9.80	0.00	9.50	12.70	223.00	90.00	23.00	20.80
23	31.90	15.00	0.00	9.50	9.20	458.30	82.00	32.00	23.50
24	28.80	17.30	3.50	8.00	6.00	325.10	94.00	46.00	23.10
25	23.60	11.00	0.00	10.50	11.70	212.30	96.00	28.00	17.30
26	23.70	8.00	0.00	8.00	12.60	143.80	72.00	25.00	15.90
27	28.00	7.80	0.00	8.00	12.60	166.40	85.00	27.00	17.90
28	27.90	13.20	0.00	8.50	11.90	158.30	80.00	31.00	20.60
29	30.70	13.00	0.00	9.00	12.30	112.80	83.00	29.00	21.90
30	32.70	14.50	0.00	11.50	10.40	172.90	75.00	27.00	23.60
Avg	27.51	13.45	5.33	7.26	8.65	254.59	90.93	38.40	20.50
Min	19.00	7.80	0.00	0.00	0.00	107.20	72.00	23.00	15.90
Max	32.70	17.50	48.80	12.00	12.70	458.40	100.00	80.00	23.60
Total	825.30	403.40	159.90	217.80	259.50	7637.60	2728.00	1152.00	615.10

Climatological Information for December 1992

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	33.90	16.40	0.00	14.00	10.30	237.90	58.00	26.00	25.20
2	35.00	15.30	0.00	15.50	11.20	317.80	65.00	28.00	25.20
3	35.50	21.70	0.00	19.00	10.90	389.60	50.00	27.00	28.60
4	36.30	21.80	0.30	14.80	6.70	313.80	45.00	27.00	29.10
5	32.20	18.40	1.20	6.20	4.10	305.00	83.00	25.00	25.30
6	32.70	15.00	1.00	6.50	6.70	272.40	88.00	32.00	23.90
7	31.80	18.30	0.00	10.50	6.80	254.00	73.00	38.00	25.10
8	30.30	17.50	0.00	8.50	2.00	308.50	80.00	40.00	23.90
9	28.50	17.70	0.00	5.50	1.60	248.70	90.00	43.00	23.10
10	20.80	16.00	5.00	1.50	0.00	212.40	94.00	70.00	18.40
11	23.50	15.70	0.00	5.50	2.40	207.90	96.00	63.00	19.60
12	23.90	14.00	1.70	3.20	0.20	313.30	97.00	53.00	19.00
13	27.20	14.50	0.00	5.00	6.00	178.60	94.00	40.00	20.90
14	32.50	16.10	0.10	12.60	10.20	279.70	93.00	26.00	24.30
15	33.70	13.80	0.00	15.00	12.70	226.00	75.00	23.00	23.80
16	33.30	11.60	0.00	11.50	12.50	192.30	56.00	26.00	22.50
17	34.90	17.00	3.70	12.20	8.60	295.50	86.00	27.00	26.00
18	34.00	18.40	0.00	*	10.20	*	93.00	26.00	26.20
19	32.90	18.00	10.00	*	*	*	87.00	36.00	25.50
20	31.30	17.90	0.80	8.80	7.60	234.20	90.00	34.00	24.60
21	30.50	17.50	32.80	*	9.30	283.90	90.00	40.00	24.00
22	23.00	15.90	0.00	3.50	3.30	193.70	96.00	59.00	19.50
23	28.00	15.20	0.00	7.00	7.40	177.40	94.00	40.00	21.60
24	27.00	14.50	0.00	9.00	12.00	232.90	92.00	40.00	20.80
25	26.10	15.10	0.00	9.00	12.30	197.60	88.00	38.00	20.60
26	29.00	14.00	0.00	9.00	12.90	180.20	76.00	32.00	21.50
27	32.30	16.20	0.30	11.80	11.10	255.70	73.00	32.00	24.30
28	34.10	17.50	0.00	13.00	12.40	247.50	67.00	24.00	25.80
29	33.70	18.40	0.00	14.00	9.80	321.70	63.00	32.00	26.10
30	32.30	20.00	5.00	6.00	1.60	243.60	90.00	37.00	26.20
31	28.80	16.30	9.00	5.50	4.30	269.40	95.00	44.00	22.60
Avg	30.61	16.64	2.29	8.50	7.33	238.43	81.19	36.39	23.65
Min	20.80	11.60	0.00	0.00	0.00	0.00	45.00	23.00	18.40
Max	36.30	21.80	32.80	19.00	12.90	389.60	97.00	70.00	29.10
Total	949.00	515.70	70.90	263.60	227.10	7391.20	2517.00	1128.00	733.20

Climatological Information for January 1993

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	29.20	15.60	0.00	*	8.00	*	85.00	32.00	22.40
2	32.30	14.00	0.00	*	11.00	*	92.00	28.00	23.20
3	29.90	17.50	2.30	*	*	*	87.00	42.00	23.70
4	30.50	17.00	0.70	9.20	8.20	163.30	93.00	34.00	23.80
5	33.00	16.00	0.00	9.00	12.10	140.60	92.00	28.00	24.50
6	35.00	18.50	0.00	11.50	12.50	150.70	88.00	23.00	26.80
7	34.10	17.50	0.00	12.00	12.30	184.50	75.00	30.00	25.80
8	35.60	17.50	0.00	11.00	0.80	175.80	77.00	27.00	26.60
9	33.60	20.30	0.00	9.50	3.60	244.90	68.00	32.00	27.00
10	23.40	18.80	7.00	2.50	0.20	145.30	92.00	66.00	21.10
11	27.40	14.50	0.00	13.00	11.70	259.30	96.00	21.00	21.00
12	27.80	9.80	0.00	8.00	12.80	102.60	66.00	27.00	18.80
13	31.00	11.60	0.00	8.50	12.50	130.30	79.00	29.00	21.30
14	32.70	16.30	0.00	8.00	11.30	122.10	57.00	29.00	24.50
15	33.00	16.10	0.00	*	12.70	*	66.00	29.00	24.60
16	35.00	17.50	0.00	*	*	*	62.00	28.00	26.30
17	36.70	21.00	0.00	*	8.90	*	55.00	24.00	28.90
18	36.00	20.00	0.00	*	11.90	*	64.00	23.00	28.00
19	33.60	15.00	0.00	17.00	12.70	198.60	47.00	22.00	24.30
20	33.50	13.10	0.00	11.00	12.80	109.10	63.00	26.00	23.30
21	35.50	13.80	0.00	12.50	9.50	201.00	72.00	26.00	24.70
22	30.90	22.60	6.50	7.50	4.70	359.20	91.00	44.00	26.80
23	30.60	15.50	2.80	8.80	10.80	217.40	93.00	35.00	23.10
24	30.80	16.70	0.30	9.30	8.80	189.30	93.00	32.00	23.80
25	29.00	18.10	23.40	8.40	7.00	255.70	86.00	44.00	23.60
26	26.70	15.30	0.00	5.50	*********	172.90	92.00	43.00	21.00
27	27.80	15.50	0.00	6.00	9.50	73.60	92.00	39.00	21.70
28	28.40	16.60	0.00	7.50	6.80	128.90	93.00	36.00	22.50
29	29.40	14.60	4.00	6.50	6.40	199.70	94.00	33.00	22.00
30	27.00	16.50	0.20	7.70	7.60	199.00	88.00	42.00	21.80
31	30.50	15.80	0.00	10.50	11.90	141.20	93.00	23.00	23.20
Avg	31.29	16.41	1.52	7.11	8.35	137.58	80.32	32.16	23.87
Min	23.40	9.80	0.00	0.00	0.00	0.00	47.00	21.00	18.80
Max	36.70	22.60	23.40	17.00	12.80	359.20	96.00	66.00	28.90
Total	969.90	508.60	47.20	220.40	259.00	4265.00	2490.00	997.00	740.10

Climatological Information for February 1993

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	29.50	10.00	0.00	9.50	12.10	125.10	88.00	24.00	19.80
2	31.80	12.00	0.00	11.00	12.40	224.90	85.00	24.00	21.90
3	33.00	16.50	0.00	10.00	10.70	157.30	80.00	26.00	24.80
4	29.00	17.50	0.30	5.80	6.80	232.20	80.00	46.00	23.30
5	29.30	17.00	15.00	6.00	6.00	145.60	90.00	44.00	23.20
6	30.20	16.30	0.00	7.00	9.10	127.90	90.00	39.00	23.30
7	31.30	17.00	0.00	9.50	10.60	200.30	88.00	36.00	24.20
8	25.40	18.40	4.40	0.40	0.00	197.30	86.00	54.00	21.90
9	24.60	16.80	1.20	0.20	0.00	163.60	92.00	48.00	20.70
10	25.80	16.60	0.00	4.00	0.70	108.20	90.00	42.00	21.20
11	25.30	17.00	2.00	2.00	0.50	109.70	92.00	54.00	21.20
12	27.10	17.60	19.00	******	1.20	162.00	92.00	47.00	22.40
13	27.50	17.70	0.00	6.00	3.90	136.70	93.00	50.00	22.60
14	29.60	18.90	0.00	6.50	6.50	171.00	90.00	43.00	24.30
15	29.00	18.60	0.00	4.50	6.80	161.20	93.00	44.00	23.80
16	29.00	14.40	0.00	5.00	10.60	236.90	93.00	34.00	21.70
17	24.40	17.00	0.80	3.80	3.20	220.80	88.00	53.00	20.70
18	25.90	14.70	0.00	5.50	5.00	141.00	87.00	46.00	20.30
19	27.10	15.00	0.00	5.00	8.70	153.00	92.00	44.00	21.10
20	29.10	15.00	0.00	6.50	7.70	101.20	93.00	32.00	22.10
21	29.60	16.30	14.70	3.70	6.60	121.00	92.00	39.00	23.00
22	29.20	15.50	0.00	7.00	11.00	110.70	93.00	37.00	22.40
23	28.20	16.60	11.20	3.70	3.20	137.00	92.00	46.00	22.40
24	27.50	14.50	0.00	7.00	10.10	111.10	93.00	40.00	21.00
25	27.20	13.20	0.00	7.00	11.90	162.00	93.00	30.00	20.20
26	27.30	14.40	0.00	6.00	5.50	150.10	89.00	37.00	20.90
27	28.00	14.10	0.00	7.50	10.80	113.20	91.00	35.00	21.10
28	29.40	14.10	0.00	8.50	10.30	171.90	86.00	26.00	21.80
Avg	28.23	15.81	2.45	5.66	6.85	155.46	89.68	40.00	22.05
Min	24.40	10.00	0.00	0.00	0.00	101.20	80.00	24.00	19.80
Max	33.00	18.90	19.00	11.00	12.40	236.90	93.00	54.00	24.80
Total	790.30	442.70	68.60	158.60	191.90	4352.90	2511.00	1120.00	617.30

Climatological Information for March 1993

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	18.40	16.00	6.50	0.00	0.00	146.60	71.00	63.00	17.20
2	23.00	16.80	2.00	2.00	1.20	141.90	92.00	63.00	19.90
3	26.30	16.00	0.00	5.00	5.50	120.90	93.00	36.00	21.20
4	24.80	13.80	18.00	2.00	3.50	100.80	93.00	50.00	19.30
5	28.50	14.00	0.00	5.50	10.60	79.30	93.00	35.00	21.30
6	30.10	14.60	0.00	7.00	10.00	104.50	91.00	30.00	22.40
7	29.20	14.70	0.00	6.50	11.30	99.80	86.00	33.00	22.00
8	29.30	12.30	0.00	6.50	9.50	73.80	82.00	31.00	20.80
9	31.00	13.00	0.00	8.00	10.10	123.00	89.00	30.00	22.00
10	29.30	16.30	0.00	7.50	10.50	125.30	71.00	33.00	22.80
11	30.50	14.60	0.00	7.00	9.00	128.50	76.00	35.00	22.60
12	30.90	15.10	0.70	6.20	9.30	125.60	83.00	33.00	23.00
13	31.60	14.80	6.00	7.50	6.80	167.90	90.00	32.00	23.20
14	30.30	16.90	0.00	6.50	6.20	101.60	89.00	34.00	23.60
15	30.50	15.00	0.00	5.50	5.50	129.50	90.00	32.00	22.80
16	27.00	15.60	0.00	6.50	5.80	223.80	86.00	44.00	21.30
17	26.50	13.60	0.00	5.50	7.20	111.90	88.00	37.00	20.10
18	29.00	15.00	0.00	6.50	9.80	114.60	83.00	33.00	22.00
19	27.40	16.50	20.00	5.50	3.30	157.70	86.00	38.00	22.00
20	27.10	13.30	0.00	4.50	8.60	68.40	93.00	36.00	20.20
21	27.30	13.90	1.70	5.20	5.70	126.90	92.00	37.00	20.60
22	25.00	15.00	7.40	2.90	3.30	102.30	92.00	42.00	20.00
23	25.60	12.50	0.00	2.50	7.10	105.30	92.00	36.00	19.10
24	26.70	14.60	0.00	10.50	10.00	236.40	91.00	31.00	20.70
25	27.00	14.00	0.00	6.50	10.70	95.60	90.00	33.00	20.50
26	29.50	10.60		7.00	10.80	110.00	93.00	25.00	20.10
27	29.40	11.50	0.00	5.00	8.20	94.50	78.00	28.00	20.50
28	28.80	12.60	11.50	3.00	4.60	169.50	90.00	25.00	20.70
29	21.00	15.00	1.70	1.70	0.00	107.40	92.00	56.00	18.00
30	23.70	13.30	0.20	4.70	8.00	84.80	91.00	44.00	18.50
31	27.00	10.50	0.00	5.50	11.00	83.10	92.00	32.00	18.80
Avg	27.47	14.24	2.52	5.35	7.20	121.33	87.68	37.00	20.88
Min	18.40	10.50	0.00	0.00	0.00	68.40	71.00	25.00	17.20
Max	31.60	16.90	20.00	10.50	11.30	236.40	93.00	63.00	23.60
Total	851.70	441.40	75.70	165.70	223.10	3761.20	2718.00	1147.00	647.20

Climatical Information for April 1993

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	28.00	9.10	0.00	6.00	10.20	120.30	86.00	27.00	18.60
2	27.10	13.30	0.60	4.60	8.10	151.80	85.00	35.00	20.20
3	27.20	12.00	0.00	6.50	9.70	185.00	91.00	31.00	19.60
4	28.20	13.10	0.00	5.50	9.00	173.20	81.00	31.00	20.70
5	24.00	16.90	0.00	4.50	0.90	242.10	75.00	46.00	20.50
6	20.70	15.50	0.40	1.90	0.70	155.90	92.00	58.00	18.10
7	26.40	11.40	0.00	4.00	10.30	89.00	93.00	30.00	18.90
8	29.00	10.00	0.00	6.00	9.00	166.00	90.00	24.00	19.50
9	29.50	14.20	0.00	8.00	10.40	186.00	83.00	26.00	21.90
10	30.50	10.30	0.00	7.50	9.20	211.50	73.00	24.00	20.40
11	22.90	15.30	26.40	3.90	0.70	255.50	92.00	55.00	19.10
12	15.50	9.00	0.00	5.50	9.90	182.00	92.00	34.00	12.30
13	16.40	3.70	0.00	4.00	10.70	121.50	90.00	38.00	10.10
14	21.30	2.50	0.00	3.00	10.40	54.20	91.00	24.00	11.90
15	24.50	4.70	0.00	5.50	10.50	129.20	90.00	23.00	14.60
16	24.90	7.30	0.00	4.50	8.10	193.70	78.00	33.00	16.10
17	25.50	14.10	2.00	6.00	7.10	286.10	86.00	43.00	19.80
18	23.00	12.10	0.00	3.50	9.20	84.40	86.00	33.00	17.60
19	25.20	3.60	0.00	2.50	10.20	76.30	93.00	20.00	14.40
20	25.50	4.50	0.00	4.00	10.60	138.30	86.00	33.00	15.00
21	26.80	8.50	0.00	4.00	10.40	86.80	90.00	26.00	17.70
22	27.10	6.60	0.00	5.00	10.20	90.10	92.00	24.00	16.90
23	27.00	8.30	0.00	5.00	9.00	95.30	73.00	26.00	17.70
24	25.90	10.60	0.00	3.00	*	87.70	81.00	33.00	18.30
25	26.50	8.00	0.00	4.50	*	90.60	92.00	28.00	17.30
26	25.50	12.00	0.00	4.50	4.40	109.10	86.00	35.00	18.80
27	26.90	12.40	9.40	4.40	*	146.90	92.00	32.00	19.70
28	23.50	9.50	0.00	5.00	9.50	168.30	92.00	36.00	16.50
29	20.30	7.30	0.00	3.00	6.90	68.00	89.00	20.00	13.80
30	21.30	1.50	0.00	3.50	10.50	77.60	91.00	23.00	11.40
Avg	24.87	9.58	1.29	4.63	7.53	140.75	87.03	31.70	17.25
Min	15.50	1.50	0.00	1.90	0.00	54.20	73.00	20.00	10.10
Max	30.50	16.90	26.40	8.00	10.70	286.10	93.00	58.00	21.90
Total	746.10	287.30	38.80	138.80	225.80	4222.40	2611.00	951.00	517.40

Climatological Information for May 1993

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	24.00	3.00	0.00	*	10.00	*	83.00	27.00	13.50
2	23.00	10.00	0.00	*	*	*	86.00	33.00	16.50
3	24.10	12.00	0.00	6.00	9.70	182.80	73.00	23.00	18.10
4	26.00	3.70	0.00	6.50	9.90	145.70	87.00	20.00	14.90
5	27.70	5.00	0.00	6.00	9.50	176.20	66.00	27.00	16.40
6	27.90	11.50	0.00	8.50	9.90	263.90	75.00	30.00	19.70
7	26.60	8.30	0.00	5.50	9.20	120.20	87.00	27.00	17.50
8	26.80	2.00	0.30	5.80	8.80	139.70	83.00	18.00	14.40
9	26.70	9.00	0.00	6.00	8.10	245.10	82.00	33.00	17.90
10	24.20	4.80	0.00	4.50	10.00	87.40	82.00	23.00	14.50
11	26.40	3.60	0.00	4.00	10.20	108.00	70.00	21.00	15.00
12	26.00	5.00	0.00	4.00	9.80	84.60	83.00	24.00	15.50
13	27.40	5.00	0.00	6.00	9.60	189.30	85.00	24.00	16.20
14	21.70	12.10	1.30	2.30	1.90	129.70	72.00	40.00	16.90
15	21.00	8.00	0.00	4.00	10.00	93.90	92.00	30.00	14.50
16	20.70	-0.30	0.00	4.00	10.00	129.80	92.00	22.00	10.20
17	22.40	1.60	0.00	3.00	9.10	55.60	80.00	25.00	12.00
18	23.80	4.00	0.00	3.00	9.80	80.30	73.00	23.00	13.90
19	25.00	3.50	0.00	3.00	9.80	107.50	74.00	28.00	14.30
20	25.50	5.70	0.00	5.00	*	81.20	80.00	26.00	15.60
21	24.70	4.50	0.00	5.00	9.70	120.40	76.00	27.00	14.60
22	25.60	5.00	0.00	6.00	9.30	174.10	72.00	27.00	15.30
23	26.10	11.00	0.00	7.00	7.10	210.00	49.00	28.00	18.60
24	26.00	6.50	0.00	6.50	9.40	202.60	57.00	27.00	16.30
25	27.50	9.80	0.00	9.00	9.80	271.30	53.00	27.00	18.70
26	22.50	8.50	0.00	4.50	8.10	151.90	62.00	30.00	15.50
27	18.30	3.10	0.00	3.50	9.90	81.70	82.00	33.00	10.70
28	16.80	-2.90	0.00	3.00	9.20	94.30	90.00	33.00	7.00
29	17.80	-2.10	0.00	4.00	9.90	81.00	86.00	28.00	7.90
30	20.00	-3.10	0.00	*	9.60	*	90.00	27.00	8.50
31	21.00	-1.50	0.00	*	6.20	*	82.00	26.00	9.80
Avg	23.97	5.04	0.05	4.37	8.50	122.85	77.55	27.00	14.53
Min	16.80	-3.10	0.00	0.00	0.00	0.00	49.00	18.00	7.00
Max	27.90	12.10	1.30	9.00	10.20	271.30	92.00	40.00	19.70
Total	743.20	156.30	1.60	135.60	263.50	3808.20	2404.00	837.00	450.40

Climatical Information for June 1993

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	22.80	0.50	0.00	4.00	9.70	96.50	70.00	24.00	11.70
2	23.00	1.50	0.00	6.00	9.00	245.00	67.00	29.00	12.30
3	18.50	13.00	0.00	6.50	8.50	250.40	70.00	42.00	15.80
4	17.90	-1.50	0.00	2.50	9.10	77.10	90.00	23.00	8.20
5	19.30	0.50	0.00	3.50	9.60	168.80	86.00	33.00	9.90
6	19.40	-1.60	0.00	3.00	9.00	100.90	93.00	30.00	8.90
7	21.50	0.80	0.00	4.00	9.70	105.40	82.00	24.00	11.20
8	22.50	1.30	0.00	3.50	9.50	121.30	66.00	24.00	11.90
9	23.60	3.10	0.00	4.50	9.40	141.90	56.00	26.00	13.40
10	22.30	3.00	0.00	5.00	9.10	218.30	70.00	28.00	12.70
11	13.00	5.10	0.00	5.00	8.50	237.60	67.00	38.00	9.10
12	12.00	-5.20	0.00	*******	8.60	**********	93.00	37.00	3.40
13	13.50	-5.20	0.00	*******	**********	*********	93.00	38.00	4.20
14	15.80	-4.00	0.00	2.50	9.00	82.90	89.00	27.00	5.90
15	17.50	-1.50	0.00	2.50	9.60	84.70	73.00	27.00	8.00
16	19.30	-1.50	0.00	3.00	9.40	100.50	72.00	23.00	8.90
17	19.40	-2.00	0.00	3.00	9.10	122.40	60.00	21.00	8.70
18	21.40	-2.10	0.00	5.00	9.40	133.60	53.00	22.00	9.70
19	18.30	-0.90	0.00	3.00	9.50	104.70	56.00	26.00	8.70
20	16.20	-6.90	0.00	3.00	9.50	79.50	70.00	26.00	4.70
21	20.00	-5.30	0.00	4.00	9.40	99.10	71.00	24.00	7.40
22	22.40	-4.20	0.00	3.00	9.50	83.80	72.00	22.00	9.10
23	21.20	-1.30	0.00	3.50	9.60	83.10	57.00	24.00	10.00
24	21.10	-3.00	0.00	4.00	8.50	189.40	65.00	23.00	9.10
25	18.50	3.00	0.00	5.00	**********	161.50	90.00	32.00	10.80
26	18.00	-1.00	0.00	4.00	**********	237.70	94.00	38.00	8.50
27	16.80	7.90	0.00	3.50	0.80	222.90	67.00	37.00	12.40
28	19.80	5.80	0.00	4.50	3.60	275.10	78.00	40.00	12.80
29	16.30	1.00	0.00	3.00	8.80	92.70	95.00	37.00	8.70
30	18.50	-4.80	0.00	2.50	8.90	121.70	80.00	35.00	6.90
Avg	18.99	-0.18	0.00	3.55	7.81	134.62	74.83	29.33	9.43
Min	12.00	-6.90	0.00	0.00	0.00	0.00	53.00	21.00	3.40
Max	23.60	13.00	0.00	6.50	9.70	275.10	95.00	42.00	15.80
Total	569.80	-5.50	0.00	106.50	234.30	4038.50	2245.00	880.00	283.00

Climatological Information for July 1993

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	17.70	0.10	0.00	3.00	9.40	89.20	80.00	28.00	8.90
2	18.70	-3.50	0.00	5.00	9.20	205.40	73.00	29.00	7.60
3	18.00	0.10	0.00	3.00	8.40	124.00	97.00	32.00	9.10
4	18.10	1.30	0.00	2.00	9.30	80.70	84.00	36.00	9.70
5	19.00	-2.00	0.00	2.50	8.50	90.90	83.00	29.00	8.50
6	18.80	2.00	0.00	2.50	8.80	97.10	86.00	27.00	10.40
7	20.00	1.30	0.00	4.50	9.40	204.30	85.00	35.00	10.70
8	21.60	4.50	0.00	4.50	9.10	189.00	83.00	35.00	13.10
9	22.50	1.00	0.00	4.50	9.50	108.60	88.00	30.00	11.80
10	21.90	1.30	0.00	3.00	9.20	114.80	75.00	32.00	11.60
11	25.00	4.20	0.00	7.50	9.70	279.00	67.00	28.00	14.60
12	18.30	0.70	0.00	3.00	10.00	82.10	80.00	35.00	9.50
13	23.00	-2.90	0.00	3.00	9.60	85.70	85.00	23.00	10.10
14	23.40	-1.40	0.00	4.50	9.70	85.60	63.00	23.00	11.00
15	24.30	-1.70	0.00	4.50	9.60	147.40	56.00	24.00	11.30
16	19.00	4.00	0.00	4.50	9.50	206.60	83.00	37.00	11.50
17	21.60	4.00	0.00	5.50	7.60	296.30	72.00	41.00	12.80
18	22.20	6.30	0.00	5.50	9.10	168.40	78.00	36.00	14.30
19	22.40	8.10	0.00	5.00	6.30	148.40	75.00	37.00	15.30
20	21.70	4.70	0.00	3.50	8.70	85.10	80.00	38.00	13.20
21	22.40	7.50	0.00	5.00	3.50	106.10	70.00	40.00	15.00
22	22.50	5.10	0.00	4.00	7.60	96.70	79.00	38.00	13.80
23	21.50	5.00	0.00	3.50	9.50	235.20	83.00	37.00	13.30
24	20.00	5.50	0.00	5.00	*	171.50	84.00	36.00	12.80
25	19.50	4.30	0.00	4.50	*	101.70	91.00	40.00	11.90
26	22.00	11.30	0.00	8.50	6.60	306.90	59.00	35.00	16.70
27	19.10	6.00	0.00	5.50	9.90	149.10	70.00	43.00	12.60
28	19.40	-1.40	0.00	4.00	10.20	87.00	92.00	31.00	9.00
29	20.70	-1.60	0.00	3.00	9.90	75.60	73.00	28.00	9.60
30	22.90	-0.90	0.00	4.00	10.00	102.50	65.00	27.00	11.00
31	24.20	1.50	0.00	6.00	10.00	209.20	67.00	30.00	12.90
Avg	21.01	2.40	0.00	4.32	8.32	146.13	77.61	32.90	11.73
Min	17.70	-3.50	0.00	2.00	0.00	75.60	56.00	23.00	7.60
Max	25.00	11.30	0.00	8.50	10.20	306.90	97.00	43.00	16.70
Total	651.40	74.40	0.00	134.00	257.80	4530.10	2406.00	1020.00	363.60

Climatical Information for August 1993

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	25.20	4.70	0.00	6.00	9.70	184.70	62.00	28.00	15.00
2	26.10	2.80	0.00	6.00	9.40	216.00	66.00	26.00	14.50
3	198.00	4.80	0.00	6.00	1.00	222.80	66.00	36.00	13.90
4	23.80	3.50	0.00	7.00	9.80	251.50	76.00	35.00	13.70
5	21.00	0.80	0.00	4.00	9.70	94.50	72.00	35.00	10.90
6	24.40	3.50	0.00	7.00	5.70	281.20	64.00	36.00	14.00
7	25.00	4.80	0.00	6.00	8.40	197.60	86.00	34.00	14.90
8	22.00	-1.00	0.00	4.00	10.00	98.00	66.00	27.00	10.50
9	22.40	2.50	0.00	5.00	8.90	301.00	95.00	34.00	12.50
10	25.00	6.00	0.00	6.50	7.10	350.50	95.00	32.00	15.50
11	17.60	12.60	0.30	2.80	1.80	125.40	96.00	65.00	15.10
12	17.70	4.10	0.00	4.00	7.20	174.90	96.00	25.00	10.90
13	18.30	1.50	0.00	5.00	10.30	167.40	76.00	27.00	9.90
14	20.60	0.00	0.00	4.50	10.00	111.90	65.00	25.00	10.30
15	22.90	0.10	0.00	4.00	10.40	82.50	63.00	23.00	11.50
16	23.70	2.00	0.00	4.00	10.30	91.50	50.00	20.00	12.90
17	23.70	2.00	0.00	5.00	10.30	95.10	46.00	20.00	12.90
18	24.20	1.00	0.00	5.00	10.60	119.90	46.00	21.00	12.60
19	24.00	1.80	0.00	7.00	9.90	240.80	45.00	24.00	12.90
20	24.60	6.80	0.00	12.50	8.30	414.20	47.00	24.00	15.70
21	16.80	3.80	0.00	3.50	11.00	160.50	62.00	31.00	10.30
22	20.50	-3.30	0.00	6.00	10.30	274.00	76.00	32.00	8.60
23	20.00	6.80	0.00	6.00	9.20	283.30	78.00	37.00	13.40
24	21.50	6.00	0.00	5.00	10.00	210.70	86.00	35.00	13.80
25	22.90	5.50	0.00	5.00	10.60	174.40	76.00	30.00	14.20
26	23.50	6.50	0.00	6.00	10.60	136.00	65.00	26.00	15.00
27	24.30	3.00	0.00	5.00	9.70	119.90	70.00	26.00	13.70
28	24.50	5.40	0.00	5.50	9.60	150.50	58.00	27.00	15.00
29	24.30	5.30	0.40	5.40	7.20	238.80	85.00	28.00	14.80
30	21.50	8.50	0.00	5.50	9.70	242.60	88.00	40.00	15.00
31	22.30	6.60	0.00	5.50	7.00	317.20	87.00	35.00	14.50
Avg	28.14	3.82	0.02	5.47	8.83	197.72	71.26	30.45	13.17
Min	16.80	-3.30	0.00	2.80	1.00	82.50	45.00	20.00	8.60
Max	198.00	12.60	0.40	12.50	11.00	414.20	96.00	65.00	15.70
Total	872.30	118.40	0.70	169.70	273.70	6129.30	2209.00	944.00	408.40

Climatological Information for September 1993

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	25.00	8.50	0.00	5.00	8.40	153.00	86.00	32.00	16.80
2	25.60	7.50	0.00	6.00	9.30	183.70	83.00	28.00	16.60
3	24.80	5.80	0.00	5.00	10.30	136.20	92.00	25.00	15.30
4	26.80	4.30	0.00	5.00	10.70	116.00	78.00	22.00	15.60
5	27.50	6.40	0.00	9.00	10.10	180.80	53.00	24.00	17.00
6	25.80	5.00	0.00	5.50	10.90	159.30	90.00	23.00	15.40
7	26.30	6.30	0.00	6.50	11.10	119.60	72.00	21.00	16.30
8	28.50	5.20	0.00	6.50	10.20	139.90	45.00	22.00	16.90
9	29.00	9.50	0.00	8.00	10.60	177.10	46.00	23.00	19.30
10	29.40	9.50	0.00	10.50	10.80	231.40	40.00	23.00	19.50
11	26.80	8.00	0.00	8.50	10.90	167.50	45.00	25.00	17.40
12	30.40	7.00	0.00	11.50	7.70	356.40	46.00	22.00	18.70
13	30.30	13.00	0.00	12.50	10.60	283.80	57.00	24.00	21.70
14	27.70	6.10	0.00	7.50	10.90	129.80	52.00	24.00	16.90
15	29.40	6.50	0.00	7.50	11.20	150.60	56.00	23.00	18.00
16	30.80	6.50	0.00	9.50	10.90	167.50	46.00	23.00	18.70
17	32.50	8.60	0.00	13.00	11.20	207.50	46.00	21.00	20.60
18	28.00	6.00	0.00	9.00	11.10	159.30	52.00	21.00	17.00
19	28.40	4.10	0.00	8.00	10.30	149.40	43.00	23.00	16.30
20	30.60	6.30	0.00	9.50	9.80	156.50	44.00	22.00	18.50
21	31.50	9.10	0.00	11.50	7.20	222.40	39.00	22.00	20.30
22	26.40	9.00	0.00	8.50	9.60	148.90	37.00	26.00	17.70
23	30.30	4.70	0.00	11.00	**********	259.00	44.00	21.00	17.50
24	29.00	9.60	0.00	6.50	4.40	304.60	90.00	32.00	19.30
25	27.60	7.50	0.00	8.00	11.10	141.00	94.00	21.00	17.60
26	30.00	5.50	0.00	5.50	6.50	230.30	68.00	27.00	17.80
27	31.10	12.00	0.00	11.50	2.70	320.20	83.00	18.00	21.60
28	30.50	15.00	0.00	9.50	9.90	257.70	68.00	26.00	22.80
29	32.20	14.00	0.00	11.00	10.90	230.70	73.00	23.00	23.10
30	31.60	14.00	12.50	10.00	8.50	483.60	86.00	28.00	22.80
Avg	28.79	8.02	0.42	8.55	9.26	204.12	61.80	23.83	18.43
Min	24.80	4.10	0.00	5.00	0.00	116.00	37.00	18.00	15.30
Max	32.50	15.00	12.50	13.00	11.20	483.60	94.00	32.00	23.10
Total	863.80	240.50	12.50	256.50	277.80	6123.70	1854.00	715.00	553.00

Climatological Information for October 1993

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	25.80	12.80	12.00	6.00	4.80	446.90	93.00	36.00	19.30
2	20.60	12.00	0.20	4.20	5.00	348.20	92.00	50.00	16.30
3	24.90	12.50	6.00	3.50	6.30	244.10	86.00	41.00	18.70
4	25.60	11.90	2.80	5.30	6.80	154.40	92.00	33.00	18.80
5	21.50	14.30	40.30	*****	2.30	211.70	91.00	55.00	17.90
6	20.60	12.40	17.30	2.80	3.80	286.80	91.00	57.00	16.50
7	21.00	10.80	28.60	5.10	6.30	286.10	92.00	53.00	15.90
8	23.60	13.40	0.00	4.00	7.10	239.80	90.00	41.00	18.50
9	28.80	13.40	0.00	7.00	10.70	174.20	88.00	27.00	21.10
10	32.00	14.50	0.00	7.50	10.90	203.40	82.00	23.00	23.30
11	30.40	18.00	12.00	7.00	9.30	313.10	75.00	30.00	24.20
12	27.90	14.50	1.70	5.20	7.60	226.00	91.00	36.00	21.20
13	30.20	14.50	0.00	9.00	10.40	233.80	86.00	28.00	22.40
14	28.50	16.60	2.50	5.00	3.70	405.80	80.00	35.00	22.60
15	20.70	14.40	0.00	2.00	2.30	298.40	90.00	56.00	17.60
16	25.40	13.20	0.00	4.50	6.40	215.20	92.00	40.00	19.30
17	17.70	14.00	6.00	0.50	0.20	88.70	92.00	66.00	15.90
18	23.30	13.00	0.00	3.50	0.90	143.70	92.00	50.00	18.20
19	23.50	14.80	44.70	**********	2.00	141.50	88.00	46.00	19.20
20	26.30	15.30	0.00	5.00	8.00	173.90	90.00	40.00	20.80
21	20.30	14.70	1.50	1.50	1.90	78.30	92.00	56.00	17.50
22	26.50	11.80	0.00	6.00	9.20	130.00	92.00	34.00	19.20
23	27.20	16.50	30.00	*****	7.70	278.40	87.00	35.00	21.90
24	27.20	14.00	0.00	4.50	10.50	220.50	90.00	35.00	20.60
25	25.80	15.00	25.40	**	6.80	370.20	76.00	46.00	20.40
26	25.90	13.00	0.00	7.50	9.60	235.10	90.00	39.00	19.50
27	23.50	15.00	0.00	3.50	0.50	181.10	82.00	37.00	19.30
28	26.90	13.20	0.00	7.00	11.50	163.90	86.00	35.00	20.10
29	29.50	13.50	0.00	8.00	12.40	134.70	86.00	26.00	21.50
30	31.70	12.50	0.00	5.00	12.60	100.10	83.00	23.00	22.10
31	31.70	11.90	0.00	3.00	******	228.80	81.00	23.00	21.80
Avg	25.63	13.79	7.45	4.29	6.37	224.41	87.68	39.74	19.73
Min	17.70	10.80	0.00	0.00	0.00	78.30	75.00	23.00	15.90
Max	32.00	18.00	44.70	9.00	12.60	446.90	93.00	66.00	24.20
Total	794.50	427.40	231.00	133.10	197.50	6956.80	2718.00	1232.00	611.60

Climatological Information for November 1993

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	32.00	12.50	0.00	12.00	12.30	144.00	87.00	20.00	22.30
2	31.50	15.00	6.30	11.30	10.20	480.80	71.00	33.00	23.30
3	28.00	16.00	0.00	10.50	9.90	285.80	80.00	26.00	22.00
4	25.20	11.30	0.00	6.00	11.90	221.30	80.00	34.00	18.30
5	22.50	14.50	25.00	*******	2.70	251.90	88.00	52.00	18.50
6	20.60	9.80	0.00	5.00	11.00	216.40	86.00	40.00	15.20
7	23.40	9.40	0.00	6.50	10.30	189.80	81.00	38.00	16.40
8	24.60	11.40	0.00	7.50	7.70	191.40	81.00	35.00	18.00
9	27.40	11.00	0.00	8.00	12.50	161.30	84.00	27.00	19.20
10	29.70	14.60	11.30	8.80	10.20	254.40	82.00	26.00	22.20
11	23.50	14.00	12.80	2.30	4.20	226.50	88.00	48.00	18.80
12	23.30	12.40	2.30	6.30	9.30	158.90	88.00	36.00	17.90
13	24.80	12.50	0.00	7.00	12.00	201.90	86.00	32.00	18.70
14	27.20	13.10	0.00	8.00	12.00	214.60	84.00	32.00	20.20
15	27.00	14.00	0.00	7.50	11.70	195.50	75.00	27.00	20.50
16	28.70	13.00	0.00	8.00	11.40	134.30	80.00	28.00	20.90
17	27.70	17.60	0.00	7.00	2.80	185.80	73.00	35.00	22.70
18	30.00	15.40	0.00	6.00	7.20	161.00	86.00	28.00	22.70
19	31.30	18.00	1.50	9.50	8.00	240.10	72.00	33.00	24.70
20	29.80	18.00	0.50	7.00	3.50	193.20	86.00	32.00	23.90
21	29.30	17.00	2.60	6.60	4.90	211.80	87.00	34.00	23.20
22	24.00	17.60	3.50	2.00	0.10	183.10	84.00	56.00	20.80
23	24.00	13.20	0.00	9.00	9.50	233.30	90.00	24.00	18.60
24	23.30	12.40	0.00	7.00	6.90	325.60	82.00	43.00	17.90
25	25.60	11.00	0.00	5.00	7.10	181.50	86.00	36.00	18.30
26	24.50	12.50	0.00	8.00	10.90	118.80	90.00	41.00	18.50
27	26.00	13.20	0.00	5.50	**********	113.20	86.00	34.00	19.60
28	26.20	11.80	0.00	4.50	**********	273.50	87.00	31.00	19.00
29	27.70	15.80	0.00	10.00	10.20	207.10	79.00	30.00	21.80
30	31.60	14.60	0.00	12.00	11.20	276.50	84.00	26.00	23.10
Avg	26.68	13.75	2.19	7.13	8.05	214.44	83.10	33.90	20.24
Min	20.60	9.40	0.00	0.00	0.00	113.20	71.00	20.00	15.20
Max	32.00	18.00	25.00	12.00	12.50	480.80	90.00	56.00	24.70
Total	800.40	412.60	65.80	213.80	241.60	6433.30	2493.00	1017.00	607.20

Climatological Information for December 1993

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	34.00	17.60	0.00	13.50	8.90	326.00	64.00	25.00	25.80
2	32.80	19.20	1.00	11.50	6.90	339.30	86.00	27.00	26.00
3	30.50	17.00	2.70	8.70	11.20	305.30	88.00	30.00	23.80
4	29.00	15.00	0.00	6.50	*	143.40	88.00	34.00	22.00
5	30.80	16.60	0.00	13.00	*	474.60	85.00	28.00	23.70
6	31.80	18.00	0.00	15.00	11.70	342.60	74.00	23.00	24.90
7	33.80	13.50	15.00	13.00	9.50	321.20	84.00	24.00	23.70
8	30.00	16.80	13.00	8.00	6.00	305.90	86.00	33.00	23.40
9	29.80	17.60	1.00	9.30	9.60	295.70	76.00	37.00	23.70
10	30.50	18.30	0.30	11.00	11.00	243.30	88.00	22.00	24.40
11	28.70	15.00	0.00	*	7.50	307.70	90.00	37.00	21.90
12	27.00	15.20	24.20	7.50	5.50	220.70	95.00	40.00	21.10
13	28.00	14.30	6.00	8.00	12.50	173.30	86.00	32.00	21.20
14	30.70	14.80	0.00	9.00	12.00	151.90	78.00	28.00	22.80
15	29.00	17.70	2.50	9.30	6.00	247.60	90.00	37.00	23.40
16	27.70	15.50	15.30	6.20	7.90	164.70	86.00	36.00	21.60
17	27.20	16.50	0.20	6.00	5.70	267.00	83.00	33.00	21.90
18	30.20	16.50	0.00	10.50	9.90	175.00	76.00	23.00	23.40
19	29.50	11.60	0.00	8.50	12.30	144.40	86.00	23.00	20.60
20	27.80	17.00	0.00	8.50	8.90	248.00	80.00	40.00	22.40
21	24.00	16.80	6.50	8.00	1.60	239.70	87.00	50.00	20.40
22	25.60	15.30	0.00	5.50	3.40	240.40	88.00	46.00	20.50
23	24.00	15.30	0.00	5.50	5.50	217.40	78.00	46.00	19.70
24	26.00	13.80	0.00	6.00	4.70	136.30	87.00	37.00	19.90
25	29.40	13.50	1.00	8.00	10.70	223.70	86.00	33.00	21.50
26	30.60	16.50	0.70	9.20	4.20	229.20	87.00	30.00	23.60
27	27.40	16.50	0.00	5.50	2.80	151.00	77.00	35.00	22.00
28	29.80	16.20	10.50	8.50	2.80	253.50	88.00	36.00	23.00
29	19.60	15.50	17.50	**********	7.00	112.80	88.00	74.00	17.60
30	25.00	15.00	7.50	13.00	8.30	88.90	88.00	48.00	20.00
31	25.00	17.30	19.40	**********	0.00	294.40	85.00	48.00	21.20
Avg	28.55	15.98	4.65	8.14	6.90	238.22	84.13	35.32	22.29
Min	19.60	11.60	0.00	0.00	0.00	88.90	64.00	22.00	17.60
Max	34.00	19.20	24.20	15.00	12.50	474.60	95.00	74.00	26.00
Total	885.20	495.40	144.30	252.20	214.00	7384.90	2608.00	1095.00	691.10

Climatical Information for January 1994

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	24.60	16.30	4.70	6.70	4.20	133.70	87.00	56.00	20.50
2	28.80	13.40	0.00	8.00	11.60	128.90	87.00	30.00	21.10
3	30.70	15.50	0.00	10.00	11.90	231.60	83.00	21.00	23.10
4	26.30	17.30	0.00	7.50	3.90	280.60	77.00	43.00	21.80
5	24.80	14.30	0.00	4.50	8.50	115.90	76.00	45.00	19.60
6	26.80	15.00	0.00	7.50	8.90	95.10	88.00	40.00	20.90
7	28.40	16.60	0.00	8.50	10.00	155.50	84.00	35.00	22.50
8	27.90	13.60	0.00	6.00	4.30	134.60	85.00	35.00	20.80
9	29.10	126.00	0.00	9.50	9.10	152.00	88.00	35.00	22.60
10	28.20	17.50	2.30	6.30	2.50	174.40	78.00	43.00	22.90
11	18.00	14.50	21.50	*****	0.00	150.10	95.00	78.00	16.30
12	23.00	15.50	28.70	**********	0.40	208.30	94.00	56.00	19.30
13	25.80	15.00	0.00	6.00	9.20	92.40	94.00	44.00	20.40
14	27.00	12.50	0.00	7.00	12.20	143.00	94.00	37.00	19.80
15	27.70	14.80	0.00	7.50	10.10	119.40	93.00	30.00	21.30
16	28.20	14.10	0.00	8.50	11.90	134.20	92.00	35.00	21.20
17	28.00	16.50	1.30	5.30	6.50	170.00	90.00	45.00	22.30
18	27.50	15.40	0.00	6.00	7.80	116.60	91.00	43.00	21.50
19	28.10	16.00	0.00	6.00	9.70	125.40	93.00	40.00	22.10
20	25.70	16.10	39.50	*	4.60	148.60	93.00	50.00	20.90
21	26.00	16.50	19.00	4.00	3.40	148.50	95.00	45.00	21.30
22	26.20	15.30	0.00	1.50	5.80	77.50	93.00	50.00	20.80
23	20.40	17.30	2.00	5.00	0.00	226.50	93.00	73.00	18.90
24	21.60	16.50	5.70	3.20	0.80	240.20	92.00	56.00	19.10
25	19.00	13.70	0.20	3.20	0.00	133.50	94.00	70.00	16.40
26	24.40	13.30	0.00	4.00	5.50	66.70	94.00	47.00	18.90
27	25.60	14.60	0.00	5.00	5.60	104.50	94.00	46.00	20.10
28	27.40	14.30	0.00	5.00	9.20	84.70	94.00	43.00	20.90
29	29.70	14.70	0.00	7.00	10.70	108.60	93.00	36.00	22.20
30	27.50	17.20	0.00	9.00	7.30	131.60	91.00	46.00	22.40
31	27.70	17.80	0.00	6.00	6.00	120.10	94.00	44.00	22.80
Avg	26.13	18.94	4.03	5.60	6.50	143.64	89.97	45.06	20.80
Min	18.00	12.50	0.00	0.00	0.00	66.70	76.00	21.00	16.30
Max	30.70	126.00	39.50	10.00	12.20	280.60	95.00	78.00	23.10
Total	810.10	587.10	124.90	173.70	201.60	4452.70	2789.00	1397.00	644.70

Climatological Information for February 1994

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	29.50	16.00	0.00	6.50	6.70	127.90	90.00	36.00	22.80
2	31.10	14.60	11.80	7.30	9.20	168.50	94.00	35.00	22.90
3	26.90	16.70	0.00	6.00	5.90	144.60	94.00	44.00	21.80
4	23.00	17.30	5.50	1.50	0.50	76.30	95.00	66.00	20.20
5	22.70	17.20	92.20	******	0.30	160.20	94.00	72.00	20.00
6	24.50	16.00	1.70	1.70	1.80	142.90	94.00	58.00	20.30
7	22.50	16.00	0.50	4.50	3.60	274.60	93.00	60.00	19.30
8	16.60	14.20	1.30	2.30	0.00	129.30	92.00	74.00	15.40
9	23.40	15.40	10.00	3.00	2.70	81.30	94.00	60.00	19.40
10	27.50	15.20	0.00	4.50	10.50	70.30	94.00	43.00	21.40
11	28.60	15.00	1.50	8.00	9.40	109.60	94.00	36.00	21.80
12	23.30	16.60	3.00	2.00	1.70	142.50	91.00	64.00	20.00
13	23.00	15.50	0.50	1.50	1.50	103.90	94.00	57.00	19.30
14	25.20	13.60	0.00	4.00	8.20	68.00	94.00	45.00	19.40
15	26.20	14.60	16.00	4.50	6.90	83.40	94.00	49.00	20.40
16	25.60	15.50	0.00	6.00	7.00	119.40	94.00	50.00	20.60
17	25.40	14.50	0.20	1.70	6.50	78.40	94.00	49.00	20.00
18	28.50	14.60	7.70	4.70	8.00	101.20	94.00	41.00	21.60
19	28.10	14.80	0.00	4.00	11.20	114.60	94.00	34.00	21.50
20	26.70	11.40	0.00	9.50	11.00	104.80	93.00	33.00	19.10
21	25.60	10.80	0.00	6.50	10.50	160.50	94.00	38.00	18.20
22	24.40	13.70	0.00	3.50	3.80	100.50	92.00	46.00	19.10
23	25.20	13.60	33.00	********	4.20	118.00	94.00	45.00	19.40
24	27.20	12.80	0.00	6.50	9.70	77.00	94.00	36.00	20.00
25	29.30	12.70	0.00	6.50	11.70	99.30	94.00	32.00	21.00
26	28.00	14.50	0.00	**********	*********	*	91.00	34.00	21.30
27	28.40	13.30	0.00	**********	11.70	**********	91.00	33.00	20.90
28	28.30	13.30	0.00	7.50	9.50	136.20	93.00	33.00	20.80
Avg	25.88	14.62	6.60	4.06	6.20	110.47	93.32	46.54	20.28
Min	16.60	10.80	0.00	0.00	0.00	0.00	90.00	32.00	15.40
Max	31.10	17.30	92.20	9.50	11.70	274.60	95.00	74.00	22.90
Total	724.70	409.40	184.90	113.70	173.70	3093.20	2613.00	1303.00	567.90

Climatical Information for March 1994

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	28.70	13.70	0.00	7.00	11.60	101.90	82.00	35.00	21.20
2	27.30	13.40	4.00	3.00	6.00	136.20	93.00	44.00	20.35
3	23.50	15.00	0.10	3.60	0.00	121.20	93.00	55.00	19.25
4	23.00	13.30	0.00	3.00	2.00	97.70	94.00	53.00	18.15
5	22.80	13.80	2.00	4.00	7.70	124.20	94.00	52.00	18.30
6	25.90	12.40	0.00	4.00	4.30	101.00	94.00	37.00	19.15
7	26.00	13.60	0.70	4.70		158.00	82.00	43.00	19.80
8	24.20	16.50	9.50	4.50	4.30	183.80	92.00	64.00	20.35
9	27.40	13.20	0.00	8.00	1.60	193.80	93.00	33.00	20.30
10	27.50	10.00	0.00	5.50	9.80	82.60	94.00	33.00	18.75
11	28.60	11.00	0.00	7.50	11.50	113.80	94.00	25.00	19.80
12	28.70	9.50	0.00	8.00	11.60	125.20	91.00	26.00	19.10
13	29.20	13.50	15.00	6.00	9.30	159.00	88.00	32.00	21.35
14	28.00	13.60	3.00	5.00	8.50	157.00	90.00	37.00	20.80
15	27.50	12.80	0.00	6.50	10.40	165.70	94.00	33.00	20.15
16	26.60	12.00	0.00	2.50	11.50	89.90	94.00	35.00	19.30
17	28.80	9.40	0.00	6.50	11.30	89.30	95.00	30.00	19.10
18	28.80	9.60	0.00	5.00	11.50	117.70	93.00	28.00	19.20
19	26.00	12.00	3.50	5.50	6.50	64.00	93.00	46.00	19.00
20	26.00	10.00	0.00	3.50	8.00	127.10	94.00	36.00	18.00
21	26.50	10.90	0.00	4.50	7.50	78.20	94.00	32.00	18.70
22	25.10	10.60	0.00	4.00	2.60	101.00	93.00	34.00	17.85
23	28.40	11.70	3.80	3.80	5.60	89.80	90.00	32.00	20.05
24	29.10	11.30	0.00	6.00	7.30	119.00	93.00	31.00	20.20
25	29.60	12.00	0.20	6.20	8.90	193.90	90.00	33.00	20.80
26	30.20	10.50	0.00	6.00	10.90	100.10	95.00	30.00	20.35
27	31.50	14.70	0.70	8.20	*	192.00	80.00	31.00	23.10
28	30.60	12.50	0.00	8.00	10.00	196.20	91.00	32.00	21.55
29	29.70	14.00	0.00	7.00	*	222.70	93.00	29.00	21.85
30	27.90	14.80	0.00	7.00	6.80	205.20	78.00	37.00	21.35
31	24.00	14.70	0.00	6.00	11.00	142.30	87.00	43.00	19.35
Avg	27.33	12.45	1.37	5.48	7.27	133.85	91.00	36.48	19.89
Min	22.80	9.40	0.00	2.50	0.00	64.00	78.00	25.00	17.85
Max	31.50	16.50	15.00	8.20	11.60	222.70	95.00	55.00	23.10
Total	847.10	386.00	42.50	170.00	218.00	4149.50	2821.00	1131.00	616.55

Climatical Information for April 1994

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	29.50	10.00	0.00	6.00	*****	106.10	91.00	35.00	19.80
2	29.10	9.00	0.00	5.00	****	11.00	93.00	27.00	19.10
3	28.00	9.80	0.00	4.50	****	104.50	88.00	28.00	18.90
4	28.50	10.70	0.00	1.00	10.10	106.00	87.00	28.00	19.60
5	29.00	10.00	0.00	5.50	8.10	87.60	87.00	33.00	19.50
6	29.70	12.20	0.00	4.50	8.30	81.90	90.00	32.00	21.00
7	28.30	12.30	0.00	8.00	6.70	118.70	88.00	33.00	20.30
8	26.70	11.60	1.00	6.00	6.60	154.90	91.00	36.00	19.20
9	27.00	10.70	0.00	6.00	10.10	64.30	93.00	34.00	18.90
10	29.00	9.00	13.00	6.00	*****	168.30	93.00	32.00	19.00
11	25.40	12.60	0.00	2.00	8.70	92.00	90.00	36.00	19.00
12	25.50	10.50	0.00	4.00	10.60	87.60	93.00	33.00	18.00
13	27.50	8.70	0.00	5.50	1.30	89.30	91.00	27.00	18.10
14	28.50	9.70	0.00	5.50	11.00	99.10	85.00	26.00	19.10
15	29.30	9.30	0.60	6.60	10.00	99.70	86.00	26.00	19.30
16	28.00	10.20	0.30	4.80	8.10	98.80	82.00	33.00	19.10
17	26.50	6.50	0.00	5.00	7.00	83.10	93.00	23.00	16.50
18	28.70	4.30	0.00	10.00	10.30	122.60	86.00	17.00	16.50
19	28.40	7.60	0.00	1.00	10.60	307.00	88.00	35.00	18.00
20	26.80	13.50	1.30	6.80	**********	276.10	93.00	33.00	20.20
21	25.50	9.70	5.00	1.50	8.30	202.60	92.00	33.00	17.60
22	19.00	2.50	0.00	6.50	10.00	109.80	94.00	34.00	10.80
23	21.00	2.00	0.00	4.50	10.90	102.90	94.00	31.00	11.50
24	22.00	2.50	0.00	3.00	9.30	98.90	94.00	30.00	12.30
25	21.50	5.00	0.00	2.50	7.10	86.00	93.00	33.00	13.30
26	22.00	2.50	0.00	3.50	9.40	82.60	94.00	27.00	12.30
27	23.50	4.50	0.00	5.00	10.50	171.60	88.00	26.00	14.00
28	27.00	7.50	0.30	4.30	9.30	142.80	74.00	26.00	17.30
29	26.00	12.50	1.70	5.70	6.10	163.60	85.00	33.00	19.30
30	21.00	7.70	0.00	4.00	10.50	231.60	93.00	42.00	14.40
Avg	26.26	8.49	0.77	4.81	7.30	125.03	89.63	30.73	17.40
Min	19.00	2.00	0.00	1.00	0.00	11.00	74.00	17.00	10.80
Max	29.70	13.50	13.00	10.00	11.00	307.00	94.00	42.00	21.00
Total	787.90	254.60	23.20	144.20	218.90	3751.00	2689.00	922.00	521.90

Climatological Information for May 1994

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	19.00	12.00	2.30	2.80	4.80	151.50	95.00	67.00	15.50
2	22.60	11.30	12.50	3.00	1.10	124.10	96.00	45.00	17.00
3	22.60	8.50	0.00	3.50	9.60	60.60	96.00	37.00	15.60
4	22.60	8.80	2.00	1.50	5.70	131.80	97.00	38.00	15.70
5	23.80	9.20	0.00	4.50	9.70	147.60	96.00	43.00	16.50
6	23.00	11.60	5.00	3.50	5.80	166.30	96.00	41.00	17.30
7	21.50	11.50	0.00	3.50	5.40	110.20	97.00	47.00	16.50
8	18.00	3.50	0.00	4.00	10.00	87.90	97.00	39.00	10.80
9	20.30	3.80	0.00	2.50	10.00	62.80	96.00	39.00	12.10
10	22.00	4.50	0.00	3.50	8.90	55.10	97.00	37.00	13.30
11	21.50	5.10	0.00	6.50	9.10	37.00	97.00	36.00	13.30
12	22.80	4.60	0.00	3.00	10.10	51.50	97.00	35.00	13.70
13	22.00	6.50	0.00	4.50	10.30	121.80	93.00	31.00	14.30
14	21.80	5.00	0.00	3.00	10.00	57.70	92.00	26.00	13.40
15	23.00	2.60	0.00	4.00	9.80	65.40	95.00	27.00	12.80
16	22.80	5.00	0.00	3.00	9.70	58.80	93.00	40.00	13.90
17	23.60	6.00	0.00	3.00	8.40	72.30	96.00	38.00	14.80
18	22.40	5.50	0.00	2.50	8.60	74.80	93.00	33.00	14.00
19	22.20	5.60	0.00	4.00	7.20	138.10	96.00	36.00	13.90
20	24.00	7.70	0.00	6.50	8.50	219.40	87.00	36.00	15.90
21	20.00	7.40	0.00	4.00	9.70	106.10	93.00	31.00	13.70
22	14.50	2.70	0.00	2.00	1.00	30.10	96.00	50.00	8.60
23	17.00	0.50	0.00	2.00	9.80	81.80	97.00	24.00	8.80
24	20.00	-3.00	0.00	2.50	6.00	63.10	91.00	44.00	8.50
25	20.00	5.60	0.00	3.50	7.90	55.70	97.00	36.00	12.80
26	20.00	4.00	0.00	1.00	6.80	46.30	96.00	37.00	12.00
27	20.30	3.50	0.00	4.00	8.80	128.10	96.00	32.00	11.90
28	18.40	4.80	0.00	3.00	7.40	105.90	94.00	36.00	11.60
29	16.50	4.10	0.00	3.00	7.50	132.30	95.00	51.00	10.30
30	19.30	2.70	0.00	3.00	7.60	70.90	97.00	44.00	11.00
31	19.80	2.30	0.00	3.00	9.40	50.10	97.00	36.00	11.10
Avg	20.88	5.58	0.70	3.33	7.89	92.42	95.16	38.45	13.25
Min	14.50	-3.00	0.00	1.00	1.00	30.10	87.00	24.00	8.50
Max	24.00	12.00	12.50	6.50	10.30	219.40	97.00	67.00	17.30
Total	647.30	172.90	21.80	103.30	244.60	2865.10	2950.00	1192.00	410.60

Climatical Information for June 1994

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	22.00	-0.20	0.00	2.00	9.60	101.40	88.00	31.00	109.00
2	21.00	4.40	0.00	4.00	10.10	178.40	91.00	34.00	12.70
3	20.80	4.90	0.00	3.50	******	141.90	90.00	33.00	12.90
4	21.80	2.20	0.00	4.50	**********	121.60	90.00	30.00	12.00
5	21.80	4.50	0.00	5.00	**********	223.90	64.00	34.00	13.20
6	12.00	-5.00	0.00	4.00	9.30	166.80	90.00	37.00	3.50
7	15.80	-7.60	0.00	2.00	8.10	74.80	96.00	33.00	4.10
8	17.10	-3.90	0.00	2.00	9.50	109.50	67.00	35.00	6.60
9	15.00	-7.30	0.00	2.50	8.90	144.60	90.00	33.00	3.90
10	19.50	-6.00	0.00	3.00	8.70	106.70	95.00	26.00	6.80
11	18.60	-1.30	0.00	2.00	6.40	101.60	85.00	25.00	8.70
12	17.40	1.50	0.00	2.50	2.10	79.60	83.00	44.00	9.50
13	17.00	6.10	0.00	3.50	0.00	109.00	70.00	40.00	11.60
14	18.00	-0.30	0.00	3.50	8.60	110.40	87.00	32.00	8.90
15	16.90	-3.60	0.00	3.00	9.30	134.30	78.00	31.00	6.70
16	17.00	-1.30	0.00	2.50	8.30	173.30	78.00	34.00	7.90
17	19.00	0.80	0.00	4.50	8.90	186.30	72.00	39.00	9.90
18	15.80	-0.90	0.00	3.00	8.80	140.70	92.00	38.00	7.50
19	14.90	-7.50	0.00	3.00	8.90	100.90	97.00	32.00	3.70
20	21.50	-3.70	0.00	6.50	9.20	280.20	66.00	20.00	8.90
21	19.00	3.50	0.00	5.50	8.50	150.60	65.00	32.00	11.30
22	22.00	-2.00	0.00	4.50	8.20	250.00	88.00	28.00	10.00
23	20.50	5.30	0.00	4.50	7.70	306.60	92.00	42.00	12.90
24	22.60	5.60	0.00	5.50	8.40	240.50	936.00	27.00	14.10
25	23.00	0.70	0.00	4.50	9.40	138.50	75.00	23.00	11.90
26	24.70	0.50	0.00	6.00	9.70	231.80	62.00	26.00	12.60
27	23.50	5.50	0.00	9.50	9.20	362.20	60.00	30.00	14.50
28	6.50	2.00	0.00	2.00	3.60	294.20	90.00	45.00	4.30
29	8.20	-6.70	0.00	3.50	6.70	253.70	96.00	46.00	0.80
30	10.50	-7.30	0.00	2.50	9.00	1498.80	93.00	36.00	1.60
Avg	18.11	-0.57	0.00	3.82	7.17	217.09	110.87	33.20	12.07
Min	6.50	-7.60	0.00	2.00	0.00	74.80	60.00	20.00	0.80
Max	24.70	6.10	0.00	9.50	10.10	1498.80	936.00	46.00	109.00
Total	543.40	-17.10	0.00	114.50	215.10	6512.80	3326.00	996.00	362.00

Climatological Information for July 1994

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	12.70	-9.40	0.00	5.00	9.60	112.10	87.00	38.00	1.70
2	15.50	-5.60	0.00	10.00	9.60	*	95.00	34.00	5.00
3	16.00	-6.40	0.00	3.00	9.40	75.70	94.00	34.00	4.80
4	15.70	-6.80	0.00	3.00	9.50	111.80	85.00	31.00	4.50
5	15.60	-7.00	0.00	2.50	9.60	90.80	78.00	30.00	4.30
6	19.50	-6.50	0.00	2.50	9.30	140.20	76.00	27.00	6.50
7	18.50	-0.60	0.00	3.00	9.40	110.60	85.00	32.00	9.00
8	18.30	-6.40	0.00	3.00	9.70	101.60	93.00	30.00	6.00
9	19.30	-4.00	0.00	2.50	9.10	88.80	80.00	30.00	7.70
10	16.80	-0.90	0.00	5.00	9.20	229.40	70.00	33.00	8.00
11	13.50	-2.70	0.00	2.50	9.70	118.10	85.00	36.00	5.40
12	18.70	-7.30	0.00	3.00	9.30	95.30	76.00	27.00	5.70
13	19.30	-3.50	0.00	3.00	9.60	78.20	76.00	27.00	7.90
14	19.50	-3.50	0.00	3.00	9.40	89.30	73.00	28.00	8.00
15	20.30	-4.30	0.00	3.50	9.60	90.80	67.00	27.00	8.00
16	20.20	-4.20	0.00	3.50	*	170.30	63.00	30.00	8.00
17	20.00	-2.00	0.00	5.50	*	166.50	77.00	32.00	9.00
18	19.40	-1.10	0.00	4.50	9.40	199.80	75.00	33.00	9.20
19	20.20	-0.50	0.00	3.50	9.40	96.60	80.00	36.00	9.90
20	19.60	-2.00	0.00	4.00	9.40	150.50	88.00	34.00	8.80
21	19.10	-0.60	0.00	3.00	9.90	92.90	76.00	33.00	9.30
22	20.70	-0.70	0.00	5.00	9.40	146.60	71.00	33.00	10.00
23	20.60	0.50	0.00	6.50	9.60	271.00	56.00	30.00	10.60
24	23.50	2.50	0.00	8.00	8.40	289.00	62.00	27.00	13.00
25	10.50	-0.60	0.00	0.10	1.60	210.10	88.00	57.00	5.00
26	10.50	0.00	0.00	0.50	4.00	210.50	96.00	53.00	5.30
27	16.60	-6.00	0.00	2.00	8.90	83.00	97.00	33.00	5.30
28	18.50	-2.50	0.00	2.50	9.80	104.00	87.00	31.00	8.00
29	18.00	-3.30	0.00	5.00	10.30	117.80	93.00	28.00	7.40
30	17.20	-0.20	0.00	4.00	****	149.30	88.00	34.00	8.50
31	17.20	-1.50	0.00	2.00	****	162.80	90.00	33.00	7.90
Avg	17.77	-3.13	0.00	3.68	7.81	133.98	80.87	32.94	7.35
Min	10.50	-9.40	0.00	0.10	0.00	0.00	56.00	27.00	1.70
Max	23.50	2.50	0.00	10.00	10.30	289.00	97.00	57.00	13.00
Total	551.00	-97.10	0.00	114.10	242.10	4153.40	2507.00	1021.00	227.70

Climatical Information for August 1994

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	17.50	-2.30	0.00	3.00	10.20	92.40	80.00	31.00	7.60
2	20.50	-3.50	0.00	3.00	9.70	111.10	76.00	27.00	8.50
3	21.00	-1.00	0.00	4.00	9.90	147.30	66.00	29.00	10.00
4	19.20	1.50	0.00	4.00	7.20	191.70	63.00	36.00	10.40
5	18.00	5.00	0.00	4.00	9.90	192.60	95.00	45.00	11.50
6	19.20	-0.20	0.00	3.50	10.00	204.40	97.00	25.00	9.50
7	21.70	3.50	0.00	5.50	9.80	196.40	63.00	27.00	12.60
8	17.20	5.30	0.00	4.50	7.70	151.70	54.00	32.00	11.30
9	22.20	-5.30	0.00	3.50	10.40	117.50	90.00	23.00	8.50
10	19.80	-1.60	0.00	5.00	10.20	136.00	70.00	27.00	9.20
11	24.00	-1.70	0.00	5.00	9.50	284.40	72.00	26.00	11.20
12	25.50	8.90	0.00	8.50	9.00	439.20	77.00	35.00	17.20
13	26.00	11.50	0.00	6.50	10.60	167.60	66.00	29.00	18.80
14	18.10	5.20	0.00	12.00	*	511.70	85.00	27.00	11.70
15	19.80	-3.00	0.00	5.00	10.20	255.50	72.00	37.00	8.40
16	20.00	3.30	0.00	6.00	9.60	201.30	87.00	34.00	11.70
17	22.40	3.10	0.00	4.50	7.80	198.90	78.00	37.00	12.80
18	24.50	7.70	0.00	7.50	8.70	310.80	83.00	36.00	16.10
19	25.50	8.10	0.00	7.50	9.20	278.60	87.00	37.00	16.80
20	18.00	3.50	0.00	7.50	9.90	264.60	62.00	36.00	10.80
21	15.50	3.70	0.00	4.50	10.50	308.60	88.00	43.00	9.60
22	18.40	2.00	0.00	6.00	10.80	249.10	90.00	32.00	10.20
23	17.30	1.10	0.00	4.00	8.60	185.20	91.00	41.00	9.20
24	21.30	1.50	0.00	5.00	10.40	135.00	84.00	40.00	11.40
25	23.50	3.50	0.00	4.50	9.80	113.30	82.00	31.00	135.00
26	24.60	2.80	0.00	5.00	10.50	113.00	77.00	29.00	13.70
27	26.20	4.00	0.00	6.00	10.60	116.90	65.00	29.00	15.10
28	26.50	3.60	0.00	6.50	10.30	150.20	66.00	27.00	15.10
29	25.80	8.00	0.00	6.00	10.40	258.60	90.00	27.00	16.90
30	26.40	8.60	0.00	6.50	10.60	138.80	88.00	27.00	17.50
31	26.50	5.70	0.00	5.50	10.50	113.00	72.00	20.00	16.10
Avg	21.68	2.98	0.00	5.47	9.44	204.37	77.94	31.68	16.27
Min	15.50	-5.30	0.00	3.00	0.00	92.40	54.00	20.00	7.60
Max	26.50	11.50	0.00	12.00	10.80	511.70	97.00	45.00	135.00
Total	672.10	92.50	0.00	169.50	292.50	6335.40	2416.00	982.00	504.40

Climatological Information for September 1994

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	28.00	5.60	0.00	8.00	9.80	218.20	60.00	22.00	16.80
2	26.00	9.10	0.00	9.50	10.30	257.00	51.00	23.00	17.60
3	26.50	6.50	0.00	7.00	**********	173.10	53.00	23.00	16.50
4	26.30	6.50	0.00	925.00	10.80	269.10	49.00	20.00	16.40
5	26.40	3.80	0.00	6.00	9.30	119.50	47.00	23.00	15.10
6	28.30	5.00	0.00	10.00	10.60	267.90	46.00	21.00	16.70
7	28.30	8.50	0.00	8.50	10.50	189.90	44.00	23.00	18.40
8	25.50	6.00	0.00	9.50	9.80	493.70	65.00	33.00	15.80
9	21.00	6.00	0.00	3.50	10.30	81.40	73.00	33.00	13.50
10	22.70	5.30	0.00	6.50	**********	68.70	78.00	28.00	14.00
11	24.20	5.30	0.00	3.50	10.80	475.80	58.00	27.00	14.80
12	26.10	3.50	0.00	7.50	9.30	190.40	57.00	25.00	14.80
13	28.60	6.80	0.00	12.00	9.80	282.00	55.00	23.00	17.70
14	23.80	3.00	0.00	7.00	10.00	169.50	88.00	25.00	13.40
15	25.10	3.90	0.00	8.50	86.00	320.20	95.00	26.00	14.50
16	29.40	9.70	0.00	8.00	8.90	152.50	76.00	23.00	19.60
17	31.30	10.90	0.00	4.50	11.30	211.00	54.00	24.00	21.10
18	23.00	4.90	0.00	7.50	9.70	471.80	45.00	26.00	14.00
19	27.40	1.50	0.00	7.00	10.90	181.40	66.00	23.00	14.50
20	30.50	10.00	0.00	9.50	9.30	200.80	69.00	23.00	20.30
21	31.00	8.00	0.00	6.50	8.30	172.70	65.00	26.00	19.50
22	31.00	13.70	0.00	8.00	10.40	251.10	76.00	33.00	22.40
23	32.50	12.50	0.00	9.00	9.40	212.30	71.00	28.00	22.50
24	30.30	10.90	0.00	7.50	10.40	166.20	57.00	25.00	20.60
25	32.00	10.00	0.00	11.00	10.10	187.00	45.00	26.00	21.00
26	31.80	16.30	0.00	11.00	7.20	324.60	60.00	31.00	24.10
27	32.40	14.50	0.00	10.00	7.90	308.10	67.00	28.00	23.50
28	26.30	13.00	0.00	9.00	11.30	236.30	61.00	30.00	19.70
29	23.00	2.50	0.00	8.00	9.80	304.20	81.00	30.00	12.80
30	22.00	2.70	0.00	8.50	9.60	128.20	87.00	34.00	14.90
Avg	27.36	7.53	0.00	38.57	11.73	236.15	63.30	26.17	17.55
Min	21.00	1.50	0.00	3.50	0.00	68.70	44.00	20.00	12.80
Max	32.50	16.30	0.00	925.00	86.00	493.70	95.00	34.00	24.10
Total	820.70	225.90	0.00	1157.00	351.80	7084.60	1899.00	785.00	526.50

Climatological Information for October 1994

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	26.00	4.80	0.00	7.50	11.00	55.00	80.00	25.00	15.40
2	28.70	8.00	0.00	12.50	9.70	547.60	50.00	24.00	18.40
3	27.50	12.20	0.00	10.50	8.90	343.00	45.00	25.00	19.90
4	21.00	10.00	0.00	4.50	6.10	374.30	81.00	54.00	15.50
5	19.50	7.90	0.30	4.30	3.10	354.00	90.00	54.00	13.70
6	22.00	6.50	0.00	7.00	10.80	227.90	87.00	36.00	14.30
7	24.00	7.50	0.00	8.00	10.10	202.50	68.00	33.00	15.80
8	24.70	9.00	0.00	10.00	7.80	237.00	61.00	34.00	16.90
9	26.00	8.10	0.00	6.00	9.80	220.90	61.00	34.00	17.10
10	30.50	10.00	0.00	12.00	**********	389.20	61.00	26.00	20.30
11	29.00	10.00	0.00	10.50	7.40	376.90	84.00	32.00	19.50
12	26.90	10.00	0.00	10.00	11.40	182.90	83.00	26.00	18.50
13	27.40	4.50	0.00	7.00	11.50	141.40	79.00	26.00	16.00
14	19.50	9.70	13.00	4.00	3.50	341.60	92.00	60.00	14.60
15	19.80	6.70	0.00	5.00	11.40	244.90	94.00	44.00	13.30
16	23.50	5.20	0.00	8.00	11.60	106.30	96.00	32.00	14.40
17	30.00	8.00	0.00	11.00	12.20	164.10	83.00	22.00	19.00
18	30.20	11.80	0.00	9.50	11.30	197.00	73.00	24.00	21.00
19	30.90	13.50	0.00	9.50	9.40	233.20	61.00	26.00	22.20
20	32.00	17.50	0.00	14.50	6.50	441.00	45.00	25.00	24.80
21	24.50	6.00	8.30	8.50	12.50	169.20	60.00	29.00	15.30
22	31.50	6.50	0.00	10.00	11.70	240.80	65.00	25.00	19.00
23	24.80	13.00	0.00	3.80	5.20	324.80	89.00	51.00	18.90
24	32.00	13.00	0.00	13.50	11.70	263.10	94.00	23.00	22.50
25	32.00	9.00	0.80	9.00	10.90	155.40	66.00	17.00	20.50
26	33.50	11.80	0.00	11.50	9.80	220.70	80.00	22.00	22.70
27	30.00	12.00	0.00	6.80	3.10	188.40	73.00	32.00	21.00
28	28.00	16.10	2.70	7.20	3.40	255.80	90.00	38.00	22.10
29	25.00	12.50	0.00	6.50	11.80	268.80	94.00	35.00	18.80
30	28.50	12.50	0.00	7.50	*******	259.00	93.00	26.00	20.50
31	24.10	12.00	0.20	8.70	8.70	298.80	80.00	37.00	18.10
Avg	26.87	9.85	0.82	8.53	8.46	258.89	76.06	32.16	18.39
Min	19.50	4.50	0.00	3.80	0.00	55.00	45.00	17.00	13.30
Max	33.50	17.50	13.00	14.50	12.50	547.60	96.00	60.00	24.80
Total	833.00	305.30	25.30	264.30	262.30	8025.50	2358.00	997.00	570.00

Climatical Information for November 1994

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	27.00	7.50	0.00	8.50	10.80	160.20	88.00	25.00	17.30
2	23.00	13.00	3.00	4.50	0.00	181.20	68.00	26.00	18.00
3	21.30	13.50	0.00	*******	2.00	**	93.00	54.00	17.40
4	27.00	10.50	0.00	*********	12.20	********	94.00	27.00	18.80
5	28.80	11.00	6.00	10.00	11.70	265.80	90.00	30.00	19.90
6	32.00	14.00	0.00	5.50	********	298.10	86.00	26.00	23.00
7	34.30	17.00	0.00	12.50	11.10	361.80	68.00	26.00	25.70
8	33.70	18.10	3.30	8.80	4.80	281.50	73.00	31.00	25.90
9	27.00	16.60	0.00	4.00	0.20	187.70	86.00	37.00	21.80
10	32.00	14.80	0.00	5.00	8.90	201.80	84.00	31.00	23.40
11	29.00	16.00	0.00	8.50	3.80	298.20	90.00	39.00	22.50
12	29.50	16.00	18.50	4.00	2.40	253.60	94.00	40.00	22.80
13	23.80	15.00	13.50	10.50	0.50	192.40	94.00	55.00	19.40
14	27.00	15.70	0.30	3.80	0.70	221.70	88.00	38.00	21.40
15	20.90	12.50	0.00	3.00	2.80	135.80	93.00	41.00	16.70
16	26.50	9.50	0.00	6.50	6.00	185.30	94.00	26.00	18.00
17	29.00	14.00	0.00	9.00	8.30	286.90	90.00	28.00	21.50
18	29.70	14.60	2.00	5.50	12.50	295.20	91.00	32.00	22.20
19	32.10	17.00	0.00	8.00	10.20	214.10	86.00	24.00	24.60
20	31.90	12.10	0.00	9.50	11.00	139.50	83.00	22.00	22.00
21	33.50	14.20	0.00	15.00	11.20	318.50	77.00	21.00	23.90
22	33.50	13.60	0.00	13.50	7.20	290.90	66.00	22.00	23.60
23	33.50	17.20	0.00	12.00	9.60	283.30	65.00	25.00	25.40
24	325.50	12.00	0.00	8.00	11.60	236.40	86.00	36.00	18.80
25	28.50	11.60	0.00	9.50	12.50	189.40	90.00	26.00	20.10
26	30.50	12.50	0.00	4.50	12.50	402.70	76.00	28.00	21.50
27	33.50	16.30	0.00	15.00	11.00	274.60	57.00	27.00	24.90
28	27.60	13.20	0.00	15.00	11.30	390.30	60.00	18.00	20.40
29	22.00	11.50	0.00	6.50	2.80	392.20	70.00	46.00	16.80
30	24.30	12.30	0.00	8.50	5.60	190.10	64.00	40.00	18.30
Avg	38.60	13.76	1.55	7.82	7.17	237.64	81.47	31.57	21.20
Min	20.90	7.50	0.00	0.00	0.00	0.00	57.00	18.00	16.70
Max	325.50	18.10	18.50	15.00	12.50	402.70	94.00	55.00	25.90
Total	1157.90	412.80	46.60	234.60	215.20	7129.20	2444.00	947.00	636.00

Climatological Information for December 1994

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	27.10	11.10	0.00	8.00	9.30	213.70	86.00	33.00	19.10
2	31.00	15.30	0.00	11.50	10.80	264.40	72.00	29.00	23.20
3	32.70	14.50	0.00	11.50	12.60	322.90	76.00	24.00	23.60
4	33.80	17.50	0.00	11.50	12.00	224.80	72.00	30.00	25.70
5	30.70	21.00	5.60	12.60	1.70	284.80	56.00	36.00	25.90
6	28.80	16.30	0.00	8.00	4.20	236.40	85.00	38.00	22.60
7	29.60	14.40	0.70	5.20	4.90	171.90	90.00	36.00	22.00
8	30.00	15.00	0.00	7.50	5.30	256.00	91.00	35.00	22.50
9	28.00	16.90	1.00	5.50	1.00	176.30	90.00	40.00	22.50
10	28.60	12.20	0.00	9.00	9.80	189.00	92.00	34.00	20.40
11	19.50	13.50	0.00	4.00	5.00	368.00	82.00	50.00	16.50
12	26.40	7.50	0.00	9.00	12.70	196.60	78.00	22.00	17.00
13	31.80	12.50	0.00	12.00	12.00	258.20	50.00	25.00	22.20
14	35.40	15.00	0.00	16.00	11.30	300.10	66.00	17.00	25.20
15	33.00	15.70	0.00	9.50	12.50	170.80	80.00	24.00	24.40
16	33.10	15.70	5.50	12.50	10.00	180.00	70.00	27.00	24.40
17	32.70	15.40	0.00	5.50	9.20	277.60	80.00	31.00	24.10
18	34.00	16.00	0.00	13.00	6.30	566.70	73.00	22.00	25.00
19	34.60	14.90	0.30	13.80	9.40	293.20	64.00	24.00	24.80
20	34.00	14.50	0.00	7.50	9.70	166.90	83.00	25.00	24.30
21	34.50	18.50	0.00	13.50	5.60	329.80	64.00	28.00	26.50
22	34.00	19.30	0.00	17.00	8.90	343.90	56.00	28.00	26.70
23	34.00	21.30	0.00	5.00	12.50	96.10	88.00	32.00	27.70
24	30.10	18.00	0.00	6.50	12.20	147.10	80.00	26.00	24.10
25	30.00	5.70	0.00	*	12.00	*	82.00	18.00	17.90
26	29.00	13.20	0.00	*	*	*	80.00	40.00	21.10
27	25.00	18.50	20.50	*	*	*	90.00	50.00	21.80
28	28.70	19.00	0.00	10.00	12.80	146.50	91.00	28.00	23.90
29	30.50	15.00	0.00	7.50	12.20	397.90	80.00	28.00	22.80
30	31.00	16.30	0.00	9.50	11.70	150.00	82.00	29.00	23.70
31	31.90	18.00	19.50	15.00	6.80	282.30	86.00	31.00	25.00
Avg	30.76	15.41	1.71	8.94	8.53	226.19	77.90	30.32	23.12
Min	19.50	5.70	0.00	0.00	0.00	0.00	50.00	17.00	16.50
Max	35.40	21.30	20.50	17.00	12.80	566.70	92.00	50.00	27.70
Total	953.50	477.70	53.10	277.10	264.40	7011.90	2415.00	940.00	716.60

Climatical Information for January 1995

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	31.90	13.50	0.00	11.00	12.50	249.60	90.00	21.00	22.70
2	33.20	14.00	0.00	13.00	12.30	232.20	84.00	19.00	23.60
3	33.50	17.70	0.00	10.50	10.60	199.70	71.00	22.00	25.60
4	32.00	14.50	0.00	11.00	12.60	187.20	80.00	27.00	23.30
5	33.70	17.00	0.00	7.50	10.10	142.80	67.00	29.00	25.40
6	34.00	19.00	0.00	12.00	11.70	356.10	56.00	26.00	26.50
7	35.00	18.50	0.00	11.50	1.70	103.10	50.00	26.00	26.80
8	32.50	19.00	0.00	14.00	2.90	256.90	71.00	28.00	25.80
9	29.00	16.00	21.00	11.00	5.00	312.30	80.00	39.00	22.50
10	23.00	15.50	0.00	12.00	8.40	334.30	86.00	50.00	19.30
11	25.50	16.80	0.00	5.50	8.10	302.70	74.00	43.00	21.20
12	26.00	16.00	4.80	2.80	11.10	143.90	89.00	46.00	21.00
13	26.80	17.00	21.00	*********	4.30	198.50	90.00	49.00	21.90
14	21.40	15.00	4.50	6.00	5.00	186.20	91.00	48.00	18.20
15	25.20	16.00	3.50	7.00	3.50	123.70	90.00	43.00	20.60
16	28.00	15.50	0.00	8.00	8.00	183.10	92.00	35.00	21.80
17	29.50	16.40	0.00	7.50	10.00	167.70	86.00	33.00	23.00
18	27.00	18.30	0.40	4.90	4.10	201.10	84.00	44.00	22.70
19	28.30	17.80	0.00	7.50	8.30	161.20	75.00	36.00	23.10
20	30.90	15.50	0.00	8.00	10.40	136.00	88.00	28.00	23.20
21	29.60	16.90	0.00	6.00	3.10	178.30	89.00	36.00	23.30
22	28.40	16.80	15.00	7.00	7.20	177.10	89.00	44.00	22.60
23	31.30	16.00	0.00	8.00	11.40	123.70	90.00	24.00	23.70
24	30.20	16.00	0.00	8.00	7.60	164.30	82.00	30.00	23.10
25	32.30	17.00	0.00	10.00	11.70	165.20	74.00	26.00	24.70
26	35.00	16.20	0.00	11.00	12.90	167.40	79.00	22.00	25.60
27	35.60	19.00	0.00	13.00	9.60	244.70	57.00	26.00	27.30
28	35.00	21.50	0.00	8.50	8.00	242.00	70.00	30.00	28.30
29	32.00	18.20	1.00	5.50	1.10	147.60	80.00	33.00	25.10
30	29.00	16.00	23.00	******	1.30	227.40	89.00	40.00	22.50
31	29.00	14.00	0.00	8.00	11.90	130.00	86.00	***	21.50
Avg	30.12	16.66	3.04	8.25	7.95	198.23	79.97	32.35	23.42
Min	21.40	13.50	0.00	0.00	1.10	103.10	50.00	0.00	18.20
Max	35.60	21.50	23.00	14.00	12.90	356.10	92.00	50.00	28.30
Total	933.80	516.60	94.20	255.70	246.40	6145.00	2479.00	1003.00	725.90

Climatological Information for February 1995

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	30.60	15.80	0.00	7.50	8.90	95.50	88.00	33.00	23.20
2	31.00	17.10	5.00	5.50	6.70	238.30	90.00	38.00	24.10
3	29.00	18.00	0.00	6.00	10.60	101.70	86.00	36.00	23.50
4	31.00	17.00	7.50	13.00	10.70	148.30	88.00	33.00	24.00
5	32.00	16.50	0.00	7.00	8.10	120.20	90.00	32.00	24.30
6	33.00	17.50	0.10	9.10	8.40	142.60	76.00	29.00	25.30
7	29.60	19.00	0.00	5.00	1.50	130.50	80.00	34.00	24.30
8	30.90	16.60	0.50	6.50	4.30	158.90	86.00	28.00	23.80
9	29.00	14.50	0.00	8.00	11.30	190.50	89.00	34.00	21.80
10	30.00	15.90	0.00	8.00	12.60	119.90	84.00	32.00	23.00
11	32.80	15.00	0.00	9.00	11.00	103.20	79.00	27.00	23.90
12	33.50	17.00	0.00	12.00	12.20	139.90	70.00	23.00	25.30
13	33.50	11.50	0.00	10.00	12.60	155.60	73.00	19.00	22.50
14	32.80	13.70	0.00	10.00	12.60	113.60	55.00	23.00	23.30
15	33.70	14.20	0.00	10.00	10.00	143.30	64.00	26.00	24.00
16	32.50	16.30	0.00	10.50	10.30	126.20	70.00	30.00	24.40
17	32.00	16.00	0.00	11.50	11.50	260.20	66.00	27.00	24.00
18	21.00	17.50	0.00	0.30	0.10	160.20	90.00	67.00	19.30
19	29.00	16.90	2.80	6.30	6.00	146.00	90.00	33.00	23.00
20	29.00	14.50	8.30	6.00	6.70	109.20	92.00	33.00	21.80
21	30.30	15.80	0.00	7.50	8.90	172.30	89.00	31.00	23.10
22	30.00	14.60	0.00	7.50	11.20	125.80	86.00	35.00	22.30
23	30.00	16.00	0.00	5.00	9.40	100.70	87.00	36.00	23.00
24	32.00	17.70	17.50	10.00	7.80	153.80	83.00	32.00	24.90
25	31.00	17.20	6.50	11.50	11.00	128.60	88.00	33.00	24.10
26	29.00	17.10	0.00	2.50	4.70	131.50	87.00	37.00	23.10
27	30.00	14.60	0.00	2.50	9.50	71.90	90.00	30.00	22.30
28	30.80	15.20	0.00	7.50	9.20	143.60	88.00	27.00	23.00
Avg	30.68	16.03	1.72	7.69	8.85	140.43	82.29	32.07	23.38
Min	21.00	11.50	0.00	0.30	0.10	71.90	55.00	19.00	19.30
Max	33.70	19.00	17.50	13.00	12.60	260.20	92.00	67.00	25.30
Total	859.00	448.70	48.20	215.20	247.80	3932.00	2304.00	898.00	654.60

Climatological Information for March 1995

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	23.70	17.00	6.50	5.00	2.00	123.90	88.00	53.00	20.40
2	26.50	15.00	0.00	4.50	6.60	125.60	90.00	37.00	20.80
3	27.80	14.50	0.00	6.00	11.20	142.10	89.00	32.00	21.20
4	28.50	14.80	0.00	4.50	10.80	169.10	87.00	33.00	21.70
5	29.80	16.00	0.00	9.00	10.00	48.20	80.00	30.00	22.90
6	29.50	16.60	0.00	12.50	8.70	155.50	67.00	35.00	23.10
7	28.20	16.00	0.00	7.00	7.50	137.00	86.00	33.00	22.10
8	27.00	14.20	0.00	5.50	4.50	164.20	86.00	37.00	20.60
9	28.30	14.00	1.00	0.50	5.30	185.30	90.00	34.00	21.20
10	26.60	14.80	0.00	7.00	9.90	166.40	84.00	35.00	20.70
11	28.00	13.00	0.00	7.50	8.20	97.40	80.00	30.00	20.50
12	27.50	12.50	0.00	5.50	5.10	126.40	85.00	35.00	20.00
13	29.80	13.60	0.00	5.00	8.60	136.20	84.00	32.00	21.70
14	27.80	14.00	2.50	2.00	8.00	135.40	86.00	35.00	20.90
15	28.00	13.00	0.00	7.00	9.50	130.50	90.00	34.00	20.50
16	29.60	13.50	0.00	7.00	10.50	140.30	80.00	31.00	21.60
17	31.00	15.00	0.00	8.00	10.00	153.70	76.00	25.00	23.00
18	33.00	12.70	0.00	8.00	1.10	100.20	80.00	23.00	22.90
19	33.60	14.00	0.00	9.00	8.70	124.10	70.00	25.00	23.80
20	33.60	17.50	0.00	11.00	9.10	171.30	60.00	26.00	25.60
21	30.00	12.00	0.00	6.00	5.00	112.00	74.00	26.00	21.00
22	26.90	14.50	0.20	3.70	6.10	158.60	86.00	35.00	20.70
23	18.00	14.30	8.20	0.20	0.00	124.20	90.00	74.00	16.20
24	21.60	13.30	0.20	0.70	0.40	48.00	88.00	51.00	17.50
25	17.00	15.60	7.50	4.00	0.00	130.00	90.00	70.00	16.30
26	24.50	15.80	1.70	2.20	3.40	143.00	88.00	50.00	20.20
27	27.00	15.50	0.00	0.50	8.70	130.40	88.00	33.00	21.30
28	24.30	15.00	0.00	5.50	4.10	210.60	87.00	45.00	19.70
29	21.70	18.00	13.50	2.00	0.60	233.70	88.00	54.00	19.90
30	25.50	14.50	0.00	5.50	7.10	172.00	88.00	37.00	20.00
31	23.50	9.50	0.00	5.00	11.10	100.80	86.00	29.00	16.50
Avg	27.03	14.51	1.33	5.38	6.51	138.58	83.58	37.39	20.79
Min	17.00	9.50	0.00	0.20	0.00	48.00	60.00	23.00	16.20
Max	33.60	18.00	13.50	12.50	11.20	233.70	90.00	74.00	25.60
Total	837.80	449.70	41.30	166.80	201.80	4296.10	2591.00	1159.00	644.50

Climatical Information for April 1995

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	24.00	8.60	0.00	4.00	9.10	104.70	89.00	33.00	16.30
2	24.00	1.60	0.00	4.50	9.50	69.90	89.00	32.00	17.30
3	24.70	11.00	0.00	5.00	8.70	56.20	86.00	31.00	17.90
4	25.00	10.60	0.00	6.00	9.20	100.20	87.00	28.00	17.80
5	26.00	11.80	0.00	5.00	9.80	104.60	86.00	29.00	18.90
6	26.30	12.50	0.00	5.00	8.40	57.80	85.00	30.00	19.40
7	27.80	11.80	0.00	5.00	8.80	94.20	92.00	27.00	19.80
8	28.00	12.80	0.00	5.50	8.60	104.20	86.00	29.00	20.40
9	27.00	10.40	0.30	6.80	9.80	169.50	92.00	31.00	18.70
10	24.00	13.00	1.40	6.40	9.60	218.70	87.00	39.00	18.50
11	20.10	8.50	0.00	4.50	10.50	122.90	86.00	37.00	14.30
12	21.60	7.40	13.80	1.80	7.20	181.70	96.00	40.00	14.50
13	24.50	10.70	0.00	6.50	10.60	223.70	94.00	30.00	17.60
14	26.80	11.90	0.00	7.50	9.10	161.60	81.00	26.00	19.40
15	27.80	6.50	0.00	7.00	10.40	139.90	94.00	25.00	17.20
16	25.40	9.00	0.00	6.00	10.30	92.80	82.00	32.00	17.20
17	22.60	10.20	0.00	5.00	8.80	249.50	95.00	47.00	16.40
18	26.00	11.50	0.00	4.50	7.60	207.10	94.00	37.00	18.80
19	27.90	12.70	0.00	7.00	9.80	179.50	92.00	32.00	20.30
20	27.80	12.80	0.20	7.20	6.70	215.90	83.00	29.00	20.30
21	22.70	11.50	0.00	1.00	3.60	208.40	93.00	43.00	17.10
22	24.10	12.30	0.00	6.00	0.30	327.20	94.00	50.00	18.20
23	26.80	13.90	0.00	7.00	7.40	223.40	89.00	35.00	20.40
24	26.20	6.60	0.00	6.00	10.60	74.20	84.00	23.00	16.40
25	26.80	3.50	0.00	7.00	10.50	94.60	83.00	23.00	15.20
26	26.00	0.00	0.00	8.00	10.90	90.10	88.00	23.00	13.00
27	26.70	2.60	0.00	6.00	10.20	58.90	87.00	25.00	14.70
28	18.50	8.60	7.70	1.20	2.20	162.40	96.00	71.00	13.60
29	21.00	9.30	0.00	3.50	3.50	231.80	96.00	55.00	15.20
30	17.50	10.20	14.00	5.00	2.70	41.10	94.00	64.00	13.90
Avg	24.79	9.46	1.25	5.36	8.15	145.56	89.33	35.20	17.29
Min	17.50	0.00	0.00	1.00	0.30	41.10	81.00	23.00	13.00
Max	28.00	13.90	14.00	8.00	10.90	327.20	96.00	71.00	20.40
Total	743.60	283.80	37.40	160.90	244.40	4366.70	2680.00	1056.00	518.70

Climatical Information for May 1995

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	19.00	12.00	2.30	2.80	4.80	151.50	95.00	67.00	15.50
2	22.60	11.30	12.50	3.00	1.10	124.10	96.00	45.00	17.00
3	22.60	8.50	0.00	3.50	9.60	60.60	96.00	37.00	15.60
4	22.60	8.80	2.00	1.50	5.70	131.80	97.00	38.00	15.70
5	23.80	9.20	0.00	4.50	9.70	147.60	96.00	43.00	16.50
6	23.00	11.60	5.00	3.50	5.80	166.30	96.00	41.00	17.30
7	21.50	11.50	0.00	3.50	5.40	110.20	97.00	47.00	16.50
8	18.00	3.50	0.00	4.00	10.00	87.90	97.00	39.00	10.80
9	20.30	3.80	0.00	2.50	10.00	62.80	96.00	39.00	12.10
10	22.00	4.50	0.00	3.50	8.90	55.10	97.00	37.00	13.30
11	21.50	5.10	0.00	6.50	9.10	37.00	97.00	36.00	13.30
12	22.80	4.60	0.00	3.00	10.10	51.50	97.00	35.00	13.70
13	22.00	6.50	0.00	4.50	10.30	121.80	93.00	31.00	14.30
14	21.80	5.00	0.00	3.00	10.00	57.70	92.00	26.00	13.40
15	23.00	2.60	0.00	4.00	9.80	65.40	95.00	27.00	12.80
16	22.80	5.00	0.00	3.00	9.70	58.80	93.00	40.00	13.90
17	23.60	6.00	0.00	3.00	8.40	72.30	96.00	38.00	14.80
18	22.40	5.50	0.00	2.50	8.60	74.80	93.00	33.00	14.00
19	22.20	5.60	0.00	4.00	7.20	138.10	95.00	36.00	13.90
20	24.00	7.70	0.00	6.50	8.50	219.40	87.00	36.00	15.90
21	20.00	7.40	0.00	4.00	9.70	106.10	93.00	31.00	13.70
22	14.50	2.70	0.00	2.00	1.00	30.10	96.00	50.00	8.60
23	17.00	0.50	0.00	2.00	9.80	81.80	97.00	24.00	8.80
24	20.00	-3.00	0.00	2.50	6.00	63.10	91.00	44.00	8.50
25	20.00	5.60	0.00	3.50	7.90	55.70	97.00	36.00	12.80
26	20.00	4.00	0.00	1.00	6.80	46.30	96.00	37.00	12.00
27	20.30	3.50	0.00	4.00	8.80	128.10	96.00	32.00	11.90
28	18.40	4.80	0.00	3.00	7.40	105.90	94.00	36.00	11.60
29	16.50	4.10	0.00	3.00	7.50	132.30	95.00	51.00	10.30
30	19.30	2.70	0.00	3.00	7.60	70.90	97.00	44.00	11.00
31	19.80	2.30	0.00	3.00	9.40	50.10	97.00	36.00	11.10
Avg	20.88	5.58	0.70	3.33	7.89	92.42	95.16	38.45	13.25
Min	14.50	-3.00	0.00	1.00	1.00	30.10	87.00	24.00	8.50
Max	24.00	12.00	12.50	6.50	10.30	219.40	97.00	67.00	17.30
Total	647.30	172.90	21.80	103.30	244.60	2865.10	2950.00	1192.00	410.60

Climatical Information for June 1995

DAY	MaxT(C)	MinT(C)	Rain(mm)	Evap(mm)	Sun(Hr)	Wind (Km)	Max H (%)	Min H (%)	Ave T (C)
1	20.70	2.00	0.00	3.00	9.10	64.40	95.00	33.00	11.40
2	19.20	2.00	0.00	3.00	9.20	54.60	96.00	31.00	10.60
3	19.50	1.50	0.00	3.00	8.90	82.10	97.00	34.00	10.50
4	19.20	0.50	0.00	3.00	8.80	134.00	97.00	31.00	9.90
5	20.90	2.20	0.00	4.50	8.00	207.10	94.00	36.00	11.60
6	13.30	-3.50	0.00	2.50	8.60	74.50	93.00	26.00	4.90
7	16.40	-3.30	0.00	3.00	8.30	130.00	92.00	42.00	6.60
8	17.00	-0.50	0.00	4.50	8.70	214.60	98.00	35.00	8.30
9	16.70	2.50	0.00	2.00	9.50	144.60	86.00	40.00	9.60
10	17.80	-3.30	0.00	2.50	9.10	50.00	97.00	31.00	7.30
11	20.60	-0.60	0.00	3.00	10.00	52.00	85.00	27.00	1.00
12	21.50	-2.80	0.00	4.50	9.20	169.20	85.00	26.00	9.40
13	20.00	4.00	0.00	4.00	9.40	237.70	80.00	35.00	12.00
14	21.20	5.00	0.00	5.50	8.80	183.00	77.00	31.00	13.10
15	18.20	5.00	0.00	6.00	7.40	318.00	66.00	33.00	11.60
16	11.60	2.20	0.00	2.50	5.00	177.80	93.00	50.00	6.90
17	16.50	-3.00	0.00	2.00	9.30	76.70	97.00	38.00	6.80
18	19.40	-1.00	0.00	3.00	8.80	62.90	94.00	37.00	9.20
19	19.00	3.00	0.00	3.00	10.00	91.20	96.00	33.00	11.00
20	19.00	1.00	0.00	3.00	8.90	66.00	80.00	33.00	10.00
21	18.50	-1.00	0.00	3.00	9.20	57.40	93.00	33.00	8.80
22	19.00	-1.10	0.00	3.50	8.50	68.50	86.00	31.00	9.00
23	20.40	-3.50	0.00	3.50	9.80	87.90	86.00	27.00	8.50
24	20.50	-2.50	0.00	3.50	9.20	76.50	76.00	26.00	9.00
25	23.00	-1.40	0.00	3.00	8.20	79.10	65.00	26.00	10.80
26	22.00	-0.70	0.00	3.50	9.00	73.60	86.00	33.00	10.70
27	21.80	-1.00	0.00	2.50	9.10	63.60	93.00	27.00	10.40
28	21.00	-1.00	0.00	4.50	9.50	48.80	86.00	31.00	10.00
29	22.80	-2.20	0.00	54.00	9.10	183.90	91.00	32.00	10.30
30	24.80	2.00	0.00	******	7.40	280.60	88.00	33.00	13.40
Avg	19.38	0.02	0.00	4.95	8.80	120.34	88.27	32.70	9.42
Min	11.60	-3.50	0.00	0.00	5.00	48.80	65.00	26.00	1.00
Max	24.80	5.00	0.00	54.00	10.00	318.00	98.00	50.00	13.40
Total	581.50	0.50	0.00	148.50	264.00	3610.30	2648.00	981.00	282.60