Special Publication SJ94-SP4

# UPPER ST. JOHNS RIVER MARSH CONTROLLED BURN STUDY

## RESPONSE OF VEGETATION TO A CONTROLLED BURN IN SAWGRASS AND MAIDENCANE PLANT COMMUNITIES IN THE UPPER ST. JOHNS RIVER BASIN

FINAL REPORT

Prepared for:

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## EXECUTIVE SUMMARY

Natural marsh communities in the upper St. Johns River Basin (USJRB) have experienced frequent arson fires. One management option to control the potential damage from arson fires is conducting controlled burns in the marsh communities to reduce fuel loads.

To evaluate this management option, the St. Johns River Water Management District (SJRWMD) contracted Environmental Science & Engineering, Inc. (ESE), to study the response of marsh vegetation to a controlled burn in the USJRB. The objective of the study was to measure aboveground biomass and species composition prior to and following controlled burns in two marsh communities, one dominated by sawgrass (Cladium jamaicense) and the other dominated by maidencane (Panicum hemitomon).

A randomized block design was used to evaluate the effects of fire on biomass and species composition. Ten 300 ft by 300 ft contiguous experimental study plots were established approximately south to north along the St. Johns River, located such that each plot contained both sawgrass and maidencane communities. One-half of the plots were randomly assigned to the controlled burning group. Within each community in each of the plots, two biomass quadrats and two 1 by 4 m permanent percent cover quadrats were established and sampled at each of three sample times. Biomass and percent cover data were collected from biomass quadrats and percent cover data were collected from permanent quadrats within each community. Sampling was conducted prior to and at 12 and 20 months following a controlled burn to monitor changes in biomass (fuel), percent cover, and species composition.

Analysis of data from the biomass plots showed rapid recovery from fire in the sawgrass community within 12 months. Live sawgrass biomass in the control group was at a pre-burn level of 2,093 grams per square meter ($g/m^2$), was 2,158 $g/m^2$ at 12 months post-burn, and was 1,289 $g/m^2$ at 20 months post-burn. Live sawgrass biomass in the sample plots that were burned was 2,379 $g/m^2$ prior to the burn, was 2,487 $g/m^2$ at 12 months and decreased slightly to 2,161 $g/m^2$ at 20 months.

Biomass recovery in the maidencane community could not be assessed because levels in both the control group and the burned group declined over time. Live maidencane biomass in the control group declined from a pre-burn level of 982 $g/m^2$ to a 12-month post-burn level of 312 $g/m^2$. Live maidencane biomass in the burn group declined from a pre-burn level of 1,103 $g/m^2$ to a 12-month post-burn level of 226 $g/m^2$. These levels continued to decline at 20 months post-burn. Percent cover results were similar to results from the biomass data.

Data from the permanent plots provided an assessment of species diversity and composition changes during the study period. Fire treatment did not appear to affect species diversity. Differences in species diversity between treatment groups (control and burn) appear to reflect initial conditions, and differences cannot be attributed to the effects of burning. However, definitive results regarding response to fire could not be concluded because of sporadic or low frequencies of some species.

Sawgrass communities in USJRB support very high biomass levels compared with other published estimates. This high productivity may reflect both hydrologic and nutrient differences between the USJRB study site and other study areas. The USJRB study site has an enriched nutrient status due to runoff from nearby agricultural areas.

Constraints in study design and burning regime may have limited the conclusions of this study. Future studies should consider using a greater number of quadrats, in fewer experimental plots, to increase relative statistical efficiency. Investigating the response of marsh communities to different burning frequencies or seasonal regimes may yield more definitive results and is recommended.

# 1.0 INTRODUCTION

Arson fires are a serious potential threat to the integrity of natural marsh communities in the Upper St. Johns River Basin (USJRB). The St. Johns River Water Management District (SJRWMD) is evaluating the management option of conducting controlled burns to reduce fuel loads prior to the dry season, when arson fires typically are set and are most destructive.

Various ecological studies of sawgrass (Cladium jamaicense) marshes in southern Florida have been conducted (e.g., Forthman, 1973; Hofstetter and Parsons, 1975; Herndon and Taylor, 1986; Herndon et al. 1991; Wood and Tanner, 1990). However, no previously published scientific information on the effect of fire on marsh community vegetation specific to USJRB was available. Therefore, SJRWMD planned this study of the response of marsh vegetation to a controlled burn in USJRB.

SJRWMD contracted with Environmental Science & Engineering, Inc. (ESE), to monitor vegetation communities during the project. The objective of this study was to measure the effect of fire on aboveground biomass (i.e., species abundance and fuel loads) and species composition at approximately 12 months and 18 months following controlled burns in two distinct marsh communities, one dominated by sawgrass and the other dominated by maidencane (Panicum hemitomon).

# 2.0 METHODS

The study site was selected by SJRWMD and was located within the USJRB south of State Road (SR) 192 (Figure 2-1). The broad riverine floodplain marsh ecosystem in this area consists of a mosaic of communities that include sawgrass marsh, maidencane marsh, broad leaf emergents, scattered tree islands, and deeper water slough areas characterized by floating aquatic vegetation and open water areas. Pre-burn sampling was conducted in August 1991. A controlled burn was conducted in February 1992, and post-burn sampling was conducted 12 months later in February 1993 and again in October 1993. The final sampling was delayed by 2 months, occurring at 20 months instead of the planned 18 months post-burn, because extremely shallow water levels in the study area precluded access by airboat.

A randomized block design was used for the experimental study (Figure 2-2). The sampling area was divided into five blocks, with two 300- by 300-foot (ft) study plots within each block, for a total of 10 study plots. The 10 plots were arranged consecutively from south to north (approximately) along the river. One of the two plots in each block was randomly assigned to the control (unburned) or fire treatment (controlled burn) group following the initial, pre-burn sampling in August 1991 using the DESIGN module from SYSTAT, Inc. (Dallal, 1988). Subsequent to baseline sampling, the southernmost block (Block 1) was burned by an arson fire during the dry season, and these plots were eliminated from further sampling. A total of 8 post-burn plots, occurring in Blocks 2 through 5, were sampled for the remainder of the study. The controlled burn coverage of the four plots treated was incomplete, with estimated area within each plot burned consisting of 90 percent, 80 percent, 75 percent, and 80 percent in plots 3, 5, 7 and 10, respectively (plots are shown in Figure 2-2). Unusually high water levels delayed SJRWMD's controlled burn until late January 1992.

Each plot contained both sawgrass and maidencane marsh communities, which were sampled and analyzed independently. Data were collected from biomass quadrats and permanent quadrats to monitor changes in percent cover and species composition. A preliminary analysis of pre-burn samples of the biomass and percent cover of sawgrass and

maidencane in these communities provided variance estimates that indicated that statistical Type I and Type II errors could be minimized to conventionally acceptable levels (.05 and .20, respectively) when testing for a 50 percent difference from the pre-burn, control levels, by using as few as two replicate sampling quadrats within each subgroup formed by plot and community type. Type I error (alpha) is the probability of rejecting the null hypothesis when the hypothesis is in fact true, that is, the probability of getting a false-positive test. Type II error (beta) is the probability of accepting the null hypothesis when it is false, concluding that there is no difference between samples when such a difference actually exists (a false-negative test). Power is 1 minus beta, the probability of a test finding a true difference. Power varies as a function sample size, sample reliability (precision), and the effect size, or magnitude of effect that is desired to detect. Power is reduced by smaller sample sizes, reduced reliability, and small effect sizes. For a more complete treatment of this subject the reader is referred to Cohen (1969).

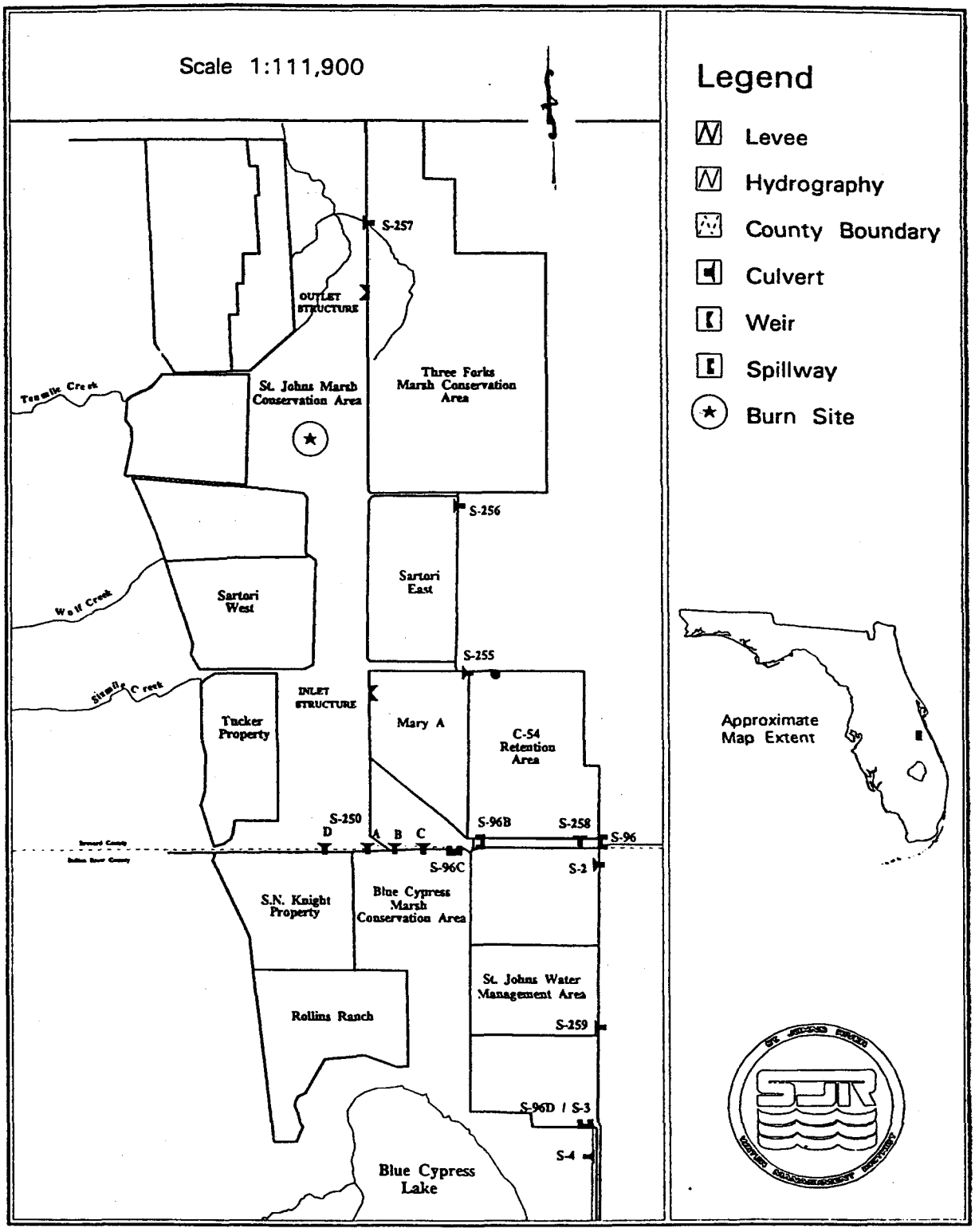
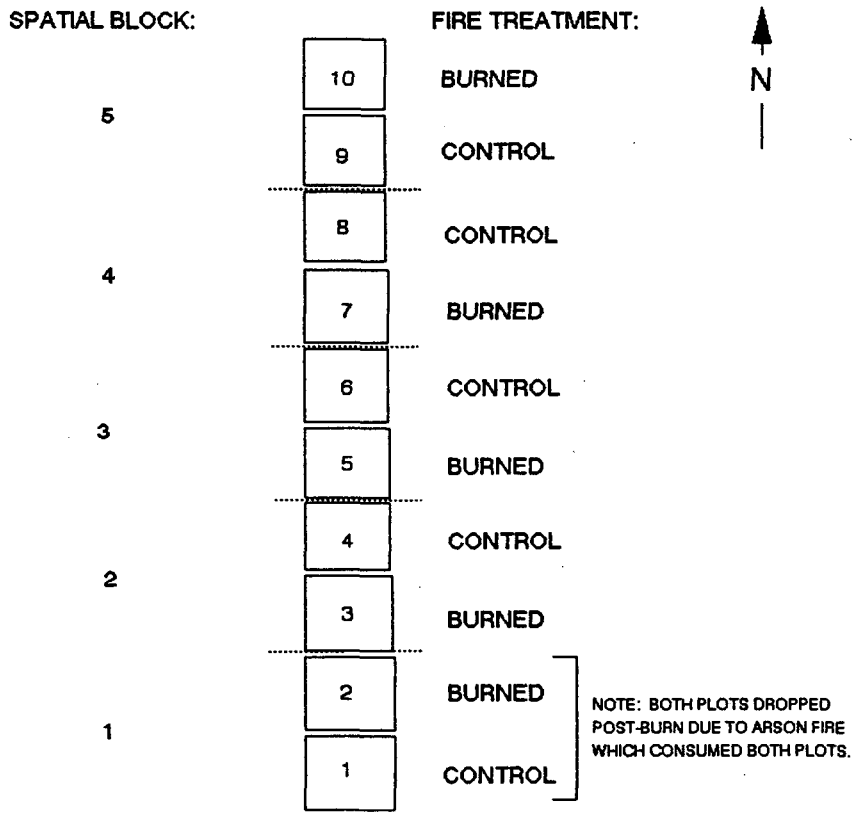



**Figure 2-1**
**PRESCRIBED BURN SITE LOCATION**

SOURCE: SJRWMD, 1993.

**ENVIRONMENTAL SCIENCE & ENGINEERING, INC.**




NOTE: SCHEMATIC DRAWING, NOT TO SCALE.

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| Environmental Science & Engineering, Inc.<br>Ecology Department | Figure 2-2. Schematic of randomized block design and treatments randomly assigned.<br>Source: ESE, 1993. |

Pre-burn biomass samples were collected from 1- by 1-meter (m) [1 square meter ($m^2$)] quadrats. Practical considerations resulted in the reduction of quadrat size to 0.1 $m^2$ for post-burn biomass sample collection. Biomass and stem counts for the latter sampling events were then adjusted to a per-square-meter basis.

Collection of data from smaller sized sample plots than used in the original experimental design could be expected to increase variability within sample groups and reduce statistical power. Expected power to detect a 50 percent difference from the control group was computed for the initial control group values that were based on full-size (1 $m^2$) biomass quadrats as well as the 12 month control group values obtained from the smaller-size (0.1 $m^2$) quadrats. Power curves for group sample sizes for total cover and total biomass in the sawgrass and maidencane communities are shown in Figures 2-3 and 2-4. In sawgrass, no increased variance for percent cover was associated with the smaller quadrat size and expected power was conserved. There was an increase in variance for biomass such that expected power at the final group sample size of 8 quadrats declined from 90 percent to about 65 percent. In the maidencane community, power was reduced with the smaller quadrat size and the smaller sample sizes in the curves for both percent cover and biomass, but at the final group sample size of $n=8$, power from the smaller quadrats was comparable to that from the larger quadrats and exceed 90 percent. In the results section the approximate actual power values of t-tests performed for variables measured in the biomass quadrats were determined by the methods described by Cohen (1969).

The following variables were measured within each biomass quadrat:

1. Water depth [in centimeters (cm)];
2. Percent cover of live and dead sawgrass, maidencane, and other subdominant species estimated visually and noted;
3. Number of stems of sawgrass and maidencane; and
4. Live and dead dry weight (biomass) of sawgrass, maidencane, and other subdominant species (combined).

Sampling quadrats were located randomly within each plot using an X,Y coordinate grid system. If a quadrat was to sample a burned area but fell in an unburned area, new random coordinates were obtained until the quadrat was within a burned area of the plot. Because of the disturbance associated with removal of vegetation, each biomass quadrat was sampled only once during the study (i.e., the same quadrat was not revisited, and additional quadrats were established for each sampling period). Vegetation was harvested by clipping all vegetation, including submerged vegetation, at the soil surface. Subsoil material (i.e., roots) was not disturbed or removed. Vegetation was identified, sorted by category (live/dead sawgrass, live/dead maidencane, live/dead other), and bagged. Vegetation was dried at 97 degrees Fahrenheit (°F) for 30 days in a walk-in oven at the University of Florida in Gainesville. Dry weight was measured on a Mettler balance and recorded to the nearest 0.1 gram (g).

Percent cover and species composition within sawgrass and maidencane marsh communities were estimated in permanent quadrats that were resampled throughout the study. Two replicate 1- by 4-m rectangular quadrats were established in each study plot. The permanent percent cover quadrats were monumented with 7-ft lengths of rebar, tagged, and resampled. The larger plot size of the permanent quadrats compared to the plot size of the biomass quadrats was intended to increase the probability of including subdominant species in sampling.

All data were entered into rectangular-type computer files with the sample quadrat as the replicate unit of analysis. For biomass quadrat data, file records contained all data recorded for each quadrat sampled. For permanent quadrat percent cover data, file records reported the frequency of occurrence of a species and sample quadrat and other group identifiers and data. Grouping variables included sample time (TIME); community type [COMTYP$, sawgrass (S) versus Panicum (maidencane) (P)]; treatment (TRT, unburned control group versus controlled burn); and the replicate blocks (BLOCK).

Separate analyses were conducted for the two community types to control potential obvious or irrelevant community-specific differences. Standard statistical methods were

used, including analysis of variance (ANOVA), analysis of covariance (ANCOVA), and regression. The statistical procedures and graphing of results were performed using SYSTAT (Wilkinson, 1990a) and SYGRAPH (Wilkinson, 1990b) statistical software. The data were examined for departures from normality using Lilliefors Kolmogorov-Smirnov goodness of fit test in SYSTAT's nonparametric (NPAR) test module, as well as for homogeneity of variance by Bartlett's test, which is reported in the output for the t-test performed by the STATS module. No serious departures from normality or homogeneity of variance were found that would be sufficient to justify transformation of the original, raw data. In addition, it is widely accepted that ANOVA is robust to such departures. Therefore, no transformations of the data were applied prior to any of the statistical tests.

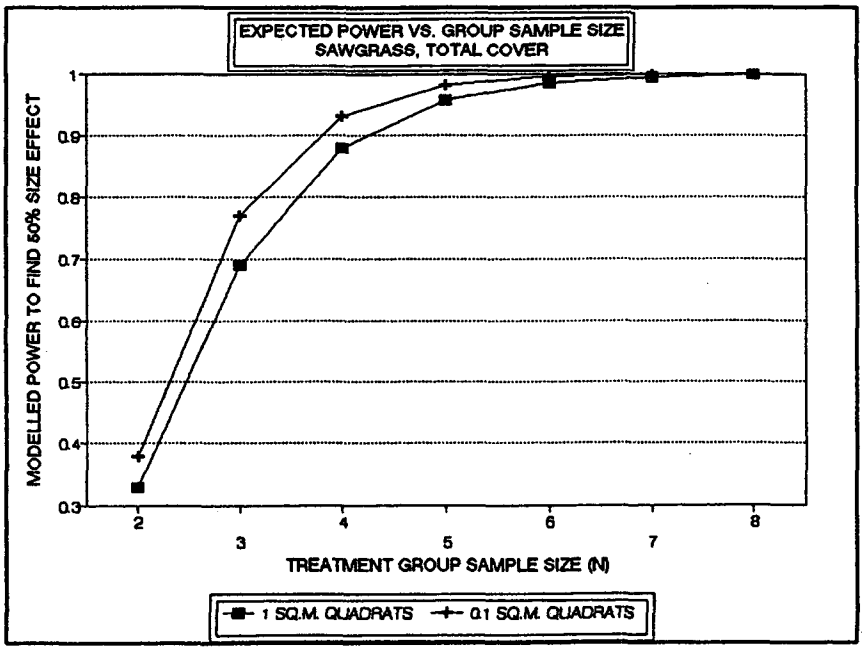
Because of the differences between the two community types, separate ANOVAs were performed on the biomass quadrat data for each community. In addition, many of the variables changed in both communities over time. Therefore, following a fully factorial ANOVA, separate ANOVAs were performed for the pre- and post-burn samples. In these tests, BLOCK was a replicate, random factor in the model included to account for potential spatial variation in the study variables and provide a reduction in the error mean square for tests.

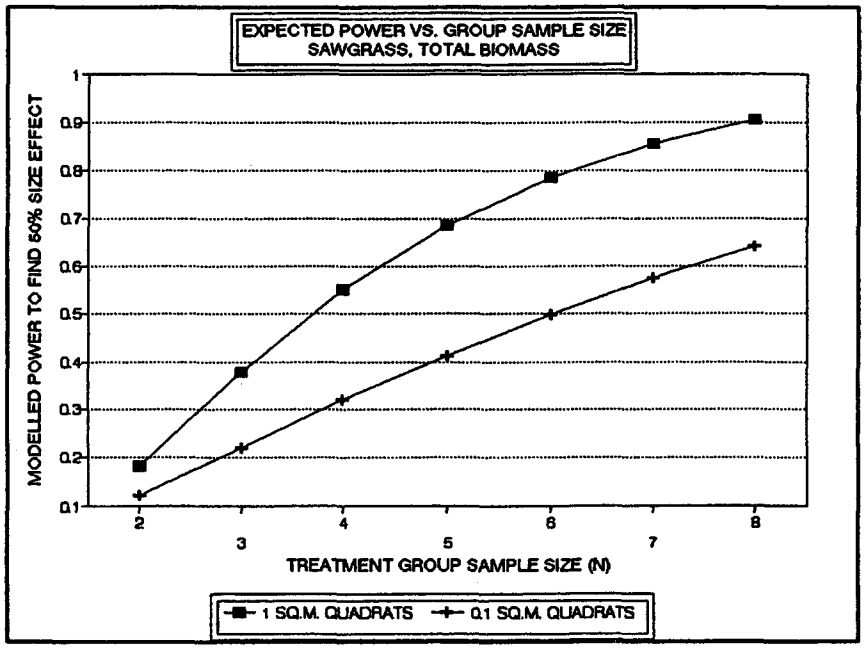
In evaluating species diversity from permanent quadrats, the number of species and Shannon's diversity index were evaluated. Shannon's index was computed as:

$$\overline{H} = -\sum_{i=1}^{n} \left( \frac{PC_i}{TOTAL} \right) * LOG_2 \left( \frac{PC_i}{TOTAL} \right)$$

where total is the total percent cover in a quadrat, $pc_i$ is the percent cover of the $i^{th}$ species in the quadrat, and there are n species.

Statistical test output is provided in a separately bound appendix to this report (Appendices A1-A9).

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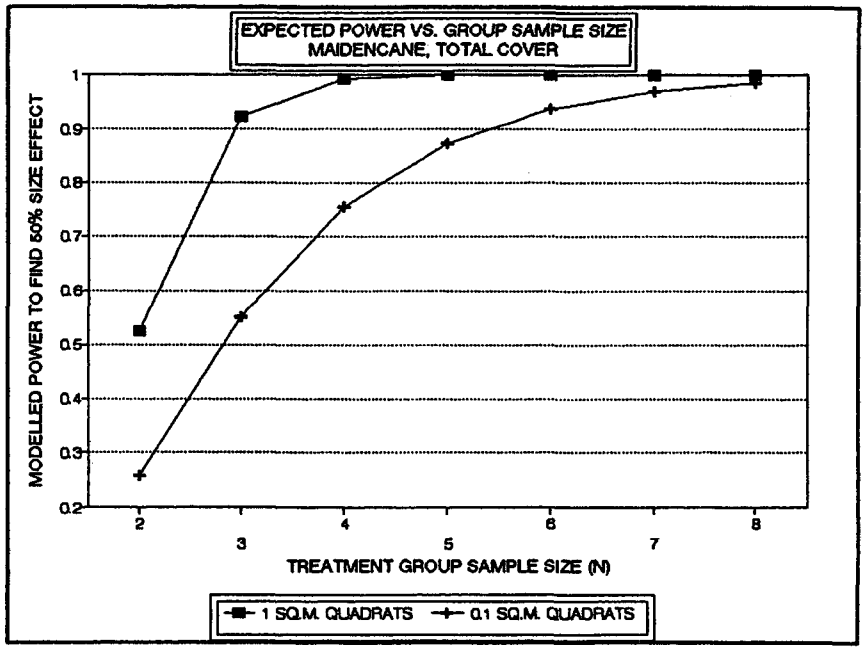
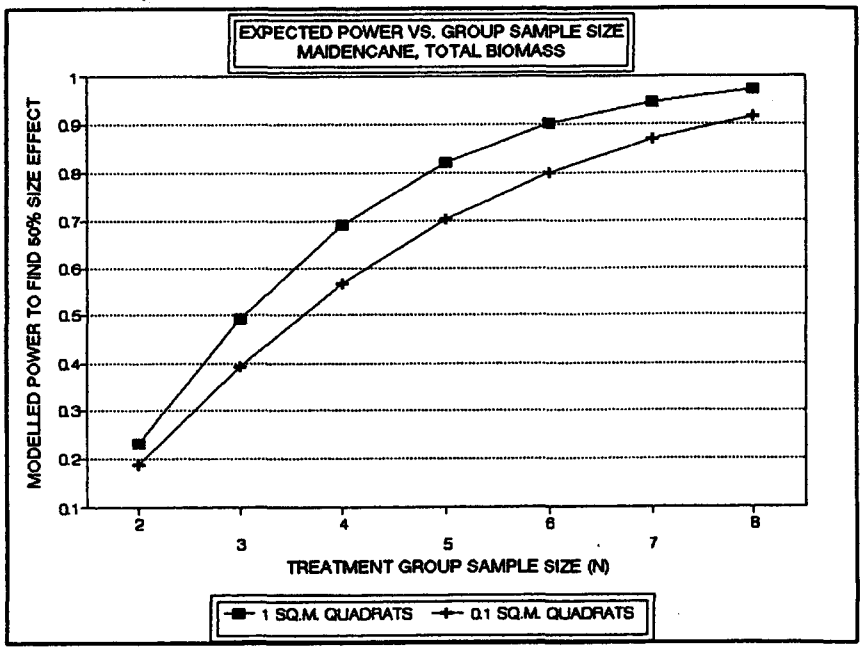
| Environmental Science & Engineering, Inc.<br><br>Ecology Department | Figure 2-3. Power of ANOVA to find a 50% difference from the control mean value as a function of group sample size (n of quadrats) and quadrat size (area) for total cover and biomass in the Sawgrass Community. |

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| Environmental Science & Engineering, Inc.<br><br>Ecology Department | Figure 2-4. Power of ANOVA to find a 50% difference from the control mean value as a function of group sample size (n of quadrats) and quadrat size (area) for total cover and biomass in the Maidencane Community. |

# 3.0 RESULTS

## 3.1 BIOMASS AND SPECIES ABUNDANCE

### 3.1.1 PRE-BURN CONDITIONS

Table 3-1 presents summary statistics for key study variables determined in the pre-burn biomass quadrats. Tables 3-2 and 3-3 report statistics for the 12- and 20-month post-burn samples, respectively. Mean and standard error of the mean ($\pm$ SEM) biomass for the treatment groups and times sampled for the sawgrass and maidencane communities are presented in Figures 3-1 and 3-2, respectively. Mean $\pm$ SEM percent cover for the treatment groups and times sampled for the studied sawgrass and maidencane communities are shown in Figures 3-3 and 3-4, respectively. Complete statistics and test results are given in Appendices A-1 and A-2.

In general, the pre-burn samples yielded comparable values for most variables in the two treatment groups (control and burn). Prior to the experimental burn in the sawgrass community, BLOCK was a highly significant source of variation for dead sawgrass biomass only but was nevertheless retained in the model tests for treatment effects for all variables. The implication of this variation for future experiments will be discussed in Section 4.0. There were no significant differences between the treatment groups assigned to control and burn categories for total biomass (TOTWTG), total percent cover (TOTCOV), live sawgrass biomass (CJLWTG), or sawgrass stem density (CJLSTEMS). Dead sawgrass biomass was significantly greater in the burn treatment group when BLOCK is included in the analysis as a source of variation ($F=5.644$, 1,10 df, $P=0.039$) but not when significance testing is performed by a simple one-way ANOVA (or t-test), as shown in Table 3-1. This illustrates the value of the randomized block design in this particular case. Water depth (DEPTHCM) also was investigated as a covariate and was not significant for any of the variables.

In the maidencane community, BLOCK was significant for stem density (PHLSTEMS) but not for other variables. The covariate water depth again was not significant for any of the variables. The tests for differences between treatment groups were conducted

Table 3-1. Summary Statistics from Biomass Quadrats by Community Type and Treatment Group, for Key Study Variables, Sampled Prior to Controlled Burning (N=10 Quadrats in Each Group). Page 1 of 2.

| Variable | Treatment Group: Control Mean | Control SD | Burn Mean | Burn SD | P | Power(%) |
|---|---|---|---|---|---|---|
| COMMUNITY: SAWGRASS | | | | | | |
| Water Depth (cm) | 48.7 | 10.05 | 54.0 | 8.79 | | 99 |
| Sawgrass Total Cover (%) | 74.0 | 15.72 | 74.7 | 12.50 | | 99 |
| Total Cover (%) | 85.5 | 16.00 | 81.4 | 10.71 | | 99 |
| Sawgrass Stems (Live stems/$m^2$) | 17.5 | 4.65 | 16.3 | 3.16 | | 99 |
| Sawgrass Biomass (Live $g/m^2$) | 2092.8 | 684.05 | 2379.4 | 857.26 | | 91 |
| Sawgrass Biomass (Dead $g/m^2$) | 981.2 | 586.51 | 1391.4 | 137.42 | | 70 |
| Other Biomass (Live $g/m^2$) | 92.3 | 120.56 | 42.5 | 60.55 | | 29 |
| Other Biomass (Dead $g/m^2$) | 59.0 | 88.04 | 36.6 | 79.37 | | 22 |
| Total Biomass (All Species) | 3225.2 | 915.21 | 3849.8 | 281.16 | | 99 |

Table 3-1. Summary Statistics from Biomass Quadrats by Community Type and Treatment Group, for Key Study Variables, Sampled Prior to Controlled Burning (N=10 Quadrats in Each Group) Cont., p. 2 of 2.

| Variable | Treatment Group: Control Mean | Control SD | Burn Mean | Burn SD | P | Power(%) |
|---|---|---|---|---|---|---|
| COMMUNITY: MAIDENCANE | | | | | | |
| Water Depth (cm) | 50.3 | 9.23 | 56.6 | 10.98 | | 99 |
| Maidencane Total Cover (%) | 70.0 | 21.91 | 66.3 | 12.72 | | 99 |
| Total Cover (%) | 81.6 | 10.84 | 68.7 | 15.36 | 0.044 | 99 |
| Maidencane Stems (Live stems/$m^2$) | 281.4 | 121.70 | 237.7 | 85.54 | | 91 |
| Maidencane Biomass (Live $g/m^2$) | 981.8 | 371.44 | 1103.1 | 388.12 | | 91 |
| Maidencane Biomass (Dead $g/m^2$) | 112.0 | 87.82 | 242.3 | 108.72 | 0.009 | 36 |
| Other Biomass (Live $g/m^2$) | 80.0 | 211.85 | 14.6 | 44.54 | | 16 |
| Other Biomass (Dead $g/m^2$) | 36.7 | 94.34 | 7.6 | 24.16 | | 16 |
| Total Biomass (All Species) | 1210.6 | 290.2 | 1367.6 | 415.32 | | 99 |

Note: P = probability value of difference between groups by t-test.
SD = standard deviation.

Source: ESE.

Table 3-2. Summary Statistics from Biomass Quadrats by Community Type and Treatment Group, for Key Study Variables, Sampled 12 Months After Controlled Burning (N=8 Quadrats in Each Group). Page 1 of 2.

| Variable | Treatment Group: Control Mean | Control SD | Burn Mean | Burn SD | P | Power(%) |
|---|---|---|---|---|---|---|
| COMMUNITY: SAWGRASS | | | | | | |
| Water Depth (cm) | 41.0 | 3.78 | 46.6 | 2.24 | 0.049 | 99 |
| Sawgrass Total Cover (%) | 66.0 | 19.66 | 53.0 | 16.83 | | 99 |
| Total Cover (%) | 71.2 | 14.49 | 61.5 | 12.32 | | 99 |
| Sawgrass Stems (Live stems/$m^2$) | 42.5 | 17.52 | 50.0 | 16.04 | | 74 |
| Sawgrass Biomass (Live $g/m^2$) | 2158.1 | 846.43 | 2486.9 | 966.10 | | 74 |
| Sawgrass Biomass (Dead $g/m^2$) | 1762.6 | 706.21 | 1572.4 | 361.75 | | 99 |
| Other Biomass (Live $g/m^2$) | 25.4 | 67.34 | 42.0 | 43.81 | | 10 |
| Other Biomass (Dead $g/m^2$) | 37.8 | 90.37 | 173.5 | 260.23 | | 7 |
| Total Biomass (All Species) | 3983.9 | 1290.81 | 4274.8 | 1246.82 | | 99 |

Table 3-2. Summary Statistics from Biomass Quadrats by Community Type and Treatment Group, for Key Study Variables, Sampled 12 Months After Controlled Burning (N=8 Quadrats in Each Group) Cont., p. 2 of 2.

| Variable | Treatment Group: Control Mean | Control SD | Burn Mean | Burn SD | P | Power(%) |
|---|---|---|---|---|---|---|
| COMMUNITY: MAIDENCANE | | | | | | |
| Water Depth (cm) | 48.6 | 5.32 | 49.2 | 8.03 | | 99 |
| Maidencane Total Cover (%) | 48.5 | 18.88 | 60.2 | 26.18 | | 61 |
| Total Cover (%) | 50.5 | 18.14 | 62.8 | 24.40 | | 74 |
| Maidencane Stems (Live stems/$m^2$) | 350.0 | 122.84 | 378.8 | 313.75 | | 38 |
| Maidencane Biomass (Live $g/m^2$) | 311.7 | 225.57 | 368.7 | 217.65 | | 38 |
| Maidencane Biomass (Dead $g/m^2$) | 232.4 | 226.75 | 219.4 | 226.08 | | 25 |
| Other Biomass (Live $g/m^2$) | 0.1 | 0.05 | 0.0 | 0.05 | | 25 |
| Other Biomass (Dead $g/m^2$) | 24.4 | 43.58 | 55.0 | 100.41 | | 10 |
| Total Biomass (All Species) | 568.6 | 336.89 | 643.1 | 327.41 | | 61 |

Note: P = probability value of difference between groups by t-test.
SD = standard deviation.

Source: ESE.

Table 3-3. Summary Statistics from Biomass Quadrats by Community Type and Treatment Group, for Key Study Variables, Sampled 20 Months After Controlled Burning (N=8 Quadrats in Each Group). Page 1 of 2.

| Variable | Treatment Group: Control Mean | Control SD | Burn Mean | Burn SD | P | Power(%) |
|---|---|---|---|---|---|---|
| COMMUNITY: SAWGRASS | | | | | | |
| Water Depth (cm) | 22.5 | 7.09 | 21.0 | 5.24 | | 99 |
| Sawgrass Total Cover (%) | 65.1 | 19.57 | 64.6 | 13.30 | | 99 |
| Total Cover (%) | 66.8 | 18.88 | 69.0 | 11.61 | | 99 |
| Sawgrass Stems (Live stems/$m^2$) | 31.2 | 19.59 | 42.5 | 18.32 | | 46 |
| Sawgrass Biomass (Live $g/m^2$) | 1289.1 | 888.31 | 2161.0 | 800.20 | 0.058 | 46 |
| Sawgrass Biomass (Dead $g/m^2$) | 2133.2 | 803.57 | 2343.5 | 250.01 | | 99 |
| Other Biomass (Live $g/m^2$) | 5.4 | 10.66 | 0.4 | 0.52 | | 19 |
| Other Biomass (Dead $g/m^2$) | 0.0 | 0.00 | 155.9 | 186.41 | NV | NV |
| Total Biomass (All Species) | 3427.6 | 1196.21 | 4664.3 | 1213.92 | 0.059 | 99 |

NV-One or more groups had no variance; no ANOVA or Power estimation could be performed.

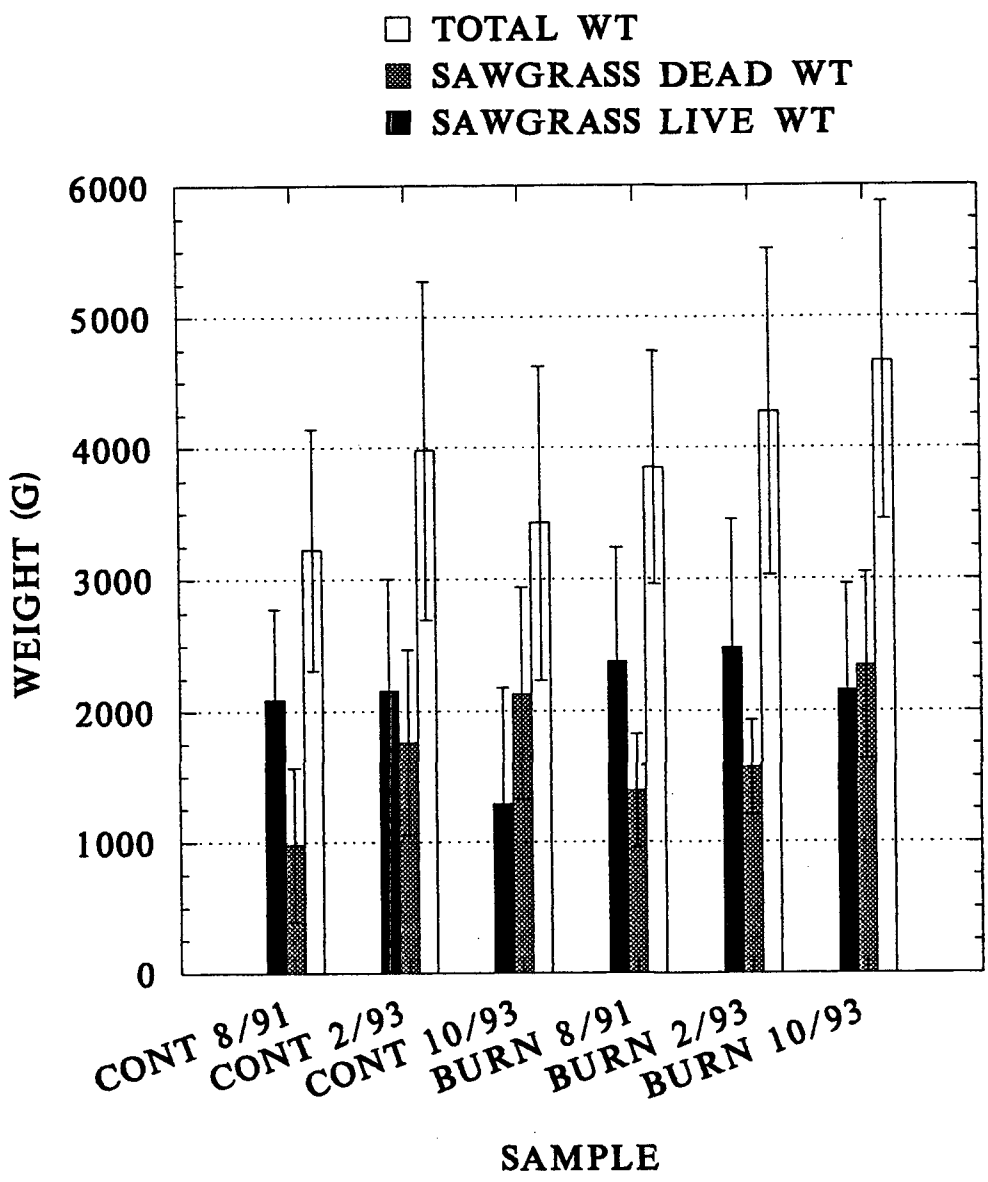
Table 3-3. Summary Statistics from Biomass Quadrats by Community Type and Treatment Group, for Key Study Variables, Sampled 20 Months After Controlled Burning (N=8 Quadrats in Each Group) Cont., p. 2 of 2.

| Variable | Treatment Group: Control Mean | Control SD | Burn Mean | Burn SD | P | Power(%) |
|---|---|---|---|---|---|---|
| COMMUNITY: MAIDENCANE | | | | | | |
| Water Depth (cm) | 25.9 | 8.66 | 26.1 | 6.69 | | 99 |
| Maidencane Total Cover (%) | 56.2 | 13.56 | 49.9 | 22.47 | | 99 |
| Total Cover (%) | 59.3 | 14.98 | 51.9 | 23.28 | | 99 |
| Maidencane Stems (Live stems/$m^2$) | 533.8 | 181.57 | 548.8 | 199.67 | | 85 |
| Maidencane Biomass (Live $g/m^2$) | 267.0 | 91.82 | 253.7 | 121.23 | | 74 |
| Maidencane Biomass (Dead $g/m^2$) | 221.8 | 133.92 | 172.5 | 96.33 | | 61 |
| Other Biomass (Live $g/m^2$) | 4.4 | 12.01 | 0.12 | 0.35 | | 13 |
| Other Biomass (Dead $g/m^2$) | 32.1 | 55.79 | 39.0 | 34.73 | | 13 |
| Total Biomass (All Species) | 525.3 | 176.46 | 465.4 | 206.01 | | 99 |

Note: P = probability value of difference between groups by t-test.
SD = standard deviation.

Source: ESE.

# SAWGRASS COMMUNITY BIOMASS




Samples are from unburned control (CONT) and controlled burn (BURN) treatment groups taken pre-burn (8/91), 12 months post-burn (2/93) and 20 moths post-burn (10/93). N=8 sampling plots per sub-group. Means plus or minus standard errors of the mean are shown.

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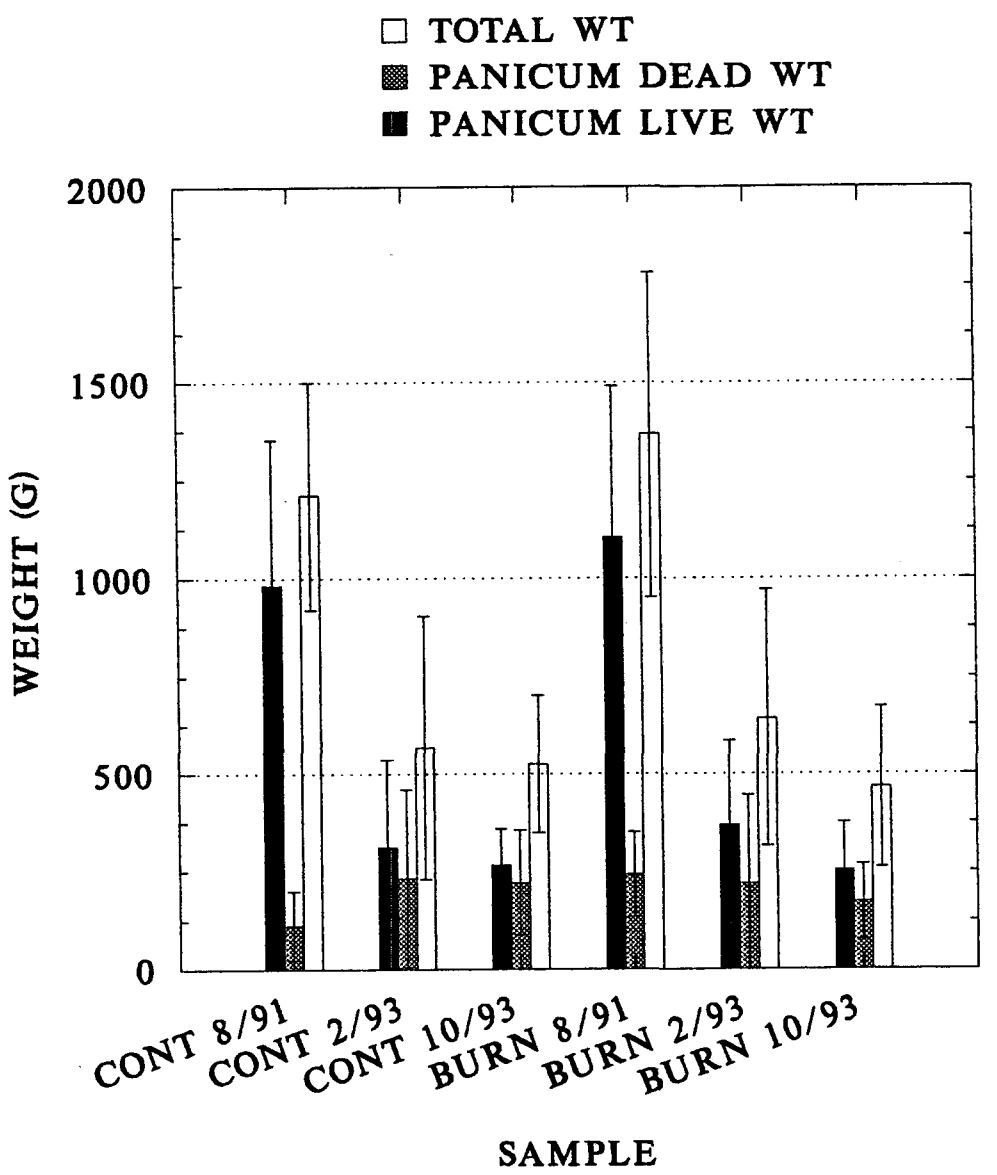
| Environmental Science & Engineering, Inc.<br><br>Ecology Department | Figure 3-1. Sawgrass community mean biomass.<br><br>Source: ESE, 1993. |

# PANICUM COMMUNITY BIOMASS




Samples are from unburned control (CONT) and controlled burn (BURN) treatment groups taken pre-burn (8/91), 12 months post-burn (2/93) and 20 moths post-burn (10/93). N=8 sampling plots per sub-group. Means plus or minus standard errors of the mean are shown.

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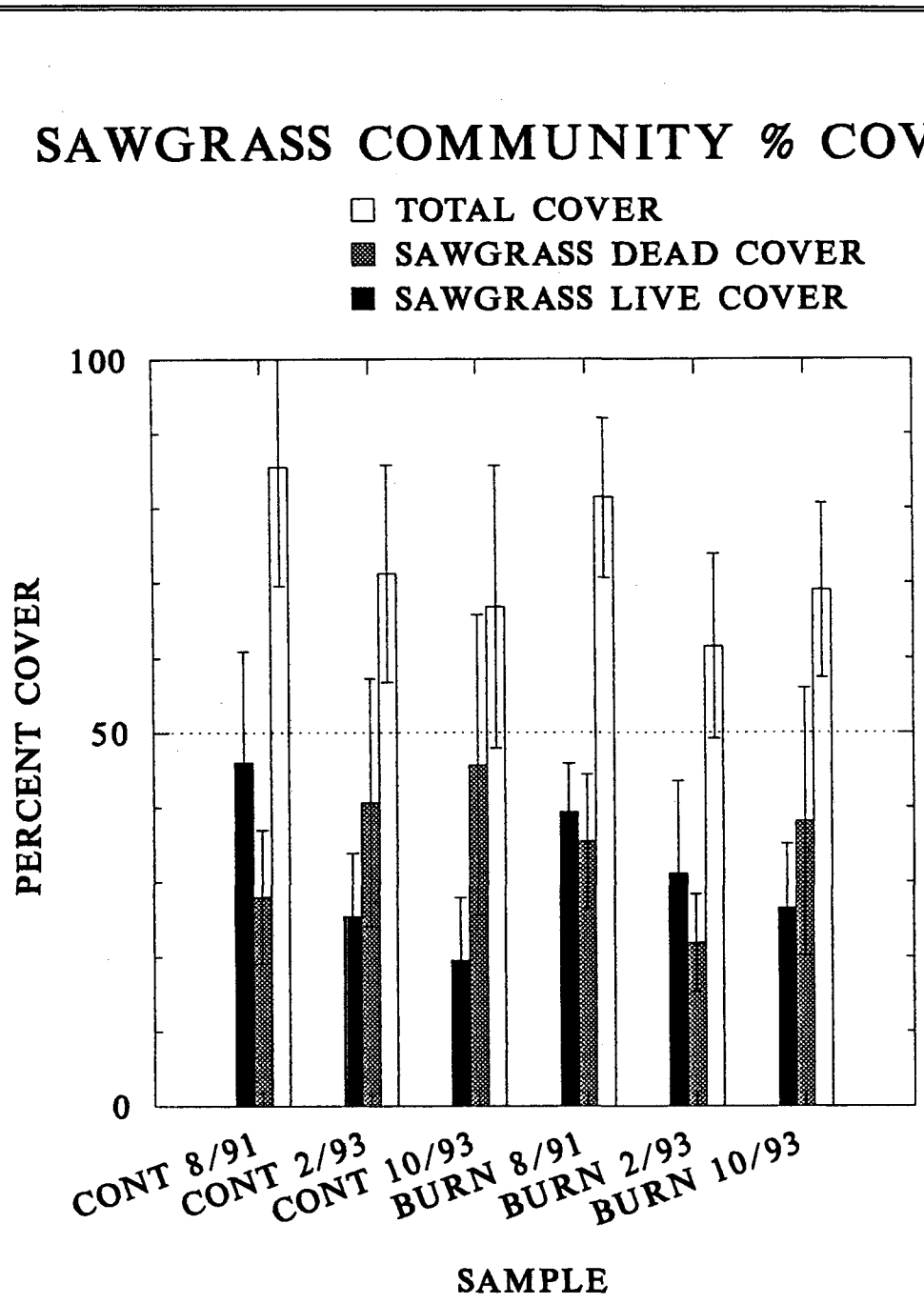
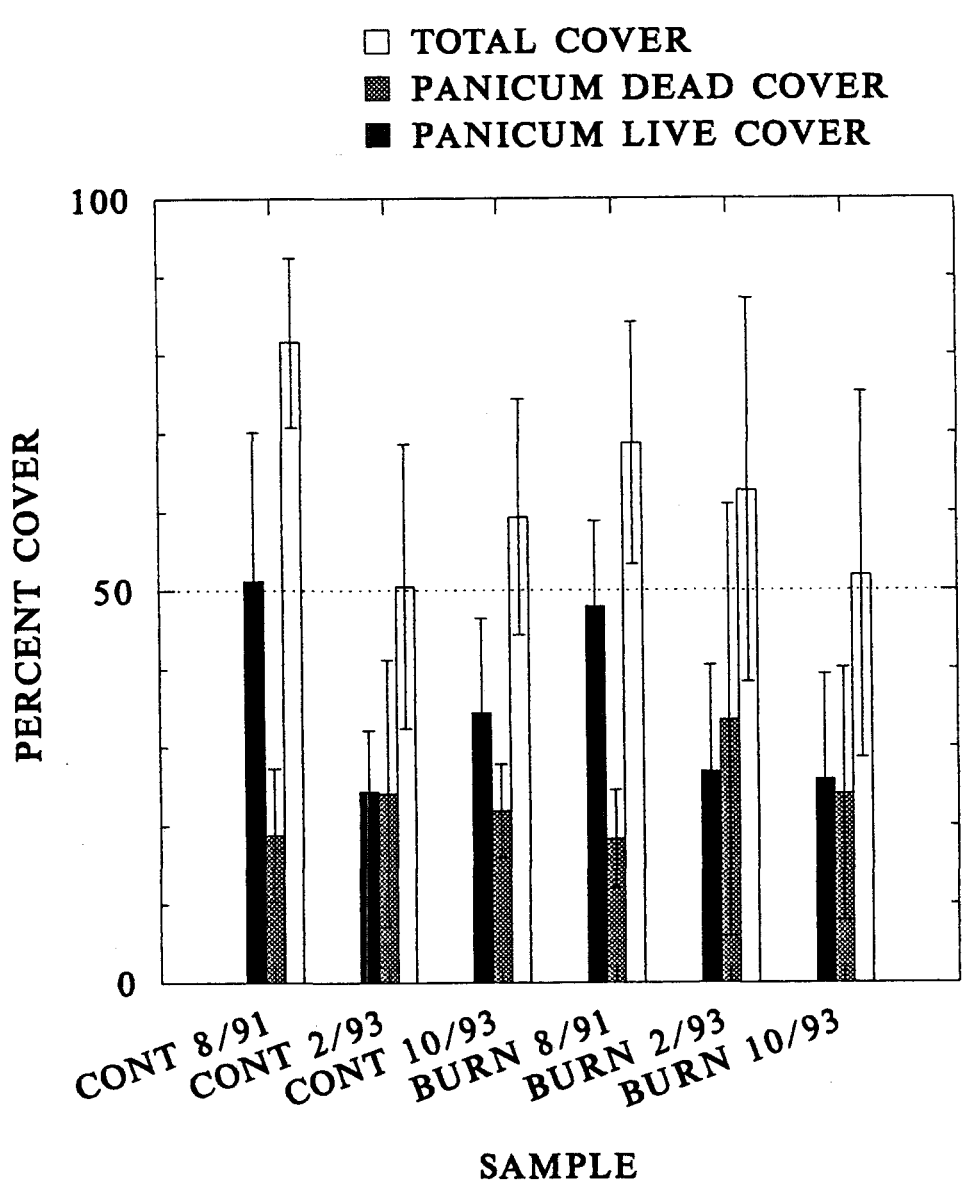
|---|---|
| Environmental Science & Engineering, Inc.<br>Ecology Department | Figure 3-2. Maidencane community mean biomass.<br>Source: ESE, 1993. |




Samples are from unburned control (CONT) and controlled burn (BURN) treatment groups taken pre-burn (8/91), 12 months post-burn (2/93) and 20 moths post-burn (10/93). N=8 sampling plots per sub-group. Means plus or minus standard errors of the mean are shown.

| | |
|---|---|
| Environmental Science & Engineering, Inc.<br><br>Ecology Department | Figure 3-3. Sawgrass community mean percent cover.<br><br>Source: ESE, 1993. |




Samples are from unburned control (CONT) and controlled burn (BURN) treatment groups taken pre-burn (8/91), 12 months post-burn (2/93) and 20 moths post-burn (10/93). N=8 sampling plots per sub-group. Means plus or minus standard errors of the mean are shown.

| | |
|---|---|
| Environmental Science & Engineering, Inc.<br>Ecology Department | Figure 3-4. Maidencane community mean percent cover<br>Source: ESE, 1993. |

including BLOCK as a random factor in the model. Dead maidencane biomass was significantly greater in the group assigned to be burned ($F=7.982$, 1,10 df, $P=0.018$). Differences for total biomass, maidencane live biomass, and maidencane stem density were not significant. Total cover was marginally nonsignificant ($P=0.065$) in the randomized blocks ANOVA. A simple t-test, in which effects of variation among blocks is ignored, yields a significant outcome (Table 3-1, $P=0.044$). The conclusion is that total cover was substantially greater in the control group regardless of which test is considered.

### 3.1.2 POST-BURN CONDITIONS

In the sawgrass community, both post-burn periods were included (represented as factor TIME) in the MANOVA (Appendix A-3). Treatment by TIME interactions were not significant for any independent variable, so both times were considered jointly to increase total sample size and improve power for the test of treatment effects. TIME was a nonsignificant factor for all variables, although a marginally nonsignificant value was reported for live sawgrass biomass ($P=.10$). Inspection of Tables 3-2 and 3-3 shows that average live sawgrass biomass in both treatment groups appears lower in the final sample than in the 12-month post-burn sample. Differences between burned and unburned sawgrass areas were not significant for total cover, dead sawgrass biomass, or sawgrass stem density. Live sawgrass biomass was marginally nonsignificant, i.e., substantially greater in the burned group ($f=4.216$, 1,24 df, $P=0.051$), as was total biomass ($P=0.058$), an apparent result of the latter variable's strong association with live sawgrass biomass.

In the maidencane community post-burn samples, treatment by TIME interaction effects were nonsignificant for all variables, as was the TIME main effect. With the two sample times pooled, the treatment effect was not significant for any of the variables. Table 3-2 shows slightly higher values in the burned group for all variables except dead maidencane biomass. Table 3-3 shows slightly higher values in the control group for all biomass measures and percent cover, but not for stem density or water depth. None of the differences is statistically significant.

Review of Figure 3-1 shows that, in the sawgrass control group, total biomass displayed a minor net increase over the study period. Live sawgrass biomass was slightly greater at 12 months but actually declined by 20 months. Dead sawgrass accumulated through the period. In the burned group, there was little difference in live biomass over time. Dead biomass was not as great as might be expected in the 12-month sample, but quantities increased to levels comparable to the control group by the last sample event. Total biomass (fuel load) was at a maximum in the control group at 12 months, and at a maxiumum in the burned group at 20 months.

Figure 3-2, which presents biomass for the maidencane community, shows a different pattern than that exhibited by the sawgrass community. When both communities were examined in a fully factorial MANOVA (Appendix A-4), including community type as a grouping factor, a significant COMTYP$*TIME interaction term was evident (due to the maidencane community) for total biomass, total live weight, and total dead weight. Unlike the sawgrass community, in which biomass was relatively constant over time, maidencane community biomass, particularly live material, declined from the pre-burn sample event in both treatment groups.

Water depth was not a significant covariate in the tests performed within time samples in which treatment group differences were explored.

## 3.2 COMMUNITY COMPOSITION IN PERMANENT QUADRATS

Table 3-4 presents statistics for total percent cover of living plant species, number of species, and the calculated Shannon-Wiener diversity index based on sampling of the 1- by 4-m permanent quadrats during the study (complete test results are given in Appendix A-6). Prior to the burn, total percent cover was comparable in both communities. Species diversity was slightly higher in the sawgrass community. There were no significant differences between the control and burn treatment groups prior to the controlled burn in either community type. In the sawgrass community, vegetation diversity in the burned and control (unburned) plots did not differ significantly between sampling periods. Total percent cover was greater in the burned group at 12 months post-burn ($P=0.006$) and nonsignificantly higher by 18 months post-burn.

In the maidencane community, percent cover did not appear to be affected by fire at 12 months or 20 months post-burn. Species diversity in this community was significantly lower in the burned group compared with the control at 20 months (Table 3-4). However, diversity in this group was also lower initially prior to any burn treatment.

Percent cover of each of the 15 species identified in the study by sample period, treatment group, and community type is shown in Table 3-5 (complete statistical results are shown in Appendix A-7). Both communities are relatively monotypic, i.e., dominated by a single species, with a minor and sometimes sporadic occurrence of other species. Sawgrass was the dominant species in the sawgrass community, with very low frequencies of arrowhead (Sagittaria lancifolia), willow (Salix spp.), cattail (Typha domingensis), climbing hempweed (Mikania scandens), water smartweed (Polygonum amphibium), and maidencane. Six species were not encountered in the sawgrass community at all and were found only in the maidencane community. Maidencane was the dominant species in the maidencane community, with low frequencies of climbing hempweed, sedge (Cyperus sp.), water pennywort (Hydrocotyle sp.), Ludwigia sp., pickerelweed (Pontederia cordata), water smartweed, and arrowhead.

Table 3-4. Total Percent Live Cover and Species Diversity from 1- by 4-m Permanent Plots

| Variable | | Pre-Burn | | | 12-mo Post-Burn | | | 20-mo Post-Burn | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Control | Burn | P | Control | Burn | P | Control | Burn | P |
| COMMUNITY TYPE: SAWGRASS | | | | | | | | | | |
| % Cover | Mean | 37.56 | 35.96 | | 18.94 | 34.86 | 0.006 | 22.50 | 33.29 | |
| | SD | 5.33 | 9.65 | | 11.85 | 7.48 | | 9.23 | 13.66 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| N Species | Mean | 4.50 | 4.37 | | 3.50 | 3.50 | | 3.63 | 3.57 | |
| | SD | 1.31 | 1.19 | | 1.93 | 0.93 | | 1.06 | 0.79 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| Shannon-Wiener | Mean | 0.88 | 0.81 | | 0.58 | 0.72 | | 0.70 | 1.02 | |
| Index | SD | 0.56 | 0.50 | | 0.67 | 0.38 | | 0.49 | 0.23 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| COMMUNITY TYPE: MAIDENCANE | | | | | | | | | | |
| % Cover | Mean | 38.59 | 44.54 | | 20.28 | 21.78 | | 26.21 | 17.25 | |
| | SD | 6.68 | 10.73 | | 7.90 | 8.71 | | 11.95 | 8.21 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |
| N Species | Mean | 4.25 | 2.87 | | 3.62 | 2.75 | 0.051 | 4.37 | 2.12 | 0.003 |
| | SD | 1.83 | 1.13 | | 0.92 | 0.71 | | 1.60 | 0.83 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |
| Shannon-Wiener | Mean | 0.63 | 0.16 | | 0.80 | 0.43 | | 0.92 | 0.10 | 0.010 |
| Index | SD | 0.63 | 0.24 | | 0.60 | 0.37 | | 0.74 | 0.27 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |

Note: P = probability value from t-test of difference between treatment groups.
SD = standard deviation.
N = number of species.

P values are reported for significant or marginally nonsignificant tests only.

Source: ESE.

Table 3-5. Percent Cover Statistics from 1- by 4-m Permanent Plots, by Community Type

| Species | Variable | Pre-Burn Control | Pre-Burn Burn | P | 12-mo Post-Burn Control | 12-mo Post-Burn Burn | P | 20-mo Post-Burn Control | 20-mo Post-Burn Burn | P |
|---|---|---|---|---|---|---|---|---|---|---|
| SAWGRASS COMMUNITY | | | | | | | | | | |
| Boehmeria cylindrica | Mean | 0.13 | 0.00 | | 0.00 | 0.00 | | 0.16 | 0.00 | |
| | SD | 0.35 | 0.00 | | 0.00 | 0.00 | | 0.44 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| Cladium jamaicense | Mean | 26.97 | 27.66 | | 14.66 | 26.53 | 0.001 | 14.81 | 18.89 | |
| | SD | 10.05 | 9.22 | | 6.25 | 5.67 | | 8.38 | 7.90 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| Cyperus sp. | Mean | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | SD | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| Eupatorium capillifolium | Mean | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | SD | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| Galium sp. | Mean | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | SD | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| Hydrocotyle sp. | Mean | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | SD | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| Ludwigia sp. | Mean | 0.16 | 0.01 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | SD | 0.44 | 0.02 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| Mikania scandens | Mean | 1.75 | 0.54 | | 0.56 | 0.00 | | 1.72 | 0.32 | |
| | SD | 2.57 | 1.09 | | 1.31 | 0.00 | | 3.34 | 0.55 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| Panicum hemitomon | Mean | 0.59 | 0.63 | | 0.06 | 0.00 | | 0.31 | 0.36 | |
| | SD | 1.16 | 1.39 | | 0.18 | 0.00 | | 0.88 | 0.94 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |

Table 3-5. Percent Cover Statistics from 1- by 4-m Permanent Plots, by Community Type (Continued, Page 2 of 4)

| Species | Variable | Pre-Burn Control | Pre-Burn Burn | P | 12-mo Post-Burn Control | 12-mo Post-Burn Burn | P | 20-mo Post-Burn Control | 20-mo Post-Burn Burn | P |
|---|---|---|---|---|---|---|---|---|---|---|
| Pontederia cordata | Mean | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | SD | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| Pluchea rosea | Mean | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | SD | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| Polygonum amphibium | Mean | 0.28 | 0.32 | | 1.01 | 0.51 | | 1.44 | 1.00 | |
| | SD | 0.80 | 0.79 | | 2.63 | 1.00 | | 1.72 | 1.38 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| Sagittaria lancifolia | Mean | 6.84 | 6.19 | | 2.22 | 7.50 | | 3.28 | 10.46 | |
| | SD | 8.66 | 7.14 | | 3.72 | 6.53 | | 8.79 | 11.15 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| Salix sp. | Mean | 0.53 | 0.16 | | 0.19 | 0.31 | | 0.63 | 2.25 | |
| | SD | 1.40 | 0.44 | | 0.53 | 0.59 | | 1.34 | 5.95 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| Typha domingensis | Mean | 0.31 | 0.47 | | 0.25 | 0.00 | | 0.16 | 0.00 | |
| | SD | 0.79 | 1.33 | | 0.71 | 0.00 | | 0.44 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 7.00 | |
| MAIDENCANE COMMUNITY | | | | | | | | | | |
| Boehmeria cylindrica | Mean | 0.00 | 0.00 | | 0.22 | 0.00 | | 0.53 | 0.00 | |
| | SD | 0.00 | 0.00 | | 0.62 | 0.00 | | 1.31 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |
| Cladium jamaicense | Mean | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | SD | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |
| Cyperus sp. | Mean | 0.06 | 0.34 | | 0.00 | 0.00 | | 0.16 | 0.00 | |
| | SD | 0.18 | 0.97 | | 0.00 | 0.00 | | 0.44 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |

Table 3-5. Percent Cover Statistics from 1- by 4-m Permanent Plots, by Community Type (Continued, Page 3 of 4)

| Species | Variable | Pre-Burn | | | 12-mo Post-Burn | | | 20-mo Post-Burn | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Control | Burn | P | Control | Burn | P | Control | Burn | P |
| Eupatorium capillifolium | Mean | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.06 | 0.00 | |
| | SD | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.18 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |
| Galium sp. | Mean | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.03 | 0.00 | |
| | SD | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.09 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |
| Hydrocotyle sp. | Mean | 0.06 | 0.00 | | 0.00 | 0.00 | | 1.31 | 0.00 | |
| | SD | 0.18 | 0.00 | | 0.00 | 0.00 | | 2.30 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |
| Ludwigia sp. | Mean | 0.13 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | SD | 0.19 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |
| Mikania scandens | Mean | 2.59 | 0.69 | | 4.16 | 1.00 | | 0.84 | 0.00 | |
| | SD | 3.07 | 1.33 | | 5.25 | 2.07 | | 1.81 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |
| Panicum hemitomon | Mean | 33.09 | 43.28 | 0.044 | 14.63 | 19.22 | | 18.56 | 16.69 | |
| | SD | 7.19 | 10.85 | | 7.77 | 7.01 | | 6.95 | 7.36 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |
| Pontederia cordata | Mean | 0.78 | 0.00 | | 0.00 | 0.00 | | 0.31 | 0.00 | |
| | SD | 2.21 | 0.00 | | 0.00 | 0.00 | | 0.88 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |
| Pluchea rosea | Mean | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.13 | 0.00 | |
| | SD | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.35 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |
| Polygonum amphibium | Mean | 0.13 | 0.07 | | 0.31 | 1.56 | | 4.28 | 0.31 | 0.02* |
| | SD | 0.19 | 0.11 | | 0.40 | 1.72 | | 5.29 | 0.88 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |
| Sagittaria lancifolia | Mean | 1.19 | 0.16 | | 0.63 | 0.00 | | 0.00 | 0.00 | |
| | SD | 1.85 | 0.44 | | 1.27 | 0.00 | | 0.00 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |

Table 3-5. Percent Cover Statistics from 1- by 4-m Permanent Plots, by Community Type (Continued, Page 4 of 4)

| Species | Variable | Pre-Burn Control | Pre-Burn Burn | P | 12-mo Post-Burn Control | 12-mo Post-Burn Burn | P | 20-mo Post-Burn Control | 20-mo Post-Burn Burn | P |
|---|---|---|---|---|---|---|---|---|---|---|
| Salix sp. | Mean | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | SD | 0.00 | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |
| Typha domingensis | Mean | 0.56 | 0.00 | | 0.34 | 0.00 | | 0.00 | 0.25 | |
| | SD | 1.05 | 0.00 | | 0.97 | 0.00 | | 0.00 | 0.71 | |
| | N | 8.00 | 8.00 | | 8.00 | 8.00 | | 8.00 | 8.00 | |

Note: N = number of species.

P = probability from t-test comparing group means.

SD = standard deviation.

*Value from Mann-Whitney U-test.

Source: ESE.

ANOVA was not possible for many species because of their absence from groups and consequent lack of variance in percent cover. In the sawgrass community, percent cover declined with time, but no treatment group differences were apparent. Maidencane biomass declined during the study, but percent cover was not affected by the fire treatment by 20 months. Water smartweed increased in frequency somewhat but also was unaffected by fire. Arrowhead declined over time in the control group but increased in the burned group. Willow also showed a slight increase in burned plots relative to control plots. Cattail was initially present about equally in both treatment groups in sawgrass, but disappeared from the burned plots. However, in the maidencane community, cattail appeared in the burned group at 20 months post-burn, suggesting that fire was not a causative agent in the disappearance of cattail.

In the maidencane community, a greater number of species disappeared following burn treatment, as was reported previously. These species included the sedge, climbing hempweed, and arrowhead. It is difficult to determine whether fire played a role in the disappearance of these species, or if other factors were involved. In the sawgrass community, climbing hempweed was reduced in burned areas but not eliminated. Arrowhead actually increased in the burned sawgrass plots during the same period, tending to rule out fire itself as a causative agent in its disappearance from the maidencane study plots.

# 4.0 DISCUSSION

## 4.1 BIOMASS AND FUEL LOADS

Live, dead, and total sawgrass biomass returned to pre-burn levels in the sawgrass communities within 12 months, indicating rapid recovery from fire. In the control group, live biomass was only slightly greater at 12 months than at the start of the experiment, although dead biomass continued to increase. Total fuel loads were not substantially different at the end of the study. The rapid recovery in sawgrass biomass is in general agreement with other studies conducted in Florida. Forthman (1973) reported no substantial differences in live sawgrass biomass 1 year post-burn in the Everglades. Rapid regrowth of Muhlenbergia prairie vegetation, including sawgrass, was reported by Herndon and Taylor (1986), although annual burning was found to be eventually detrimental to sawgrass. Sawgrass biomass in the USJRB study area generally was greater than that reported in other studies. This may reflect both hydrologic and nutrient differences between the USJRB study site and others.

In the maidencane community, biomass recovery following fire cannot be assessed since biomass in both treatment groups declined over time. The correlation between maidencane biomass and depth of water suggests that the decline in water levels with time could be associated with the decline in maidencane biomass throughout the study area. However, other factors could also be contributing to this decline. VanArman and Goodrick (1979) found that total biomass in a maidencane marsh in the Kissimmee River floodplain recovered completely within 6 months. Values for USJRB maidencane biomass are generally within the range of values reported elsewhere.

## 4.2 PERCENT COVER

Percent cover measured in the biomass quadrats generally yielded results similar to those observed for biomass. In the sawgrass community, percent live cover of sawgrass had declined in both treatment groups and differences in treatment groups were not significant. Percent cover of dead sawgrass increased over time in the control group as expected; in the burn group, percent cover was nonsignificantly lower at 12 months post-burn compared with

pre-burn levels, but some recovery had occurred by the end of the study. Percent cover is difficult to estimate as accurately as biomass can be measured, so some differences in results compared with the biomass data are to be expected. Although total cover and total biomass in this study were significantly correlated, only a small proportion of the variance in percent cover is explained by the actual biomass present. Thus, where practical for a study, biomass provides a better estimate of species abundance as well as directly relevant data on fuel loads.

The permanent plots provided an assessment of species composition changes over the course of this study. Live sawgrass cover appeared to decline in the 12-month sample control group but had increased by the end of the study. In the burned group, live sawgrass percent cover amounts were relatively constant. In viewing the data overall, fire would actually appear to have had a mildly beneficial effect on biomass and percent cover amounts relative to the unburned control plots. This observation may be related to the release and uptake of nutrients by sawgrass in the burned areas. In the maidencane community, percent cover declined over time regardless of treatment, as was noted for percent cover measured in the biomass quadrats.

Species diversity was initially slightly higher in the sawgrass community than in the maidencane community but was not substantially different throughout the study. In the unburned plots, species diversity at 12 months and 20 months was slightly greater in the maidencane community. No significant effects of burning on species diversity were apparent in the sawgrass community. Species diversity in the maidencane community was consistently higher in the unburned plots, including the pre-burn sample. VanArman and Goodrick (1979) did not detect any effect of fire on species diversity in their study of maidencane marshes in the Kissimmee River floodplain. In this study of USJRB marshes, differences in species diversity between treatment groups appear to reflect initial conditions and cannot be attributed to the effects of burning.

# 5.0 CONCLUSIONS

Two USJRB marsh communities were monitored to measure the effects of fire on aboveground biomass and species composition. The following conclusions are presented as a result of this study:

1. Biomass in the burned sawgrass plots recovered to pre-burn levels within 12 months of the fire. Biomass in the control plots appeared to be at an equilibrium or undergoing a slight decline. Burning may have had a slight stimulatory effect on sawgrass production.
2. Biomass recovery following fire in the maidencane community reached levels comparable to the control group by 12 months post-burn. However, pre-burn levels were not attained during the study; both the control and burned plots declined by more than 50 percent for unknown reasons. Lower water levels following the fire may have been responsible.
3. Other measures of plant abundance for sawgrass and maidencane, such as percent cover, stem density, etc., generally provided results similar to those observed for biomass.
4. Fire treatment did not affect species diversity significantly. However, some species occurred so infrequently that definitive statements about response to fire cannot be made.
5. The USJRB sawgrass community supports very high biomass levels compared with other published estimates. This high productivity may reflect the enriched nutrient status of the study site due to runoff from nearby agricultural areas.
6. Although a randomized block design was employed, spatial variation (due to blocks) was generally insignificant and the resultant increase in relative statistical efficiency was limited for most variables. Future studies could consider using fewer blocks, with a greater number of quadrats per block, to reduce field effort. Unfortunately, the loss of one block to arson fire illustrates the risk of using a small number of blocks. A reasonable design to detect a 50 percent difference from control levels might be to use three blocks, with three to four quadrats per treatment group in each block, providing a total treatment group sample size of 9 to 12. The variance

estimates from this study could be used in the design of future studies nearby. The actual designs required will depend on the study objectives and magnitude of effect (size effect) that is to be detected and considered biologically meaningful.

7. This study monitored the response of marsh communities at 12 and 20 months following fire. The rate of recovery between the burn and 12 months remains unknown, as do potential effects beyond 20 months. In addition, the response to a single fire was monitored. It would seem to be important to study the response of marsh communities to different burning frequencies or seasonal burning regimes.

## 6.0 REFERENCES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Special Publication SJ94-SP4

# APPENDICES TO FINAL REPORT:

# UPPER ST. JOHNS RIVER MARSH CONTROLLED BURN STUDY

## RESPONSE OF VEGETATION TO A CONTROLLED BURN IN SAWGRASS AND MAIDENCANE PLANT COMMUNITIES IN THE UPPER ST. JOHNS RIVER BASIN

Prepared for:

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
Palatka, Florida

Contract 91D170

Prepared by:

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
Tampa and Gainesville, Florida

February 1994

APPENDIX A. KEY TO STATISTICAL FILE VARIABLE CODE NAMES, BY FILE.

FILE: BIOMSSRT.SYS DATA FROM BIOMASS QUADRATS

VARIABLES IN SYSTAT RECT FILE ARE:

| | | | | |
|---|---|---|---|---|
| BLOCK | PLOT | QUADRAT | DEPTHCM | PHLCOV |
| PHDCOV | PHTOTCOV | CJLCOV | CJDCOV | OTHERLCO |
| OTHERDCO | TOTCOV | PHLSTEMS | CJLSTEMS | PHLWTG |
| PHDWTG | CJLWTG | CJDWTG | OTHERLWT | OTHERDWT |
| TOTWTG | COMTYP | COMTYP$ | CJTOTCOV | PHTOTWT |
| CJTOTWT | OTHTOTWT | TRT | TRT$ | TIME |
| GRP | GRP$ | TOTLWT | TOTDWT | TIME$ |

Variable name information:
block-study block, 1-5
plot-study plot, 1-10, each plot 300x300 ft
comtyp$-S or P (sawgrass or panicum dominated)
quadrat-quadrat
depthcm-surface water depth at quadrat center in cm
phlcov-live panicum cover %
phdcov-dead " "
phtotcov-panicum total cover (live + dead)
cjlcov-sawgrass live cover
cjdcov-sawgrass dead cover
otherlco-other spp. live cover, combined total estimate
otherdco- " " dead "
totcov-total cover, all spp.
phlstems-panicum stems per quadrat
cjlstems-sawgrass " " "
comtyp-community type index (1=sawgrass, 2=panicum)
trt-treatment group (1=intended control, 2=intended for burning)
time-1 (pre-burn), 2 (12 mos) or 3 (20 mos)
other prefixes similar, wt and wtg abbrev. for weight (biomass in g)

FILE: SPP.SYS DATA FROM PERMANENT PERCENT COVER QUADRATS

VARIABLES IN SYSTAT RECT FILE ARE:

| | | | | |
|---|---|---|---|---|
| TIME | BLOCK | COMTYP$ | COMTYP | PLT |
| QUAD | X | Y | DCM | SP$ |
| PERCOV | TRT | TRT$ | GRP | |

plt-plot
quad-quadrat
x,y-x,y coordinates of quadrat within the plot
dcm-depth in cm of standing water
sp$-4 letter species code, consisting of first two letter of genus and of species
percov-percent cover

FILE: DIVERS.SYS DATA FROM PERMANENT PERCENT COVER QUADRATS

SYSTAT FILE VARIABLES AVAILABLE TO YOU ARE:

| | | | | |
|---|---|---|---|---|
| TIME | BLOCK | COMTYP$ | COMTYP | PLT |
| QUAD | X | Y | DCM | TOTCOV |
| NSPP | SWINDEX | TRT | TRT$ | |

TOTCOV-TOTAL PERCENT COVER WITHIN QUADRAT
NSPP-NUMBER OF SPECIES WITHIN QUADRAT
SWINDEX-SHANNON-WIENER INDEX

APPENDIX A1. GROUP STATISTICS AND T-TEST OUTPUT BY COMMUNITY TYPE AND SAMPLE TIMES.

ANOVAS.LIS BIOMSGRP.SYS 1WAY.CMD
TIME=PRE-BURN

sawgrass community

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 10

| | DEPTHCM | CJTOTCOV | TOTCOV | CJLSTEMS | CJLWTG |
|---|---|---|---|---|---|
| N OF CASES | 10 | 10 | 10 | 10 | 10 |
| MINIMUM | 38.500 | 45.000 | 46.000 | 10.000 | 883.600 |
| MAXIMUM | 70.000 | 90.000 | 100.000 | 26.000 | 3034.450 |
| MEAN | 48.690 | 74.000 | 85.500 | 17.500 | 2092.757 |
| STANDARD DEV | 10.050 | 15.720 | 15.995 | 4.649 | 684.050 |

| | CJDWTG | OTHERLWT | OTHERDWT | TOTWTG |
|---|---|---|---|---|
| N OF CASES | 10 | 10 | 10 | 10 |
| MINIMUM | 390.800 | 7.500 | 0.000 | 1915.000 |
| MAXIMUM | 2387.300 | 389.300 | 251.300 | 5264.200 |
| MEAN | 981.160 | 92.290 | 58.968 | 3225.175 |
| STANDARD DEV | 586.512 | 120.564 | 88.040 | 915.208 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 10

| | DEPTHCM | CJTOTCOV | TOTCOV | CJLSTEMS | CJLWTG |
|---|---|---|---|---|---|
| N OF CASES | 10 | 10 | 10 | 10 | 10 |
| MINIMUM | 41.100 | 55.000 | 55.000 | 11.000 | 1413.100 |
| MAXIMUM | 68.000 | 90.000 | 90.000 | 21.000 | 3535.900 |
| MEAN | 54.030 | 74.700 | 81.400 | 16.300 | 2379.366 |
| STANDARD DEV | 8.795 | 12.499 | 10.710 | 3.164 | 857.259 |

| | CJDWTG | OTHERLWT | OTHERDWT | TOTWTG |
|---|---|---|---|---|
| N OF CASES | 10 | 10 | 10 | 10 |
| MINIMUM | 865.490 | 0.000 | 0.000 | 2842.900 |
| MAXIMUM | 2228.580 | 152.250 | 251.700 | 5734.440 |
| MEAN | 1391.411 | 42.468 | 36.606 | 3849.851 |
| STANDARD DEV | 434.577 | 60.548 | 79.366 | 889.092 |

SUMMARY STATISTICS FOR DEPTHCM

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.160

APPROXIMATE F = 0.151 DF = 1, 972 PROBABILITY = 0.698

OVERALL MEAN = 51.360 STANDARD DEVIATION = 9.591
POOLED WITHIN GROUPS STANDARD DEVIATION = 9.443
T STATISTIC = -1.264 PROBABILITY = 0.222

---

SUMMARY STATISTICS FOR CJTOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.469

APPROXIMATE F = 0.444 DF = 1, 972 PROBABILITY = 0.505

OVERALL MEAN = 74.350 STANDARD DEVIATION = 13.827
POOLED WITHIN GROUPS STANDARD DEVIATION = 14.201
T STATISTIC = -0.110 PROBABILITY = 0.913

---

SUMMARY STATISTICS FOR TOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.410

APPROXIMATE F = 1.337 DF = 1, 972 PROBABILITY = 0.248

OVERALL MEAN = 83.450 STANDARD DEVIATION = 13.414
POOLED WITHIN GROUPS STANDARD DEVIATION = 13.611
T STATISTIC = -0.674 PROBABILITY = 0.509

---

SUMMARY STATISTICS FOR CJLSTEMS

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.301

APPROXIMATE F = 1.233 DF = 1, 972 PROBABILITY = 0.267

OVERALL MEAN = 16.900 STANDARD DEVIATION = 3.919
POOLED WITHIN GROUPS STANDARD DEVIATION = 3.976
T STATISTIC = -0.675 PROBABILITY = 0.508

---

SUMMARY STATISTICS FOR CJLWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.455

APPROXIMATE F = 0.431 DF = 1, 972 PROBABILITY = 0.512

OVERALL MEAN = 2236.062 STANDARD DEVIATION = 769.008
POOLED WITHIN GROUPS STANDARD DEVIATION = 775.506
T STATISTIC = -0.826 PROBABILITY = 0.419

---

SUMMARY STATISTICS FOR CJDWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.797

APPROXIMATE F = 0.755 DF = 1, 972 PROBABILITY = 0.385

OVERALL MEAN = 1186.286 STANDARD DEVIATION = 544.697
POOLED WITHIN GROUPS STANDARD DEVIATION = 516.165
T STATISTIC = -1.777 PROBABILITY = 0.092

---

SUMMARY STATISTICS FOR OTHERLWT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 3.969

APPROXIMATE F = 3.771 DF = 1, 972 PROBABILITY = 0.052

OVERALL MEAN = 67.379 STANDARD DEVIATION = 96.307
POOLED WITHIN GROUPS STANDARD DEVIATION = 95.399
T STATISTIC = -1.168 PROBABILITY = 0.258

---

SUMMARY STATISTICS FOR OTHERDWT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.097

APPROXIMATE F = 0.091 DF = 1, 972 PROBABILITY = 0.762

OVERALL MEAN = 47.787 STANDARD DEVIATION = 82.383
POOLED WITHIN GROUPS STANDARD DEVIATION = 83.815
T STATISTIC = -0.597 PROBABILITY = 0.558

---

SUMMARY STATISTICS FOR TOTWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.008

APPROXIMATE F = 0.007 DF = 1, 972 PROBABILITY = 0.933

OVERALL MEAN = 3537.513 STANDARD DEVIATION = 934.821
POOLED WITHIN GROUPS STANDARD DEVIATION = 902.245
T STATISTIC = -1.548 PROBABILITY = 0.139

---

TIME=12 MOS POST-BURN

sawgrass community

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

| | DEPTHCM | CJTOTCOV | TOTCOV | CJLSTEMS | CJLWTG |
|---|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 | 8 |
| MINIMUM | 34.000 | 25.000 | 46.000 | 30.000 | 1135.100 |
| MAXIMUM | 47.000 | 80.000 | 88.000 | 80.000 | 3563.600 |
| MEAN | 41.000 | 66.000 | 71.250 | 42.500 | 2158.075 |
| STANDARD DEV | 3.780 | 19.661 | 14.489 | 17.525 | 846.431 |

| | CJDWTG | OTHERLWT | OTHERDWT | TOTWTG |
|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 |
| MINIMUM | 567.100 | 0.000 | 0.000 | 2152.900 |
| MAXIMUM | 2769.100 | 191.900 | 258.800 | 5531.200 |
| MEAN | 1762.613 | 25.450 | 37.750 | 3983.888 |
| STANDARD DEV | 706.209 | 67.376 | 90.367 | 1290.813 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

| | DEPTHCM | CJTOTCOV | TOTCOV | CJLSTEMS | CJLWTG |
|---|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 | 8 |
| MINIMUM | 40.000 | 30.000 | 43.000 | 30.000 | 769.900 |
| MAXIMUM | 59.900 | 70.000 | 75.000 | 80.000 | 3631.500 |
| MEAN | 46.613 | 53.000 | 61.500 | 50.000 | 2486.938 |
| STANDARD DEV | 6.338 | 16.835 | 12.329 | 16.036 | 966.104 |

| | CJDWTG | OTHERLWT | OTHERDWT | TOTWTG |
|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 |
| MINIMUM | 1104.000 | 0.000 | 0.000 | 1882.500 |
| MAXIMUM | 2136.200 | 113.200 | 790.400 | 5767.700 |
| MEAN | 1572.413 | 42.000 | 173.500 | 4274.850 |
| STANDARD DEV | 361.748 | 43.809 | 260.231 | 1246.819 |

---

SUMMARY STATISTICS FOR DEPTHCM

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.793

APPROXIMATE F = 1.676 DF = 1, 588 PROBABILITY = 0.196

OVERALL MEAN = 43.806 STANDARD DEVIATION = 5.815
POOLED WITHIN GROUPS STANDARD DEVIATION = 5.218
T STATISTIC = -2.151 PROBABILITY = 0.049

---

SUMMARY STATISTICS FOR CJTOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.168

APPROXIMATE F = 0.157 DF = 1, 588 PROBABILITY = 0.693

OVERALL MEAN = 59.500 STANDARD DEVIATION = 18.914
POOLED WITHIN GROUPS STANDARD DEVIATION = 18.303
T STATISTIC = -1.421 PROBABILITY = 0.177

---

SUMMARY STATISTICS FOR TOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.182

APPROXIMATE F = 0.169 DF = 1, 588 PROBABILITY = 0.681

OVERALL MEAN = 66.375 STANDARD DEVIATION = 13.937
POOLED WITHIN GROUPS STANDARD DEVIATION = 13.452
T STATISTIC = -1.450 PROBABILITY = 0.169

---

SUMMARY STATISTICS FOR CJLSTEMS

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.055

APPROXIMATE F = 0.051 DF = 1, 588 PROBABILITY = 0.821

OVERALL MEAN = 46.250 STANDARD DEVIATION = 16.683
POOLED WITHIN GROUPS STANDARD DEVIATION = 16.797
T STATISTIC = -0.893 PROBABILITY = 0.387

---

SUMMARY STATISTICS FOR CJLWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.122

APPROXIMATE F = 0.114 DF = 1, 588 PROBABILITY = 0.736

OVERALL MEAN = 2322.506 STANDARD DEVIATION = 893.727
POOLED WITHIN GROUPS STANDARD DEVIATION = 908.240
T STATISTIC = -0.724 PROBABILITY = 0.481

---

SUMMARY STATISTICS FOR CJDWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 2.924

APPROXIMATE F = 2.737 DF = 1, 588 PROBABILITY = 0.099

OVERALL MEAN = 1667.513 STANDARD DEVIATION = 550.869
POOLED WITHIN GROUPS STANDARD DEVIATION = 561.067
T STATISTIC = -0.678 PROBABILITY = 0.509

---

SUMMARY STATISTICS FOR OTHERLWT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.259

APPROXIMATE F = 1.175 DF = 1, 588 PROBABILITY = 0.279

OVERALL MEAN = 33.725 STANDARD DEVIATION = 55.562
POOLED WITHIN GROUPS STANDARD DEVIATION = 56.827
T STATISTIC = -0.582 PROBABILITY = 0.570

---

SUMMARY STATISTICS FOR OTHERDWT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 6.698

APPROXIMATE F = 6.309 DF = 1, 588 PROBABILITY = 0.012

OVERALL MEAN = 105.625 STANDARD DEVIATION = 200.818
POOLED WITHIN GROUPS STANDARD DEVIATION = 194.790
T STATISTIC = -1.394 PROBABILITY = 0.185

---

SUMMARY STATISTICS FOR TOTWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.008

APPROXIMATE F = 0.008 DF = 1, 588 PROBABILITY = 0.929

OVERALL MEAN = 4129.369 STANDARD DEVIATION = 1235.150
POOLED WITHIN GROUPS STANDARD DEVIATION = 1269.007
T STATISTIC = -0.459 PROBABILITY = 0.654

---

TIME=20 MOS POST-BURN

sawgrass community

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

| | DEPTHCM | CJTOTCOV | TOTCOV | CJLSTEMS | CJLWTG |
|---|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 | 8 |
| MINIMUM | 15.000 | 40.000 | 40.000 | 10.000 | 398.300 |
| MAXIMUM | 37.000 | 95.000 | 95.000 | 60.000 | 2553.600 |
| MEAN | 22.500 | 65.125 | 66.750 | 31.250 | 1289.075 |
| STANDARD DEV | 7.091 | 19.570 | 18.881 | 19.594 | 888.316 |

| | CJDWTG | OTHERLWT | OTHERDWT | TOTWTG |
|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 |
| MINIMUM | 1297.800 | 0.000 | 0.000 | 1900.200 |
| MAXIMUM | 3721.300 | 28.700 | 0.000 | 5863.500 |
| MEAN | 2133.150 | 5.363 | 0.000 | 3427.588 |
| STANDARD DEV | 803.569 | 10.659 | 0.000 | 1196.215 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

| | DEPTHCM | CJTOTCOV | TOTCOV | CJLSTEMS | CJLWTG |
|---|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 | 8 |
| MINIMUM | 15.000 | 55.000 | 59.000 | 20.000 | 1102.500 |
| MAXIMUM | 31.000 | 90.000 | 91.000 | 70.000 | 3612.200 |
| MEAN | 21.500 | 64.625 | 69.000 | 42.500 | 2160.950 |
| STANDARD DEV | 5.237 | 13.298 | 11.613 | 18.323 | 800.204 |

| | CJDWTG | OTHERLWT | OTHERDWT | TOTWTG |
|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 |
| MINIMUM | 1294.000 | 0.000 | 1.000 | 3364.000 |
| MAXIMUM | 3122.600 | 1.000 | 507.600 | 6639.100 |
| MEAN | 2343.488 | 0.375 | 155.938 | 4664.325 |
| STANDARD DEV | 707.129 | 0.518 | 186.641 | 1213.923 |

---

SUMMARY STATISTICS FOR DEPTHCM

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.633

APPROXIMATE F = 0.591 DF = 1, 588 PROBABILITY = 0.442

OVERALL MEAN = 22.000 STANDARD DEVIATION = 6.044
POOLED WITHIN GROUPS STANDARD DEVIATION = 6.234
T STATISTIC = -0.321 PROBABILITY = 0.753

---

SUMMARY STATISTICS FOR CJTOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.020

APPROXIMATE F = 0.952 DF = 1, 588 PROBABILITY = 0.330

OVERALL MEAN = 64.875 STANDARD DEVIATION = 16.165
POOLED WITHIN GROUPS STANDARD DEVIATION = 16.731
T STATISTIC = -0.060 PROBABILITY = 0.953

---

SUMMARY STATISTICS FOR TOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.592

APPROXIMATE F = 1.488 DF = 1, 588 PROBABILITY = 0.223

OVERALL MEAN = 67.875 STANDARD DEVIATION = 15.187
POOLED WITHIN GROUPS STANDARD DEVIATION = 15.674
T STATISTIC = -0.287 PROBABILITY = 0.778

---

SUMMARY STATISTICS FOR CJLSTEMS

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.031

APPROXIMATE F = 0.029 DF = 1, 588 PROBABILITY = 0.864

OVERALL MEAN = 36.875 STANDARD DEVIATION = 19.225
POOLED WITHIN GROUPS STANDARD DEVIATION = 18.969
T STATISTIC = -1.186 PROBABILITY = 0.255

---

SUMMARY STATISTICS FOR CJLWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.076

APPROXIMATE F = 0.071 DF = 1, 588 PROBABILITY = 0.790

OVERALL MEAN = 1725.013 STANDARD DEVIATION = 932.619
POOLED WITHIN GROUPS STANDARD DEVIATION = 845.409
T STATISTIC = -2.063 PROBABILITY = 0.058

---

SUMMARY STATISTICS FOR CJDWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.114

APPROXIMATE F = 0.106 DF = 1, 588 PROBABILITY = 0.744

OVERALL MEAN = 2238.319 STANDARD DEVIATION = 739.245
POOLED WITHIN GROUPS STANDARD DEVIATION = 756.886
T STATISTIC = -0.556 PROBABILITY = 0.587

---

SUMMARY STATISTICS FOR OTHERLWT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 32.679

APPROXIMATE F = 32.120 DF = 1, 588 PROBABILITY = 0.000

OVERALL MEAN = 2.869 STANDARD DEVIATION = 7.732
POOLED WITHIN GROUPS STANDARD DEVIATION = 7.546
T STATISTIC = -1.322 PROBABILITY = 0.207

---

SUMMARY STATISTICS FOR OTHERDWT

ONE OR MORE OF YOUR GROUPS HAS NO VARIANCE.

---

SUMMARY STATISTICS FOR TOTWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.002

APPROXIMATE F = 0.001 DF = 1, 588 PROBABILITY = 0.970

OVERALL MEAN = 4045.956 STANDARD DEVIATION = 1327.902
POOLED WITHIN GROUPS STANDARD DEVIATION = 1205.101
T STATISTIC = -2.053 PROBABILITY = 0.059

---

TIME=PRE-BURN

panicum (maidencane) community

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 10

| | DEPTHCM | PHTOTCOV | TOTCOV | PHLSTEMS | PHLWTG |
|---|---|---|---|---|---|
| N OF CASES | 10 | 10 | 10 | 10 | 10 |
| MINIMUM | 36.900 | 13.000 | 60.000 | 20.000 | 167.900 |
| MAXIMUM | 67.000 | 90.000 | 93.000 | 435.000 | 1523.400 |
| MEAN | 50.330 | 70.000 | 81.600 | 281.400 | 981.808 |
| STANDARD DEV | 9.229 | 21.914 | 10.844 | 121.704 | 371.440 |

| | PHDWTG | OTHERLWT | OTHERDWT | TOTWTG |
|---|---|---|---|---|
| N OF CASES | 10 | 10 | 10 | 10 |
| MINIMUM | 26.400 | 0.000 | 0.000 | 812.300 |
| MAXIMUM | 256.100 | 678.300 | 300.800 | 1627.300 |
| MEAN | 112.033 | 80.036 | 36.720 | 1210.597 |
| STANDARD DEV | 87.815 | 211.851 | 94.340 | 290.235 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 10

| | DEPTHCM | PHTOTCOV | TOTCOV | PHLSTEMS | PHLWTG |
|---|---|---|---|---|---|
| N OF CASES | 10 | 10 | 10 | 10 | 10 |
| MINIMUM | 44.000 | 45.000 | 45.000 | 130.000 | 467.100 |
| MAXIMUM | 76.000 | 85.000 | 93.000 | 365.000 | 1872.130 |
| MEAN | 56.640 | 66.300 | 68.700 | 237.700 | 1103.096 |
| STANDARD DEV | 10.985 | 12.702 | 15.355 | 85.545 | 388.123 |

| | PHDWTG | OTHERLWT | OTHERDWT | TOTWTG |
|---|---|---|---|---|
| N OF CASES | 10 | 10 | 10 | 10 |
| MINIMUM | 97.890 | 0.000 | 0.000 | 713.900 |
| MAXIMUM | 421.600 | 141.300 | 76.400 | 2099.740 |
| MEAN | 242.309 | 14.588 | 7.640 | 1367.633 |
| STANDARD DEV | 108.718 | 44.545 | 24.160 | 415.323 |

SUMMARY STATISTICS FOR DEPTHCM

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.272

APPROXIMATE F = 0.257 DF = 1, 972 PROBABILITY = 0.612

OVERALL MEAN = 53.485 STANDARD DEVIATION = 10.391
POOLED WITHIN GROUPS STANDARD DEVIATION = 10.145
T STATISTIC = -1.391 PROBABILITY = 0.181

---

SUMMARY STATISTICS FOR PHTOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 2.554

APPROXIMATE F = 2.423 DF = 1, 972 PROBABILITY = 0.120

OVERALL MEAN = 68.150 STANDARD DEVIATION = 17.536
POOLED WITHIN GROUPS STANDARD DEVIATION = 17.910
T STATISTIC = -0.462 PROBABILITY = 0.650

---

SUMMARY STATISTICS FOR TOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.068

APPROXIMATE F = 1.012 DF = 1, 972 PROBABILITY = 0.315

OVERALL MEAN = 75.150 STANDARD DEVIATION = 14.532
POOLED WITHIN GROUPS STANDARD DEVIATION = 13.293
T STATISTIC = -2.170 PROBABILITY = 0.044

---

SUMMARY STATISTICS FOR PHLSTEMS

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.096

APPROXIMATE F = 1.039 DF = 1, 972 PROBABILITY = 0.308

OVERALL MEAN = 259.550 STANDARD DEVIATION = 104.810
POOLED WITHIN GROUPS STANDARD DEVIATION = 105.190
T STATISTIC = -0.929 PROBABILITY = 0.365

---

SUMMARY STATISTICS FOR PHLWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.017

APPROXIMATE F = 0.016 DF = 1, 972 PROBABILITY = 0.898

OVERALL MEAN = 1042.452 STANDARD DEVIATION = 374.940
POOLED WITHIN GROUPS STANDARD DEVIATION = 379.873
T STATISTIC = -0.714 PROBABILITY = 0.484

---

SUMMARY STATISTICS FOR PHDWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.407

APPROXIMATE F = 0.386 DF = 1, 972 PROBABILITY = 0.535

OVERALL MEAN = 177.171 STANDARD DEVIATION = 117.123
POOLED WITHIN GROUPS STANDARD DEVIATION = 98.820
T STATISTIC = -2.948 PROBABILITY = 0.009

---

SUMMARY STATISTICS FOR OTHERLWT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 16.371

APPROXIMATE F = 15.746 DF = 1, 972 PROBABILITY = 0.000

OVERALL MEAN = 47.312 STANDARD DEVIATION = 152.730
POOLED WITHIN GROUPS STANDARD DEVIATION = 153.077
T STATISTIC = -0.956 PROBABILITY = 0.352

---

SUMMARY STATISTICS FOR OTHERDWT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 13.187

APPROXIMATE F = 12.644 DF = 1, 972 PROBABILITY = 0.000

OVERALL MEAN = 22.180 STANDARD DEVIATION = 68.665
POOLED WITHIN GROUPS STANDARD DEVIATION = 68.861
T STATISTIC = -0.944 PROBABILITY = 0.358

---

SUMMARY STATISTICS FOR TOTWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.132

APPROXIMATE F = 1.073 DF = 1, 972 PROBABILITY = 0.301

OVERALL MEAN = 1289.115 STANDARD DEVIATION = 357.908
POOLED WITHIN GROUPS STANDARD DEVIATION = 358.280
T STATISTIC = -0.980 PROBABILITY = 0.340

---

TIME=12 MOS POST-BURN
panicum (maidencane) community

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

| | DEPTHCM | PHTOTCOV | TOTCOV | PHLSTEMS | PHLWTG |
|---|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 | 8 |
| MINIMUM | 41.000 | 25.000 | 29.000 | 150.000 | 93.600 |
| MAXIMUM | 57.000 | 75.000 | 77.000 | 490.000 | 833.900 |
| MEAN | 48.625 | 48.500 | 50.500 | 350.000 | 311.713 |
| STANDARD DEV | 5.317 | 18.883 | 18.142 | 122.824 | 225.569 |

| | PHDWTG | OTHERLWT | OTHERDWT | TOTWTG |
|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 |
| MINIMUM | 10.800 | 0.000 | 0.000 | 117.900 |
| MAXIMUM | 611.900 | 0.100 | 120.000 | 1098.900 |
| MEAN | 232.363 | 0.050 | 24.438 | 568.563 |
| STANDARD DEV | 226.750 | 0.053 | 43.576 | 336.886 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

| | DEPTHCM | PHTOTCOV | TOTCOV | PHLSTEMS | PHLWTG |
|---|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 | 8 |
| MINIMUM | 36.000 | 24.000 | 25.000 | 70.000 | 111.600 |
| MAXIMUM | 59.000 | 90.000 | 90.000 | 1000.000 | 708.100 |
| MEAN | 49.250 | 60.250 | 62.750 | 378.750 | 368.700 |
| STANDARD DEV | 8.031 | 26.185 | 24.406 | 313.753 | 217.615 |

| | PHDWTG | OTHERLWT | OTHERDWT | TOTWTG |
|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 |
| MINIMUM | 22.600 | 0.000 | 0.000 | 215.600 |
| MAXIMUM | 646.400 | 0.100 | 295.300 | 1145.600 |
| MEAN | 219.375 | 0.038 | 54.988 | 643.100 |
| STANDARD DEV | 226.080 | 0.052 | 100.413 | 327.406 |

---

SUMMARY STATISTICS FOR DEPTHCM

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.159

APPROXIMATE F = 1.082 DF = 1, 588 PROBABILITY = 0.299

OVERALL MEAN = 48.938 STANDARD DEVIATION = 6.588
POOLED WITHIN GROUPS STANDARD DEVIATION = 6.811
T STATISTIC = -0.184 PROBABILITY = 0.857

---

SUMMARY STATISTICS FOR PHTOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.735

APPROXIMATE F = 0.686 DF = 1, 588 PROBABILITY = 0.408

OVERALL MEAN = 54.375 STANDARD DEVIATION = 22.873
POOLED WITHIN GROUPS STANDARD DEVIATION = 22.828
T STATISTIC = -1.029 PROBABILITY = 0.321

---

SUMMARY STATISTICS FOR TOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.607

APPROXIMATE F = 0.566 DF = 1, 588 PROBABILITY = 0.452

OVERALL MEAN = 56.625 STANDARD DEVIATION = 21.716
POOLED WITHIN GROUPS STANDARD DEVIATION = 21.503
T STATISTIC = -1.139 PROBABILITY = 0.274

---

SUMMARY STATISTICS FOR PHLSTEMS

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 5.422

APPROXIMATE F = 5.097 DF = 1, 588 PROBABILITY = 0.024

OVERALL MEAN = 364.375 STANDARD DEVIATION = 230.650
POOLED WITHIN GROUPS STANDARD DEVIATION = 238.251
T STATISTIC = -0.241 PROBABILITY = 0.813

---

SUMMARY STATISTICS FOR PHLWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.009

APPROXIMATE F = 0.008 DF = 1, 588 PROBABILITY = 0.927

OVERALL MEAN = 340.206 STANDARD DEVIATION = 216.125
POOLED WITHIN GROUPS STANDARD DEVIATION = 221.627
T STATISTIC = -0.514 PROBABILITY = 0.615

---

SUMMARY STATISTICS FOR PHDWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.000

APPROXIMATE F = 0.000 DF = 1, 588 PROBABILITY = 0.994

OVERALL MEAN = 225.869 STANDARD DEVIATION = 218.841
POOLED WITHIN GROUPS STANDARD DEVIATION = 226.415
T STATISTIC = -0.115 PROBABILITY = 0.910

---

SUMMARY STATISTICS FOR OTHERLWT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.007

APPROXIMATE F = 0.007 DF = 1, 588 PROBABILITY = 0.934

OVERALL MEAN = 0.044 STANDARD DEVIATION = 0.051
POOLED WITHIN GROUPS STANDARD DEVIATION = 0.053
T STATISTIC = -0.475 PROBABILITY = 0.642

---

SUMMARY STATISTICS FOR OTHERDWT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 4.399

APPROXIMATE F = 4.128 DF = 1, 588 PROBABILITY = 0.043

OVERALL MEAN = 39.713 STANDARD DEVIATION = 76.422
POOLED WITHIN GROUPS STANDARD DEVIATION = 77.400
T STATISTIC = -0.789 PROBABILITY = 0.443

---

SUMMARY STATISTICS FOR TOTWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.006

APPROXIMATE F = 0.005 DF = 1, 588 PROBABILITY = 0.942

OVERALL MEAN = 605.831 STANDARD DEVIATION = 323.216
POOLED WITHIN GROUPS STANDARD DEVIATION = 332.180
T STATISTIC = -0.449 PROBABILITY = 0.660

---

panicum (maidencane) community

TIME=20 MOS POST-BURN

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

| | DEPTHCM | PHTOTCOV | TOTCOV | PHLSTEMS | PHLWTG |
|---|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 | 8 |
| MINIMUM | 15.000 | 35.000 | 38.000 | 220.000 | 153.000 |
| MAXIMUM | 37.000 | 75.000 | 78.500 | 760.000 | 441.100 |
| MEAN | 25.875 | 56.250 | 59.313 | 533.750 | 267.038 |
| STANDARD DEV | 8.659 | 13.562 | 14.978 | 181.575 | 91.816 |

| | PHDWTG | OTHERLWT | OTHERDWT | TOTWTG |
|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 |
| MINIMUM | 108.100 | 0.000 | 0.000 | 353.700 |
| MAXIMUM | 491.300 | 34.100 | 159.300 | 779.300 |
| MEAN | 221.763 | 4.388 | 32.075 | 525.263 |
| STANDARD DEV | 133.922 | 12.011 | 55.786 | 176.456 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

| | DEPTHCM | PHTOTCOV | TOTCOV | PHLSTEMS | PHLWTG |
|---|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 | 8 |
| MINIMUM | 19.000 | 18.000 | 18.000 | 230.000 | 91.000 |
| MAXIMUM | 35.000 | 90.000 | 92.000 | 840.000 | 386.400 |
| MEAN | 26.125 | 49.875 | 51.875 | 548.750 | 253.700 |
| STANDARD DEV | 6.686 | 22.472 | 23.277 | 199.674 | 121.234 |

| | PHDWTG | OTHERLWT | OTHERDWT | TOTWTG |
|---|---|---|---|---|
| N OF CASES | 8 | 8 | 8 | 8 |
| MINIMUM | 59.400 | 0.000 | 0.000 | 236.700 |
| MAXIMUM | 323.400 | 1.000 | 91.200 | 742.600 |
| MEAN | 172.538 | 0.125 | 39.013 | 465.375 |
| STANDARD DEV | 96.327 | 0.354 | 34.727 | 206.010 |

---

SUMMARY STATISTICS FOR DEPTHCM

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.463

APPROXIMATE F = 0.432 DF = 1, 588 PROBABILITY = 0.511

OVERALL MEAN = 26.000 STANDARD DEVIATION = 7.474
POOLED WITHIN GROUPS STANDARD DEVIATION = 7.736
T STATISTIC = -0.065 PROBABILITY = 0.949

---

SUMMARY STATISTICS FOR PHTOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.714

APPROXIMATE F = 1.602 DF = 1, 588 PROBABILITY = 0.206

OVERALL MEAN = 53.063 STANDARD DEVIATION = 18.230
POOLED WITHIN GROUPS STANDARD DEVIATION = 18.560
T STATISTIC = -0.687 PROBABILITY = 0.503

---

SUMMARY STATISTICS FOR TOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.319

APPROXIMATE F = 1.232 DF = 1, 588 PROBABILITY = 0.268

OVERALL MEAN = 55.594 STANDARD DEVIATION = 19.295
POOLED WITHIN GROUPS STANDARD DEVIATION = 19.573
T STATISTIC = -0.760 PROBABILITY = 0.460

---

SUMMARY STATISTICS FOR PHLSTEMS

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.063

APPROXIMATE F = 0.059 DF = 1, 588 PROBABILITY = 0.808

OVERALL MEAN = 541.250 STANDARD DEVIATION = 184.531
POOLED WITHIN GROUPS STANDARD DEVIATION = 190.839
T STATISTIC = -0.157 PROBABILITY = 0.877

---

SUMMARY STATISTICS FOR PHLWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.534

APPROXIMATE F = 0.498 DF = 1, 588 PROBABILITY = 0.481

OVERALL MEAN = 260.369 STANDARD DEVIATION = 104.118
POOLED WITHIN GROUPS STANDARD DEVIATION = 107.536
T STATISTIC = -0.248 PROBABILITY = 0.808

---

SUMMARY STATISTICS FOR PHDWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.747

APPROXIMATE F = 0.697 DF = 1, 588 PROBABILITY = 0.404

OVERALL MEAN = 197.150 STANDARD DEVIATION = 115.525
POOLED WITHIN GROUPS STANDARD DEVIATION = 116.649
T STATISTIC = -0.844 PROBABILITY = 0.413

---

SUMMARY STATISTICS FOR OTHERLWT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 39.665

APPROXIMATE F = 39.447 DF = 1, 588 PROBABILITY = 0.000

OVERALL MEAN = 2.256 STANDARD DEVIATION = 8.498
POOLED WITHIN GROUPS STANDARD DEVIATION = 8.497
T STATISTIC = -1.003 PROBABILITY = 0.333

---

SUMMARY STATISTICS FOR OTHERDWT

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.517

APPROXIMATE F = 1.417 DF = 1, 588 PROBABILITY = 0.234

OVERALL MEAN = 35.544 STANDARD DEVIATION = 45.033
POOLED WITHIN GROUPS STANDARD DEVIATION = 46.465
T STATISTIC = -0.299 PROBABILITY = 0.770

---

SUMMARY STATISTICS FOR TOTWTG

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.167

APPROXIMATE F = 0.156 DF = 1, 588 PROBABILITY = 0.693

| | | | |
|---|---|---|---|
| OVERALL MEAN = | 495.319 | STANDARD DEVIATION = | 187.862 |
| POOLED WITHIN GROUPS STANDARD DEVIATION = | | | 191.803 |
| T STATISTIC = | -0.624 | PROBABILITY = | 0.542 |

APPENDIX A2. MANOVA/ANOVA FOR PRE-BURN DATA.
FILE IS BIOMSSRT OUTPUT IS MANBLKT1.LIS
SAWGRASS COMMUNITY
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.000 2.000
BLOCK
2.000 3.000 4.000 5.000

NUMBER OF CASES PROCESSED: 16

ADJUSTED LEAST SQUARES MEANS.

TRT = 1.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 3369.935 | 80.495 | 2275.253 | 994.173 | 17.669 |
| SE | 315.733 | 4.533 | 272.576 | 125.506 | 1.295 |

TRT = 2.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 4043.822 | 81.255 | 2565.338 | 1427.891 | 16.581 |
| SE | 315.733 | 4.533 | 272.576 | 125.506 | 1.295 |

BLOCK = 2.000 N OF CASES = 4.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 4404.004 | 90.952 | 2520.298 | 1861.066 | 18.881 |
| SE | 433.737 | 6.228 | 374.450 | 172.414 | 1.778 |

BLOCK = 3.000 N OF CASES = 4.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 3064.554 | 76.579 | 2025.079 | 858.653 | 14.806 |
| SE | 434.143 | 6.233 | 374.800 | 172.575 | 1.780 |

BLOCK = 4.000 N OF CASES = 4.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 3551.476 | 81.736 | 2570.931 | 955.663 | 17.884 |
| SE | 436.035 | 6.261 | 376.434 | 173.327 | 1.788 |

BLOCK = 5.000 N OF CASES = 4.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 3807.482 | 74.232 | 2564.875 | 1168.745 | 16.929 |
| SE | 437.021 | 6.275 | 377.286 | 173.719 | 1.792 |

TEST FOR EFFECT CALLED: TRT

UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 1617704.317 | 1 | 1617704.317 | 2.153 | 0.173 |
| ERROR | 7513352.276 | 10 | 751335.228 | | |
| TOTCOV | 2.056 | 1 | 2.056 | 0.013 | 0.911 |
| ERROR | 1548.916 | 10 | 154.892 | | |
| CJLWTG | 299760.313 | 1 | 299760.313 | 0.535 | 0.481 |
| ERROR | 5599747.662 | 10 | 559974.766 | | |
| CJDWTG | 670098.881 | 1 | 670098.881 | 5.644 | 0.039 |
| ERROR | 1187199.671 | 10 | 118719.967 | | |
| CJLSTEMS | 4.218 | 1 | 4.218 | 0.334 | 0.576 |
| ERROR | 126.314 | 10 | 12.631 | | |

---

TEST FOR EFFECT CALLED: BLOCK

UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 3696096.004 | 3 | 1232032.001 | 1.640 | 0.242 |
| ERROR | 7513352.276 | 10 | 751335.228 | | |
| TOTCOV | 659.153 | 3 | 219.718 | 1.419 | 0.294 |
| ERROR | 1548.916 | 10 | 154.892 | | |
| CJLWTG | 835859.296 | 3 | 278619.765 | 0.498 | 0.692 |
| ERROR | 5599747.662 | 10 | 559974.766 | | |
| CJDWTG | 2436388.073 | 3 | 812129.358 | 6.841 | 0.009 |
| ERROR | 1187199.671 | 10 | 118719.967 | | |
| CJLSTEMS | 36.274 | 3 | 12.091 | 0.957 | 0.450 |
| ERROR | 126.314 | 10 | 12.631 | | |

TEST FOR EFFECT CALLED: DEPTHCM

UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 8066.823 | 1 | 8066.823 | 0.011 | 0.920 |
| ERROR | 7513352.276 | 10 | 751335.228 | | |
| TOTCOV | 523.334 | 1 | 523.334 | 3.379 | 0.096 |
| ERROR | 1548.916 | 10 | 154.892 | | |
| CJLWTG | 376260.601 | 1 | 376260.601 | 0.672 | 0.431 |
| ERROR | 5599747.662 | 10 | 559974.766 | | |
| CJDWTG | 476407.663 | 1 | 476407.663 | 4.013 | 0.073 |
| ERROR | 1187199.671 | 10 | 118719.967 | | |
| CJLSTEMS | 43.936 | 1 | 43.936 | 3.478 | 0.092 |
| ERROR | 126.314 | 10 | 12.631 | | |

MAIDENCANE (PANICUM) COMMUNITY MANOVA

LEVELS ENCOUNTERED DURING PROCESSING ARE:

TRT

1.000 2.000

BLOCK

2.000 3.000 4.000 5.000

NUMBER OF CASES PROCESSED: 16

ADJUSTED LEAST SQUARES MEANS.

TRT = 1.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 1164.377 | 78.840 | 1053.835 | 95.311 | 305.046 |
| SE | 131.699 | 4.531 | 119.200 | 34.960 | 15.177 |

TRT = 2.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 1379.823 | 64.910 | 1136.095 | 241.629 | 264.704 |
| SE | 131.699 | 4.531 | 119.200 | 34.960 | 15.177 |

BLOCK = 2.000 N OF CASES = 4.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 1482.962 | 73.645 | 1285.368 | 190.234 | 295.404 |
| SE | 180.710 | 6.217 | 163.560 | 47.971 | 20.825 |

BLOCK = 3.000 N OF CASES = 4.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 1569.244 | 79.780 | 1340.062 | 223.235 | 200.775 |
| SE | 178.712 | 6.148 | 161.752 | 47.440 | 20.595 |

BLOCK = 4.000 N OF CASES = 4.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 1045.297 | 68.929 | 904.730 | 120.536 | 253.784 |
| SE | 181.924 | 6.259 | 164.659 | 48.293 | 20.965 |

BLOCK = 5.000 N OF CASES = 4.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 990.897 | 65.145 | 849.700 | 139.875 | 389.537 |
| SE | 178.019 | 6.124 | 161.125 | 47.256 | 20.515 |

TEST FOR EFFECT CALLED: TRT

UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 152773.480 | 1 | 152773.480 | 1.220 | 0.295 |
| ERROR | 1252701.251 | 10 | 125270.125 | | |
| TOTCOV | 638.571 | 1 | 638.571 | 4.307 | 0.065 |
| ERROR | 1482.707 | 10 | 148.271 | | |
| PHLWTG | 22271.122 | 1 | 22271.122 | 0.217 | 0.651 |
| ERROR | 1026216.597 | 10 | 102621.660 | | |
| PHDWTG | 70463.959 | 1 | 70463.959 | 7.982 | 0.018 |
| ERROR | 88274.201 | 10 | 8827.420 | | |
| PHLSTEMS | 5356.674 | 1 | 5356.674 | 3.220 | 0.103 |
| ERROR | 16636.952 | 10 | 1663.695 | | |

TEST FOR EFFECT CALLED: BLOCK

UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 950699.140 | 3 | 316899.713 | 2.530 | 0.116 |
| ERROR | 1252701.251 | 10 | 125270.125 | | |
| TOTCOV | 448.300 | 3 | 149.433 | 1.008 | 0.429 |
| ERROR | 1482.707 | 10 | 148.271 | | |
| PHLWTG | 695337.160 | 3 | 231779.053 | 2.259 | 0.144 |
| ERROR | 1026216.597 | 10 | 102621.660 | | |
| PHDWTG | 23822.216 | 3 | 7940.739 | 0.900 | 0.475 |
| ERROR | 88274.201 | 10 | 8827.420 | | |
| PHLSTEMS | 75756.016 | 3 | 25252.005 | 15.178 | 0.000 |
| ERROR | 16636.952 | 10 | 1663.695 | | |

TEST FOR EFFECT CALLED: DEPTHCM

UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 27163.592 | 1 | 27163.592 | 0.217 | 0.651 |
| ERROR | 1252701.251 | 10 | 125270.125 | | |
| TOTCOV | 122.793 | 1 | 122.793 | 0.828 | 0.384 |
| ERROR | 1482.707 | 10 | 148.271 | | |
| PHLWTG | 2047.948 | 1 | 2047.948 | 0.020 | 0.890 |
| ERROR | 1026216.597 | 10 | 102621.660 | | |
| PHDWTG | 11320.681 | 1 | 11320.681 | 1.282 | 0.284 |
| ERROR | 88274.201 | 10 | 8827.420 | | |
| PHLSTEMS | 15.298 | 1 | 15.298 | 0.009 | 0.926 |
| ERROR | 16636.952 | 10 | 1663.695 | | |

APPENDIX A3. MANOVA/ANOVA FOR POST-BURN DATA (SAMPLE TIMES 2 AND 3, 12 AND 20 MOS POST-BURN.
FILE IS BIOMSSRT OUTPUT IS MANOVBLK.LIS
SAWGRASS COMMUNITY.

LEVELS ENCOUNTERED DURING PROCESSING ARE:

| | | | | |
|---|---|---|---|---|
| TRT | | | | |
| | 1.000 | 2.000 | | |
| TIME | | | | |
| | 2.000 | 3.000 | | |
| BLOCK | | | | |
| | 2.000 | 3.000 | 4.000 | 5.000 |

NUMBER OF CASES PROCESSED: 32

ADJUSTED LEAST SQUARES MEANS.

TIME = 2.000 N OF CASES = 16.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 4748.525 | 64.693 | 2651.162 | 1920.810 | 45.451 |
| SE | 548.363 | 6.052 | 397.422 | 292.589 | 7.224 |

TIME = 3.000 N OF CASES = 16.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 3426.800 | 69.557 | 1396.357 | 1985.021 | 37.674 |
| SE | 548.363 | 6.052 | 397.422 | 292.589 | 7.224 |

TRT = 1.000 N OF CASES = 16.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 3640.255 | 69.178 | 1688.816 | 1921.092 | 36.960 |
| SE | 314.720 | 3.473 | 228.091 | 167.924 | 4.146 |

TRT = 2.000 N OF CASES = 16.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 4535.070 | 65.072 | 2358.703 | 1984.739 | 46.165 |
| SE | 314.720 | 3.473 | 228.091 | 167.924 | 4.146 |

TRT = 1.000
TIME = 2.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 4443.685 | 70.001 | 2402.141 | 1950.716 | 41.906 |
| SE | 553.174 | 6.105 | 400.909 | 295.156 | 7.287 |

TRT = 1.000
TIME = 3.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 2836.825 | 68.355 | 975.491 | 1891.468 | 32.013 |
| SE | 615.787 | 6.796 | 446.287 | 328.564 | 8.112 |

TRT = 2.000
TIME = 2.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 5053.365 | 59.385 | 2900.182 | 1890.904 | 48.995 |
| SE | 718.301 | 7.927 | 520.583 | 383.262 | 9.462 |

TRT = 2.000
TIME = 3.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 4016.775 | 70.759 | 1817.223 | 2078.574 | 43.336 |
| SE | 645.448 | 7.123 | 467.783 | 344.390 | 8.503 |

BLOCK = 2.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 4084.388 | 73.620 | 2052.020 | 1877.398 | 37.557 |
| SE | 441.106 | 4.868 | 319.688 | 235.360 | 5.811 |

BLOCK = 3.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 3682.619 | 61.496 | 1717.376 | 1847.959 | 39.939 |
| SE | 441.282 | 4.870 | 319.816 | 235.454 | 5.813 |

BLOCK = 4.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 4415.252 | 74.139 | 2122.914 | 2282.531 | 32.566 |
| SE | 441.514 | 4.873 | 319.984 | 235.578 | 5.816 |

BLOCK = 5.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | CJLWTG | CJDWTG | CJLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 4168.392 | 59.244 | 2202.728 | 1803.774 | 56.188 |
| SE | 441.323 | 4.870 | 319.845 | 235.476 | 5.814 |

TEST FOR EFFECT CALLED: TRT*TIME

UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 592962.651 | 1 | 592962.651 | 0.383 | 0.542 |
| ERROR | .371588E+08 | 24 | 1548283.867 | | |
| TOTCOV | 309.094 | 1 | 309.094 | 1.639 | 0.213 |
| ERROR | 4525.773 | 24 | 188.574 | | |
| CJLWTG | 215377.364 | 1 | 215377.364 | 0.265 | 0.612 |
| ERROR | .195177E+08 | 24 | 813238.909 | | |
| CJDWTG | 111165.928 | 1 | 111165.928 | 0.252 | 0.620 |
| ERROR | .105789E+08 | 24 | 440787.624 | | |
| CJLSTEMS | 32.697 | 1 | 32.697 | 0.122 | 0.730 |
| ERROR | 6448.276 | 24 | 268.678 | | |

TEST FOR EFFECT CALLED: TIME
UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 2679938.002 | 1 | 2679938.002 | 1.731 | 0.201 |
| ERROR | .371588E+08 | 24 | 1548283.867 | | |
| TOTCOV | 36.291 | 1 | 36.291 | 0.192 | 0.665 |
| ERROR | 4525.773 | 24 | 188.574 | | |
| CJLWTG | 2415431.645 | 1 | 2415431.645 | 2.970 | 0.098 |
| ERROR | .195177E+08 | 24 | 813238.909 | | |
| CJDWTG | 6325.074 | 1 | 6325.074 | 0.014 | 0.906 |
| ERROR | .105789E+08 | 24 | 440787.624 | | |
| CJLSTEMS | 92.773 | 1 | 92.773 | 0.345 | 0.562 |
| ERROR | 6448.276 | 24 | 268.678 | | |

TEST FOR EFFECT CALLED: TRT
UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 6117156.517 | 1 | 6117156.517 | 3.951 | 0.058 |
| ERROR | .371588E+08 | 24 | 1548283.867 | | |
| TOTCOV | 128.787 | 1 | 128.787 | 0.683 | 0.417 |
| ERROR | 4525.773 | 24 | 188.574 | | |
| CJLWTG | 3428352.847 | 1 | 3428352.847 | 4.216 | 0.051 |
| ERROR | .195177E+08 | 24 | 813238.909 | | |
| CJDWTG | 30948.173 | 1 | 30948.173 | 0.070 | 0.793 |
| ERROR | .105789E+08 | 24 | 440787.624 | | |
| CJLSTEMS | 647.471 | 1 | 647.471 | 2.410 | 0.134 |
| ERROR | 6448.276 | 24 | 268.678 | | |

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MAIDENCANE (PANICUM) COMMUNITY
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.000 2.000
TIME
2.000 3.000
BLOCK
2.000 3.000 4.000 5.000

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NUMBER OF CASES PROCESSED: 32

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ADJUSTED LEAST SQUARES MEANS.
TIME = 2.000 N OF CASES = 16.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 554.928 | 67.184 | 270.108 | 290.032 | 389.951 |
| SE | 103.482 | 7.262 | 67.597 | 67.662 | 76.555 |

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TIME = 3.000 N OF CASES = 16.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 546.222 | 45.035 | 330.467 | 132.986 | 515.674 |
| SE | 103.482 | 7.262 | 67.597 | 67.662 | 76.555 |

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TRT = 1.000 N OF CASES = 16.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 547.883 | 54.705 | 290.712 | 225.839 | 441.387 |
| SE | 63.793 | 4.477 | 41.671 | 41.711 | 47.193 |

TRT = 2.000 N OF CASES = 16.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 553.267 | 57.514 | 309.863 | 197.180 | 464.238 |
| SE | 63.793 | 4.477 | 41.671 | 41.711 | 47.193 |

TRT = 1.000
TIME = 2.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 519.046 | 60.771 | 243.524 | 294.778 | 374.879 |
| SE | 120.078 | 8.426 | 78.438 | 78.513 | 88.832 |

TRT = 1.000
TIME = 3.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 576.721 | 48.638 | 337.900 | 156.900 | 507.895 |
| SE | 122.153 | 8.572 | 79.793 | 79.870 | 90.367 |

TRT = 2.000
TIME = 2.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 590.810 | 73.597 | 296.691 | 285.287 | 405.023 |
| SE | 123.055 | 8.635 | 80.383 | 80.460 | 91.035 |

TRT = 2.000
TIME = 3.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 515.724 | 41.431 | 323.035 | 109.073 | 523.453 |
| SE | 120.962 | 8.488 | 79.015 | 79.091 | 89.486 |

BLOCK = 2.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 611.189 | 47.079 | 308.433 | 237.353 | 398.380 |
| SE | 92.625 | 6.500 | 60.504 | 60.563 | 68.523 |

BLOCK = 3.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 519.762 | 54.971 | 257.487 | 264.004 | 347.461 |
| SE | 94.365 | 6.622 | 61.641 | 61.701 | 69.810 |

BLOCK = 4.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 369.895 | 49.473 | 230.470 | 71.230 | 415.618 |
| SE | 90.389 | 6.343 | 59.044 | 59.101 | 66.869 |

BLOCK = 5.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | PHLWTG | PHDWTG | PHLSTEMS |
|---|---|---|---|---|---|
| ADJ. LS MEAN | 701.454 | 72.914 | 404.761 | 273.451 | 649.791 |
| SE | 90.193 | 6.329 | 58.916 | 58.973 | 66.724 |

TEST FOR EFFECT CALLED: TRT*TIME

UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 35243.053 | 1 | 35243.053 | 0.542 | 0.469 |
| ERROR | 1561787.730 | 24 | 65074.489 | | |
| TOTCOV | 802.447 | 1 | 802.447 | 2.504 | 0.127 |
| ERROR | 7690.898 | 24 | 320.454 | | |
| PHLWTG | 9254.943 | 1 | 9254.943 | 0.333 | 0.569 |
| ERROR | 666413.333 | 24 | 27767.222 | | |
| PHDWTG | 2938.579 | 1 | 2938.579 | 0.106 | 0.748 |
| ERROR | 667696.156 | 24 | 27820.673 | | |
| PHLSTEMS | 425.426 | 1 | 425.426 | 0.012 | 0.914 |
| ERROR | 854743.787 | 24 | 35614.324 | | |

TEST FOR EFFECT CALLED: TIME

UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 142.128 | 1 | 142.128 | 0.002 | 0.963 |
| ERROR | 1561787.730 | 24 | 65074.489 | | |
| TOTCOV | 920.016 | 1 | 920.016 | 2.871 | 0.103 |
| ERROR | 7690.898 | 24 | 320.454 | | |
| PHLWTG | 6832.459 | 1 | 6832.459 | 0.246 | 0.624 |
| ERROR | 666413.333 | 24 | 27767.222 | | |
| PHDWTG | 46252.203 | 1 | 46252.203 | 1.663 | 0.210 |
| ERROR | 667696.156 | 24 | 27820.673 | | |
| PHLSTEMS | 29642.059 | 1 | 29642.059 | 0.832 | 0.371 |
| ERROR | 854743.787 | 24 | 35614.324 | | |

TEST FOR EFFECT CALLED: TRT

UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 231.554 | 1 | 231.554 | 0.004 | 0.953 |
| ERROR | 1561787.730 | 24 | 65074.489 | | |
| TOTCOV | 63.051 | 1 | 63.051 | 0.197 | 0.661 |
| ERROR | 7690.898 | 24 | 320.454 | | |
| PHLWTG | 2930.584 | 1 | 2930.584 | 0.106 | 0.748 |
| ERROR | 666413.333 | 24 | 27767.222 | | |
| PHDWTG | 6562.722 | 1 | 6562.722 | 0.236 | 0.632 |
| ERROR | 667696.156 | 24 | 27820.673 | | |
| PHLSTEMS | 4172.261 | 1 | 4172.261 | 0.117 | 0.735 |
| ERROR | 854743.787 | 24 | 35614.324 | | |

APPENDIX A4. COMPLETE MANOVA/ANOVA WITH BOTH COMMUNITIES AND ALL TIMES CONSIDERED.

FILE IS BIOMSSRT PRINT FILE IS MANOV1.LIS
LEVELS ENCOUNTERED DURING PROCESSING ARE:
COMTYP
1.000 2.000
TRT
1.000 2.000
TIME
1.000 2.000 3.000

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NUMBER OF CASES PROCESSED: 104

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TEST FOR EFFECT CALLED: COMTYP*TRT*TIME
UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 1295223.645 | 2 | 647611.822 | 0.963 | 0.386 |
| ERROR | .619003E+08 | 92 | 672829.159 | | |
| TOTCOV | 1348.235 | 2 | 674.118 | 2.550 | 0.084 |
| ERROR | 24325.244 | 92 | 264.405 | | |
| TOTLWT | 614774.346 | 2 | 307387.173 | 0.846 | 0.432 |
| ERROR | .334203E+08 | 92 | 363264.217 | | |
| TOTDWT | 252525.904 | 2 | 126262.952 | 0.668 | 0.515 |
| ERROR | .173906E+08 | 92 | 189028.329 | | |
| DEPTHCM | 51.304 | 2 | 25.652 | 0.402 | 0.670 |
| ERROR | 5869.949 | 92 | 63.804 | | |

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TEST FOR EFFECT CALLED: COMTYP*TRT
UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 2802237.769 | 1 | 2802237.769 | 4.165 | 0.044 |
| ERROR | .619003E+08 | 92 | 672829.159 | | |
| TOTCOV | 8.813 | 1 | 8.813 | 0.033 | 0.856 |
| ERROR | 24325.244 | 92 | 264.405 | | |
| TOTLWT | 1316187.398 | 1 | 1316187.398 | 3.623 | 0.060 |
| ERROR | .334203E+08 | 92 | 363264.217 | | |
| TOTDWT | 277451.312 | 1 | 277451.312 | 1.468 | 0.229 |
| ERROR | .173906E+08 | 92 | 189028.329 | | |
| DEPTHCM | 5.471 | 1 | 5.471 | 0.086 | 0.770 |
| ERROR | 5869.949 | 92 | 63.804 | | |

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TEST FOR EFFECT CALLED: TRT*TIME
UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 658459.635 | 2 | 329229.818 | 0.489 | 0.615 |
| ERROR | .619003E+08 | 92 | 672829.159 | | |
| TOTCOV | 436.203 | 2 | 218.101 | 0.825 | 0.442 |
| ERROR | 24325.244 | 92 | 264.405 | | |
| TOTLWT | 375579.510 | 2 | 187789.755 | 0.517 | 0.598 |
| ERROR | .334203E+08 | 92 | 363264.217 | | |
| TOTDWT | 313914.514 | 2 | 156957.257 | 0.830 | 0.439 |
| ERROR | .173906E+08 | 92 | 189028.329 | | |
| DEPTHCM | 170.858 | 2 | 85.429 | 1.339 | 0.267 |
| ERROR | 5869.949 | 92 | 63.804 | | |

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TEST FOR EFFECT CALLED: COMTYP*TIME

UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | .102228E+08 | 2 | 5111378.443 | 7.597 | 0.001 |
| ERROR | .619003E+08 | 92 | 672829.159 | | |
| TOTCOV | 71.011 | 2 | 35.506 | 0.134 | 0.875 |
| ERROR | 24325.244 | 92 | 264.405 | | |
| TOTLWT | 2919857.780 | 2 | 1459928.890 | 4.019 | 0.021 |
| ERROR | .334203E+08 | 92 | 363264.217 | | |
| TOTDWT | 4889726.335 | 2 | 2444863.167 | 12.934 | 0.000 |
| ERROR | .173906E+08 | 92 | 189028.329 | | |
| DEPTHCM | 41.775 | 2 | 20.888 | 0.327 | 0.722 |
| ERROR | 5869.949 | 92 | 63.804 | | |

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TEST FOR EFFECT CALLED: COMTYP
UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | .248315E+09 | 1 | .248315E+09 | 369.061 | 0.000 |
| ERROR | .619003E+08 | 92 | 672829.159 | | |
| TOTCOV | 2628.528 | 1 | 2628.528 | 9.941 | 0.002 |
| ERROR | 24325.244 | 92 | 264.405 | | |
| TOTLWT | .630257E+08 | 1 | .630257E+08 | 173.498 | 0.000 |
| ERROR | .334203E+08 | 92 | 363264.217 | | |
| TOTDWT | .611391E+08 | 1 | .611391E+08 | 323.439 | 0.000 |
| ERROR | .173906E+08 | 92 | 189028.329 | | |
| DEPTHCM | 362.009 | 1 | 362.009 | 5.674 | 0.019 |
| ERROR | 5869.949 | 92 | 63.804 | | |

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TEST FOR EFFECT CALLED: TRT

UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 3858045.843 | 1 | 3858045.843 | 5.734 | 0.019 |
| ERROR | .619003E+08 | 92 | 672829.159 | | |
| TOTCOV | 276.855 | 1 | 276.855 | 1.047 | 0.309 |
| ERROR | 24325.244 | 92 | 264.405 | | |
| TOTLWT | 1711373.719 | 1 | 1711373.719 | 4.711 | 0.033 |
| ERROR | .334203E+08 | 92 | 363264.217 | | |
| TOTDWT | 430330.824 | 1 | 430330.824 | 2.277 | 0.135 |
| ERROR | .173906E+08 | 92 | 189028.329 | | |
| DEPTHCM | 209.781 | 1 | 209.781 | 3.288 | 0.073 |
| ERROR | 5869.949 | 92 | 63.804 | | |

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TEST FOR EFFECT CALLED: TIME

UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 368833.656 | 2 | 184416.828 | 0.274 | 0.761 |
| ERROR | .619003E+08 | 92 | 672829.159 | | |
| TOTCOV | 7697.663 | 2 | 3848.832 | 14.557 | 0.000 |
| ERROR | 24325.244 | 92 | 264.405 | | |
| TOTLWT | 8752856.137 | 2 | 4376428.069 | 12.048 | 0.000 |
| ERROR | .334203E+08 | 92 | 363264.217 | | |
| TOTDWT | 5597371.349 | 2 | 2798685.674 | 14.806 | 0.000 |
| ERROR | .173906E+08 | 92 | 189028.329 | | |
| DEPTHCM | 15321.221 | 2 | 7660.610 | 120.065 | 0.000 |
| ERROR | 5869.949 | 92 | 63.804 | | |

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APPENDIX A5. MANOVA/ANOVA FOR SAWGRASS AND MAIDENCANE COMMUNITIES CONSIDERED SEPARATELY.
FILE IS BIOMSSRT PRINT FILE IS MANOV2.LIS
SAWGRASS COMMUNITY.
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.000 2.000
TIME
1.000 2.000 3.000

NUMBER OF CASES PROCESSED: 52

LEAST SQUARES MEANS.

TRT = 1.000 N OF CASES = 26.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 3545.550 | 74.500 | 1887.670 | 1657.880 | 37.397 |
| SE | 220.537 | 2.805 | 161.030 | 117.143 | 1.463 |

TRT = 2.000 N OF CASES = 26.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 4263.009 | 70.633 | 2371.891 | 1891.118 | 40.714 |
| SE | 220.537 | 2.805 | 161.030 | 117.143 | 1.463 |

TIME = 1.000 N OF CASES = 20.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 3537.513 | 83.450 | 2303.441 | 1234.073 | 51.360 |
| SE | 250.065 | 3.181 | 182.591 | 132.827 | 1.658 |

TIME = 2.000 N OF CASES = 16.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 4129.369 | 66.375 | 2356.231 | 1773.138 | 43.806 |
| SE | 279.581 | 3.556 | 204.143 | 148.506 | 1.854 |

TIME = 3.000 N OF CASES = 16.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 4045.956 | 67.875 | 1729.669 | 2316.288 | 22.000 |
| SE | 279.581 | 3.556 | 204.143 | 148.506 | 1.854 |

TRT = 1.000
TIME = 1.000 N OF CASES = 10.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 3225.175 | 85.500 | 2185.047 | 1040.128 | 48.690 |
| SE | 353.645 | 4.498 | 258.222 | 187.846 | 2.345 |

TRT = 1.000
TIME = 2.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 3983.888 | 71.250 | 2183.525 | 1800.363 | 41.000 |
| SE | 395.387 | 5.029 | 288.701 | 210.019 | 2.622 |

TRT = 1.000
TIME = 3.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 3427.588 | 66.750 | 1294.438 | 2133.150 | 22.500 |
| SE | 395.387 | 5.029 | 288.701 | 210.019 | 2.622 |

TRT = 2.000
TIME = 1.000 N OF CASES = 10.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 3849.851 | 81.400 | 2421.834 | 1428.017 | 54.030 |
| SE | 353.645 | 4.498 | 258.222 | 187.846 | 2.345 |

TRT = 2.000
TIME = 2.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 4274.850 | 61.500 | 2528.938 | 1745.913 | 46.613 |
| SE | 395.387 | 5.029 | 288.701 | 210.019 | 2.622 |

TRT = 2.000
TIME = 3.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 4664.325 | 69.000 | 2164.900 | 2499.425 | 21.500 |
| SE | 395.387 | 5.029 | 288.701 | 210.019 | 2.622 |

TEST FOR EFFECT CALLED: TRT*TIME
UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 1848578.862 | 2 | 924289.431 | 0.739 | 0.483 |
| ERROR | .575299E+08 | 46 | 1250649.447 | | |
| TOTCOV | 288.377 | 2 | 144.188 | 0.713 | 0.496 |
| ERROR | 9307.900 | 46 | 202.346 | | |
| TOTLWT | 975209.447 | 2 | 487604.724 | 0.731 | 0.487 |
| ERROR | .306722E+08 | 46 | 666787.372 | | |
| TOTDWT | 519597.810 | 2 | 259798.905 | 0.736 | 0.484 |
| ERROR | .162317E+08 | 46 | 352862.276 | | |
| DEPTHCM | 115.769 | 2 | 57.885 | 1.052 | 0.357 |
| ERROR | 2530.299 | 46 | 55.006 | | |

TEST FOR EFFECT CALLED: TRT
UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 6618174.922 | 1 | 6618174.922 | 5.292 | 0.026 |
| ERROR | .575299E+08 | 46 | 1250649.447 | | |
| TOTCOV | 192.229 | 1 | 192.229 | 0.950 | 0.335 |
| ERROR | 9307.900 | 46 | 202.346 | | |
| TOTLWT | 3014609.837 | 1 | 3014609.837 | 4.521 | 0.039 |
| ERROR | .306722E+08 | 46 | 666787.372 | | |
| TOTDWT | 699428.117 | 1 | 699428.117 | 1.982 | 0.166 |
| ERROR | .162317E+08 | 46 | 352862.276 | | |
| DEPTHCM | 141.503 | 1 | 141.503 | 2.572 | 0.116 |
| ERROR | 2530.299 | 46 | 55.006 | | |

TEST FOR EFFECT CALLED: TIME
UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 3780762.359 | 2 | 1890381.180 | 1.512 | 0.231 |
| ERROR | .575299E+08 | 46 | 1250649.447 | | |
| TOTCOV | 3298.069 | 2 | 1649.035 | 8.150 | 0.001 |
| ERROR | 9307.900 | 46 | 202.346 | | |
| TOTLWT | 3975786.692 | 2 | 1987893.346 | 2.981 | 0.061 |
| ERROR | .306722E+08 | 46 | 666787.372 | | |
| TOTDWT | .104479E+08 | 2 | 5223968.980 | 14.805 | 0.000 |
| ERROR | .162317E+08 | 46 | 352862.276 | | |
| DEPTHCM | 7996.792 | 2 | 3998.396 | 72.690 | 0.000 |
| ERROR | 2530.299 | 46 | 55.006 | | |

MAIDENCANE (PANICUM) COMMUNITY MANOVA
LEVELS ENCOUNTERED DURING PROCESSING ARE:
TRT
1.000 2.000
TIME
1.000 2.000 3.000

NUMBER OF CASES PROCESSED: 52

LEAST SQUARES MEANS.
TRT = 1.000 N OF CASES = 26.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 768.141 | 63.804 | 548.344 | 219.797 | 41.610 |
| SE | 60.785 | 3.563 | 48.200 | 31.301 | 1.680 |

TRT = 2.000 N OF CASES = 26.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 825.369 | 61.108 | 580.082 | 245.287 | 44.005 |
| SE | 60.785 | 3.563 | 48.200 | 31.301 | 1.680 |

TIME = 1.000 N OF CASES = 20.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 1289.115 | 75.150 | 1089.764 | 199.351 | 53.485 |
| SE | 68.923 | 4.040 | 54.654 | 35.493 | 1.905 |

TIME = 2.000 N OF CASES = 16.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 605.831 | 56.625 | 340.250 | 265.581 | 48.938 |
| SE | 77.059 | 4.517 | 61.105 | 39.682 | 2.130 |

TIME = 3.000 N OF CASES = 16.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 495.319 | 55.594 | 262.625 | 232.694 | 26.000 |
| SE | 77.059 | 4.517 | 61.105 | 39.682 | 2.130 |

TRT = 1.000
TIME = 1.000 N OF CASES = 10.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 1210.597 | 81.600 | 1061.844 | 148.753 | 50.330 |
| SE | 97.472 | 5.714 | 77.292 | 50.194 | 2.694 |

TRT = 1.000
TIME = 2.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 568.563 | 50.500 | 311.763 | 256.800 | 48.625 |
| SE | 108.978 | 6.388 | 86.415 | 56.119 | 3.012 |

TRT = 1.000
TIME = 3.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 525.263 | 59.313 | 271.425 | 253.838 | 25.875 |
| SE | 108.978 | 6.388 | 86.415 | 56.119 | 3.012 |

TRT = 2.000
TIME = 1.000 N OF CASES = 10.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 1367.633 | 68.700 | 1117.684 | 249.949 | 56.640 |
| SE | 97.472 | 5.714 | 77.292 | 50.194 | 2.694 |

TRT = 2.000
TIME = 2.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 643.100 | 62.750 | 368.738 | 274.363 | 49.250 |
| SE | 108.978 | 6.388 | 86.415 | 56.119 | 3.012 |

TRT = 2.000
TIME = 3.000 N OF CASES = 8.000

| | TOTWTG | TOTCOV | TOTLWT | TOTDWT | DEPTHCM |
|---|---|---|---|---|---|
| LS. MEAN | 465.375 | 51.875 | 253.825 | 211.550 | 26.125 |
| SE | 108.978 | 6.388 | 86.415 | 56.119 | 3.012 |

TEST FOR EFFECT CALLED: TRT*TIME
UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 105104.418 | 2 | 52552.209 | 0.553 | 0.579 |
| ERROR | 4370408.035 | 46 | 95008.870 | | |
| TOTCOV | 1496.061 | 2 | 748.030 | 2.291 | 0.113 |
| ERROR | 15017.344 | 46 | 326.464 | | |
| TOTLWT | 15144.410 | 2 | 7572.205 | 0.127 | 0.881 |
| ERROR | 2748088.799 | 46 | 59741.061 | | |
| TOTDWT | 46842.608 | 2 | 23421.304 | 0.930 | 0.402 |
| ERROR | 1158941.578 | 46 | 25194.382 | | |
| DEPTHCM | 106.393 | 2 | 53.196 | 0.733 | 0.486 |
| ERROR | 3339.650 | 46 | 72.601 | | |

TEST FOR EFFECT CALLED: TRT
UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 42108.689 | 1 | 42108.689 | 0.443 | 0.509 |
| ERROR | 4370408.035 | 46 | 95008.870 | | |
| TOTCOV | 93.440 | 1 | 93.440 | 0.286 | 0.595 |
| ERROR | 15017.344 | 46 | 326.464 | | |
| TOTLWT | 12951.280 | 1 | 12951.280 | 0.217 | 0.644 |
| ERROR | 2748088.799 | 46 | 59741.061 | | |
| TOTDWT | 8354.020 | 1 | 8354.020 | 0.332 | 0.568 |
| ERROR | 1158941.578 | 46 | 25194.382 | | |
| DEPTHCM | 73.749 | 1 | 73.749 | 1.016 | 0.319 |
| ERROR | 3339.650 | 46 | 72.601 | | |

---

TEST FOR EFFECT CALLED: TIME
UNIVARIATE F TESTS

| VARIABLE | SS | DF | MS | F | P |
|---|---|---|---|---|---|
| TOTWTG | 6810828.182 | 2 | 3405414.091 | 35.843 | 0.000 |
| ERROR | 4370408.035 | 46 | 95008.870 | | |
| TOTCOV | 4470.605 | 2 | 2235.303 | 6.847 | 0.002 |
| ERROR | 15017.344 | 46 | 326.464 | | |
| TOTLWT | 7696927.225 | 2 | 3848463.612 | 64.419 | 0.000 |
| ERROR | 2748088.799 | 46 | 59741.061 | | |
| TOTDWT | 39159.724 | 2 | 19579.862 | 0.777 | 0.466 |
| ERROR | 1158941.578 | 46 | 25194.382 | | |
| DEPTHCM | 7366.204 | 2 | 3683.102 | 50.731 | 0.000 |
| ERROR | 3339.650 | 46 | 72.601 | | |

---

APPENDIX A6. ONE-WAY ANOVAS FOR PERMANENT QUADRAT MEASURES, BY COMMUNITY AND TIME.

sawgrass community

TIME=PRE-BURN
THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

| | TOTCOV | NSPP | SWINDEX |
|---|---|---|---|
| N OF CASES | 8 | 8 | 8 |
| MINIMUM | 29.750 | 3.000 | 0.347 |
| MAXIMUM | 45.000 | 7.000 | 1.936 |
| MEAN | 37.563 | 4.500 | 0.882 |
| STANDARD DEV | 5.326 | 1.309 | 0.565 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

| | TOTCOV | NSPP | SWINDEX |
|---|---|---|---|
| N OF CASES | 8 | 8 | 8 |
| MINIMUM | 24.000 | 3.000 | 0.201 |
| MAXIMUM | 57.050 | 6.000 | 1.514 |
| MEAN | 35.962 | 4.375 | 0.814 |
| STANDARD DEV | 9.653 | 1.188 | 0.503 |

---

SUMMARY STATISTICS FOR TOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 2.342

APPROXIMATE F = 2.191 DF = 1, 588 PROBABILITY = 0.139

OVERALL MEAN = 36.762 STANDARD DEVIATION = 7.577
POOLED WITHIN GROUPS STANDARD DEVIATION = 7.796
T STATISTIC = 0.410 PROBABILITY = 0.688

---

SUMMARY STATISTICS FOR NSPP

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.066

APPROXIMATE F = 0.062 DF = 1, 588 PROBABILITY = 0.804

OVERALL MEAN = 4.438 STANDARD DEVIATION = 1.209
POOLED WITHIN GROUPS STANDARD DEVIATION = 1.250
T STATISTIC = 0.200 PROBABILITY = 0.844

---

SUMMARY STATISTICS FOR SWINDEX

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.095

APPROXIMATE F = 0.088 DF = 1, 588 PROBABILITY = 0.766

OVERALL MEAN = 0.848 STANDARD DEVIATION = 0.518
POOLED WITHIN GROUPS STANDARD DEVIATION = 0.535
T STATISTIC = 0.253 PROBABILITY = 0.804

---

sawgrass community

TIME=12 MOS POST-BURN
THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

| | TOTCOV | NSPP | SWINDEX |
|---|---|---|---|
| N OF CASES | 8 | 8 | 8 |
| MINIMUM | 6.500 | 2.000 | 0.000 |
| MAXIMUM | 41.750 | 7.000 | 1.851 |
| MEAN | 18.944 | 3.500 | 0.584 |
| STANDARD DEV | 11.852 | 1.927 | 0.667 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

| | TOTCOV | NSPP | SWINDEX |
|---|---|---|---|
| N OF CASES | 8 | 8 | 8 |
| MINIMUM | 24.250 | 2.000 | 0.000 |
| MAXIMUM | 46.800 | 5.000 | 1.182 |
| MEAN | 34.856 | 3.500 | 0.725 |
| STANDARD DEV | 7.480 | 0.926 | 0.382 |

---

SUMMARY STATISTICS FOR TOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.434

APPROXIMATE F = 1.339 DF = 1, 588 PROBABILITY = 0.248

OVERALL MEAN = 26.900 STANDARD DEVIATION = 12.617
POOLED WITHIN GROUPS STANDARD DEVIATION = 9.910
T STATISTIC = 3.211 PROBABILITY = 0.006

---

SUMMARY STATISTICS FOR NSPP

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 3.467

APPROXIMATE F = 3.249 DF = 1, 588 PROBABILITY = 0.072

OVERALL MEAN = 3.500 STANDARD DEVIATION = 1.461
POOLED WITHIN GROUPS STANDARD DEVIATION = 1.512
T STATISTIC = 0.000 PROBABILITY = 1.000

---

SUMMARY STATISTICS FOR SWINDEX

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 2.076

APPROXIMATE F = 1.942 DF = 1, 588 PROBABILITY = 0.164

OVERALL MEAN = 0.655 STANDARD DEVIATION = 0.530
POOLED WITHIN GROUPS STANDARD DEVIATION = 0.544
T STATISTIC = 0.521 PROBABILITY = 0.610

---

sawgrass community

TIME=20 MOS POST-BURN
THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

| | TOTCOV | NSPP | SWINDEX |
|---|---|---|---|
| N OF CASES | 8 | 8 | 8 |
| MINIMUM | 7.500 | 2.000 | 0.000 |
| MAXIMUM | 33.750 | 5.000 | 1.481 |
| MEAN | 22.500 | 3.625 | 0.705 |
| STANDARD DEV | 9.227 | 1.061 | 0.492 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 7

| | TOTCOV | NSPP | SWINDEX |
|---|---|---|---|
| N OF CASES | 7 | 7 | 7 |
| MINIMUM | 16.250 | 3.000 | 0.722 |
| MAXIMUM | 53.750 | 5.000 | 1.424 |
| MEAN | 33.286 | 3.571 | 1.021 |
| STANDARD DEV | 13.664 | 0.787 | 0.233 |

---

SUMMARY STATISTICS FOR TOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.991

APPROXIMATE F = 0.920 DF = 1, 499 PROBABILITY = 0.338

OVERALL MEAN = 27.533 STANDARD DEVIATION = 12.394
POOLED WITHIN GROUPS STANDARD DEVIATION = 11.490
T STATISTIC = 1.814 PROBABILITY = 0.093

---

SUMMARY STATISTICS FOR NSPP

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.560

APPROXIMATE F = 0.519 DF = 1, 499 PROBABILITY = 0.472

OVERALL MEAN = 3.600 STANDARD DEVIATION = 0.910
POOLED WITHIN GROUPS STANDARD DEVIATION = 0.944
T STATISTIC = 0.110 PROBABILITY = 0.914

---

SUMMARY STATISTICS FOR SWINDEX

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 3.198

APPROXIMATE F = 2.980 DF = 1, 499 PROBABILITY = 0.085

OVERALL MEAN = 0.852 STANDARD DEVIATION = 0.414
POOLED WITHIN GROUPS STANDARD DEVIATION = 0.394
T STATISTIC = 1.548 PROBABILITY = 0.146

---

panicum (maidencane) community

TIME=PRE-BURN
THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

| | TOTCOV | NSPP | SWINDEX |
|---|---|---|---|
| N OF CASES | 8 | 8 | 8 |
| MINIMUM | 30.000 | 2.000 | 0.000 |
| MAXIMUM | 46.250 | 7.000 | 1.679 |
| MEAN | 38.594 | 4.250 | 0.629 |
| STANDARD DEV | 6.684 | 1.832 | 0.628 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

| | TOTCOV | NSPP | SWINDEX |
|---|---|---|---|
| N OF CASES | 8 | 8 | 8 |
| MINIMUM | 28.750 | 2.000 | 0.000 |
| MAXIMUM | 60.000 | 5.000 | 0.636 |
| MEAN | 44.537 | 2.875 | 0.164 |
| STANDARD DEV | 10.730 | 1.126 | 0.243 |

---

SUMMARY STATISTICS FOR TOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.513

APPROXIMATE F = 1.414 DF = 1, 588 PROBABILITY = 0.235

OVERALL MEAN = 41.566 STANDARD DEVIATION = 9.165
POOLED WITHIN GROUPS STANDARD DEVIATION = 8.939
T STATISTIC = 1.330 PROBABILITY = 0.205

---

SUMMARY STATISTICS FOR NSPP

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.598

APPROXIMATE F = 1.493 DF = 1, 588 PROBABILITY = 0.222

OVERALL MEAN = 3.563 STANDARD DEVIATION = 1.632
POOLED WITHIN GROUPS STANDARD DEVIATION = 1.521
T STATISTIC = 1.808 PROBABILITY = 0.092

---

SUMMARY STATISTICS FOR SWINDEX

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 5.542

APPROXIMATE F = 5.210 DF = 1, 588 PROBABILITY = 0.023

OVERALL MEAN = 0.397 STANDARD DEVIATION = 0.519
POOLED WITHIN GROUPS STANDARD DEVIATION = 0.476
T STATISTIC = 1.954 PROBABILITY = 0.071

---

panicum (maidencane) community

TIME=12 MOS POST-BURN
THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

| | TOTCOV | NSPP | SWINDEX |
|---|---|---|---|
| N OF CASES | 8 | 8 | 8 |
| MINIMUM | 6.500 | 2.000 | 0.000 |
| MAXIMUM | 32.250 | 5.000 | 1.555 |
| MEAN | 20.281 | 3.625 | 0.802 |
| STANDARD DEV | 7.902 | 0.916 | 0.599 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

| | TOTCOV | NSPP | SWINDEX |
|---|---|---|---|
| N OF CASES | 8 | 8 | 8 |
| MINIMUM | 13.750 | 2.000 | 0.000 |
| MAXIMUM | 39.750 | 4.000 | 0.918 |
| MEAN | 21.781 | 2.750 | 0.430 |
| STANDARD DEV | 8.714 | 0.707 | 0.375 |

---

SUMMARY STATISTICS FOR TOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.067

APPROXIMATE F = 0.062 DF = 1, 588 PROBABILITY = 0.803

OVERALL MEAN = 21.031 STANDARD DEVIATION = 8.073
POOLED WITHIN GROUPS STANDARD DEVIATION = 8.318
T STATISTIC = 0.361 PROBABILITY = 0.724

---

SUMMARY STATISTICS FOR NSPP

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.464

APPROXIMATE F = 0.433 DF = 1, 588 PROBABILITY = 0.511

OVERALL MEAN = 3.188 STANDARD DEVIATION = 0.911
POOLED WITHIN GROUPS STANDARD DEVIATION = 0.818
T STATISTIC = 2.139 PROBABILITY = 0.051

---

SUMMARY STATISTICS FOR SWINDEX

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.478

APPROXIMATE F = 1.381 DF = 1, 588 PROBABILITY = 0.240

OVERALL MEAN = 0.616 STANDARD DEVIATION = 0.520
POOLED WITHIN GROUPS STANDARD DEVIATION = 0.500
T STATISTIC = 1.490 PROBABILITY = 0.158

---

panicum (maidencane) community
TIME=20 MOS POST-BURN
THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

| | TOTCOV | NSPP | SWINDEX |
|---|---|---|---|
| N OF CASES | 8 | 8 | 8 |
| MINIMUM | 16.250 | 2.000 | 0.000 |
| MAXIMUM | 53.500 | 6.000 | 1.662 |
| MEAN | 26.219 | 4.375 | 0.923 |
| STANDARD DEV | 11.949 | 1.598 | 0.737 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

| | TOTCOV | NSPP | SWINDEX |
|---|---|---|---|
| N OF CASES | 8 | 8 | 8 |
| MINIMUM | 4.250 | 1.000 | 0.000 |
| MAXIMUM | 29.500 | 4.000 | 0.767 |
| MEAN | 17.250 | 2.125 | 0.096 |
| STANDARD DEV | 8.206 | 0.835 | 0.271 |

---

SUMMARY STATISTICS FOR TOTCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.966

APPROXIMATE F = 0.902 DF = 1, 588 PROBABILITY = 0.343

OVERALL MEAN = 21.734 STANDARD DEVIATION = 10.932
POOLED WITHIN GROUPS STANDARD DEVIATION = 10.250
T STATISTIC = 1.750 PROBABILITY = 0.102

---

SUMMARY STATISTICS FOR NSPP

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 2.767

APPROXIMATE F = 2.590 DF = 1, 588 PROBABILITY = 0.108

OVERALL MEAN = 3.250 STANDARD DEVIATION = 1.693
POOLED WITHIN GROUPS STANDARD DEVIATION = 1.275
T STATISTIC = 3.530 PROBABILITY = 0.003

---

SUMMARY STATISTICS FOR SWINDEX

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 6.062

APPROXIMATE F = 5.704 DF = 1, 588 PROBABILITY = 0.017

OVERALL MEAN = 0.509 STANDARD DEVIATION = 0.686
POOLED WITHIN GROUPS STANDARD DEVIATION = 0.555
T STATISTIC = 2.979 PROBABILITY = 0.010

---

APPENDIX A7. SELECT ANOVAS FOR PERCENT COVER, BY INDIVIDUAL SPECIES PRESENT IN PERMANENT QUADRATS.
TIME=PREBURN

sawgrass community

CLJA

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 26.969 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 27.656 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.051

APPROXIMATE F = 0.048 DF = 1, 588 PROBABILITY = 0.827

OVERALL MEAN = 27.313 STANDARD DEVIATION = 9.322
POOLED WITHIN GROUPS STANDARD DEVIATION = 9.642
T STATISTIC = 0.143 PROBABILITY = 0.889

---

CLJA

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 14.656 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 26.531 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.065

APPROXIMATE F = 0.061 DF = 1, 588 PROBABILITY = 0.805

OVERALL MEAN = 20.594 STANDARD DEVIATION = 8.418
POOLED WITHIN GROUPS STANDARD DEVIATION = 5.970
T STATISTIC = 3.978 PROBABILITY = 0.001

---

CLJA

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 14.813 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 7

PERCOV

| | |
|---|---|
| N OF CASES | 7 |
| MEAN | 18.893 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.023

APPROXIMATE F = 0.021 DF = 1, 499 PROBABILITY = 0.885

OVERALL MEAN = 16.717 STANDARD DEVIATION = 8.141
POOLED WITHIN GROUPS STANDARD DEVIATION = 8.160
T STATISTIC = 0.966 PROBABILITY = 0.352

---

MISC

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 1.750 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.538 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 4.645

APPROXIMATE F = 4.362 DF = 1, 588 PROBABILITY = 0.037

OVERALL MEAN = 1.144 STANDARD DEVIATION = 2.004
POOLED WITHIN GROUPS STANDARD DEVIATION = 1.971
T STATISTIC = -1.230 PROBABILITY = 0.239

---

MISC

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.563 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.000 |

---

SUMMARY STATISTICS FOR PERCOV

ONE OR MORE OF YOUR GROUPS HAS NO VARIANCE.

---

MISC

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 1.719 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 7

PERCOV

| | |
|---|---|
| N OF CASES | 7 |
| MEAN | 0.321 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 13.809

APPROXIMATE F = 13.131 DF = 1, 499 PROBABILITY = 0.000

OVERALL MEAN = 1.067 STANDARD DEVIATION = 2.494
POOLED WITHIN GROUPS STANDARD DEVIATION = 2.477
T STATISTIC = -1.090 PROBABILITY = 0.296

---

PAHE

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

N OF CASES 8
MEAN 0.594

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

N OF CASES 8
MEAN 0.631

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.227

APPROXIMATE F = 0.211 DF = 1, 588 PROBABILITY = 0.646

OVERALL MEAN = 0.613 STANDARD DEVIATION = 1.233
POOLED WITHIN GROUPS STANDARD DEVIATION = 1.276
T STATISTIC = -0.059 PROBABILITY = 0.954

---

PAHE

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

N OF CASES 8
MEAN 0.063

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.000 |

---

SUMMARY STATISTICS FOR PERCOV

ONE OR MORE OF YOUR GROUPS HAS NO VARIANCE.

---

PAHE

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.313 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 7

PERCOV

| | |
|---|---|
| N OF CASES | 7 |
| MEAN | 0.357 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.029

APPROXIMATE F = 0.027 DF = 1, 499 PROBABILITY = 0.870

OVERALL MEAN = 0.333 STANDARD DEVIATION = 0.880
POOLED WITHIN GROUPS STANDARD DEVIATION = 0.913
T STATISTIC = -0.095 PROBABILITY = 0.926

POCO

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.281 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.319 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.001

APPROXIMATE F = 0.001 DF = 1, 588 PROBABILITY = 0.973

OVERALL MEAN = 0.300 STANDARD DEVIATION = 0.764
POOLED WITHIN GROUPS STANDARD DEVIATION = 0.790
T STATISTIC = -0.095 PROBABILITY = 0.926

---

POCO

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 1.006 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.513 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 5.701

APPROXIMATE F = 5.362 DF = 1, 588 PROBABILITY = 0.021

OVERALL MEAN = 0.759 STANDARD DEVIATION = 1.939
POOLED WITHIN GROUPS STANDARD DEVIATION = 1.990
T STATISTIC = -0.496 PROBABILITY = 0.627

---

POCO

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 1.438 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 7

PERCOV

| | |
|---|---|
| N OF CASES | 7 |
| MEAN | 1.000 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.306

APPROXIMATE F = 0.284 DF = 1, 499 PROBABILITY = 0.595

OVERALL MEAN = 1.233 STANDARD DEVIATION = 1.528
POOLED WITHIN GROUPS STANDARD DEVIATION = 1.568
T STATISTIC = -0.539 PROBABILITY = 0.599

---

SALA

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 6.844 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 6.188 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.258

APPROXIMATE F = 0.241 DF = 1, 588 PROBABILITY = 0.624

OVERALL MEAN = 6.516 STANDARD DEVIATION = 7.674
POOLED WITHIN GROUPS STANDARD DEVIATION = 7.936
T STATISTIC = -0.165 PROBABILITY = 0.871

---

SALA

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 2.219 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 7.500 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 2.103

APPROXIMATE F = 1.967 DF = 1, 588 PROBABILITY = 0.161

OVERALL MEAN = 4.859 STANDARD DEVIATION = 5.812
POOLED WITHIN GROUPS STANDARD DEVIATION = 5.313
T STATISTIC = 1.988 PROBABILITY = 0.067

---

SALA

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 3.281 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 7

PERCOV

| | |
|---|---|
| N OF CASES | 7 |
| MEAN | 10.464 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.369

APPROXIMATE F = 0.342 DF = 1, 499 PROBABILITY = 0.559

OVERALL MEAN = 6.633 STANDARD DEVIATION = 10.280
POOLED WITHIN GROUPS STANDARD DEVIATION = 9.950
T STATISTIC = -1.395 PROBABILITY = 0.186

SASP

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.531 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.156 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 7.804

APPROXIMATE F = 7.364 DF = 1, 588 PROBABILITY = 0.007

OVERALL MEAN = 0.344 STANDARD DEVIATION = 1.024
POOLED WITHIN GROUPS STANDARD DEVIATION = 1.041
T STATISTIC = -0.720 PROBABILITY = 0.483

---

SASP

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.188 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.313 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.089

APPROXIMATE F = 0.083 DF = 1, 588 PROBABILITY = 0.773

OVERALL MEAN = 0.250 STANDARD DEVIATION = 0.548
POOLED WITHIN GROUPS STANDARD DEVIATION = 0.563
T STATISTIC = -0.444 PROBABILITY = 0.664

---

SASP

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.625 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 7

PERCOV

| | |
|---|---|
| N OF CASES | 7 |
| MEAN | 2.250 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 11.607

APPROXIMATE F = 10.990 DF = 1, 499 PROBABILITY = 0.001

OVERALL MEAN = 1.383 STANDARD DEVIATION = 4.097
POOLED WITHIN GROUPS STANDARD DEVIATION = 4.161

T STATISTIC = -0.755 PROBABILITY = 0.464

---

TYDO

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.313 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.469 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.817

APPROXIMATE F = 1.699 DF = 1, 588 PROBABILITY = 0.193

OVERALL MEAN = 0.391 STANDARD DEVIATION = 1.057
POOLED WITHIN GROUPS STANDARD DEVIATION = 1.090
T STATISTIC = -0.287 PROBABILITY = 0.779

---

TYDO

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.250 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.000 |

---

SUMMARY STATISTICS FOR PERCOV

ONE OR MORE OF YOUR GROUPS HAS NO VARIANCE.

---

TYDO

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.156 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 7

PERCOV

| | |
|---|---|
| N OF CASES | 7 |
| MEAN | 0.000 |

---

SUMMARY STATISTICS FOR PERCOV

ONE OR MORE OF YOUR GROUPS HAS NO VARIANCE.

---

PANICUM COMMUNITY

MISC

THE FOLLOWING RESULTS ARE FOR:

TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 2.594 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.688 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 4.392

APPROXIMATE F = 4.122 DF = 1, 588 PROBABILITY = 0.043

OVERALL MEAN = 1.641 STANDARD DEVIATION = 2.492
POOLED WITHIN GROUPS STANDARD DEVIATION = 2.369
T STATISTIC = -1.609 PROBABILITY = 0.130

---

MISC

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 4.156 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 1.000 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 5.324

APPROXIMATE F = 5.004 DF = 1, 588 PROBABILITY = 0.026

OVERALL MEAN = 2.578 STANDARD DEVIATION = 4.186
POOLED WITHIN GROUPS STANDARD DEVIATION = 3.991
T STATISTIC = -1.582 PROBABILITY = 0.136

---

MISC

PAHE

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 33.094 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 43.281 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.158

APPROXIMATE F = 1.081 DF = 1, 588 PROBABILITY = 0.299

OVERALL MEAN = 38.188 STANDARD DEVIATION = 10.333
POOLED WITHIN GROUPS STANDARD DEVIATION = 9.206
T STATISTIC = 2.213 PROBABILITY = 0.044

---

PAHE

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 14.625 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 19.219 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 0.075

APPROXIMATE F = 0.070 DF = 1, 588 PROBABILITY = 0.792

OVERALL MEAN = 16.922 STANDARD DEVIATION = 7.530
POOLED WITHIN GROUPS STANDARD DEVIATION = 7.398
T STATISTIC = 1.242 PROBABILITY = 0.235

---

PAHE

POCO

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.125 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.069 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 1.764

APPROXIMATE F = 1.648 DF = 1, 588 PROBABILITY = 0.200

OVERALL MEAN = 0.097 STANDARD DEVIATION = 0.153
POOLED WITHIN GROUPS STANDARD DEVIATION = 0.156
T STATISTIC = -0.722 PROBABILITY = 0.482

---

POCO

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.313 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 1.563 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 11.568

APPROXIMATE F = 10.982 DF = 1, 588 PROBABILITY = 0.001

OVERALL MEAN = 0.938 STANDARD DEVIATION = 1.365
POOLED WITHIN GROUPS STANDARD DEVIATION = 1.245
T STATISTIC = -2.009 PROBABILITY = 0.064

---

THE FOLLOWING RESULTS ARE FOR:
TRT = 1.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 4.281 |

THE FOLLOWING RESULTS ARE FOR:
TRT = 2.000

TOTAL OBSERVATIONS: 8

PERCOV

| | |
|---|---|
| N OF CASES | 8 |
| MEAN | 0.313 |

---

SUMMARY STATISTICS FOR PERCOV

BARTLETT TEST FOR HOMOGENEITY OF GROUP VARIANCES = 15.720

APPROXIMATE F = 15.025 DF = 1, 588 PROBABILITY = 0.000

OVERALL MEAN = 2.297 STANDARD DEVIATION = 4.195
POOLED WITHIN GROUPS STANDARD DEVIATION = 3.789
T STATISTIC = -2.095 PROBABILITY = 0.055

---

APPENDIX A8. LILLIEFORS NORMALITY TESTS, BY COMMUNITY TYPE AND TIME SAMPLE.
CONTROL SAMPLES.
SAWGRASS COMMUNITY PRE-BURN.
KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

| VARIABLE | N-OF-CASES | MAXDIF | LILLIEFORS PROBABILITY (2-TAIL) |
|---|---|---|---|
| DEPTHCM | 10.000 | 0.259 | 0.056 |
| CJLCOV | 10.000 | 0.173 | 0.619 |
| CJDCOV | 10.000 | 0.211 | 0.251 |
| OTHERLCO | 10.000 | 0.190 | 0.431 |
| OTHERDCO | 10.000 | 0.241 | 0.103 |
| TOTCOV | 10.000 | 0.211 | 0.254 |
| CJLSTEMS | 10.000 | 0.143 | 1.000 |
| CJLWTG | 10.000 | 0.161 | 0.786 |
| CJDWTG | 10.000 | 0.198 | 0.350 |
| OTHERLWT | 10.000 | 0.375 | 0.000 |
| OTHERDWT | 10.000 | 0.335 | 0.002 |
| TOTWTG | 10.000 | 0.189 | 0.435 |
| CJTOTCOV | 10.000 | 0.225 | 0.168 |
| CJTOTWT | 10.000 | 0.178 | 0.558 |
| OTHTOTWT | 10.000 | 0.397 | 0.000 |
| TOTLWT | 10.000 | 0.162 | 0.770 |
| TOTDWT | 10.000 | 0.226 | 0.163 |

12 MOS POST-BURN

KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

| VARIABLE | N-OF-CASES | MAXDIF | LILLIEFORS PROBABILITY (2-TAIL) |
|---|---|---|---|
| DEPTHCM | 8.000 | 0.250 | 0.160 |
| CJLCOV | 8.000 | 0.238 | 0.221 |
| CJDCOV | 8.000 | 0.140 | 1.000 |
| OTHERLCO | 8.000 | 0.278 | 0.069 |
| OTHERDCO | 8.000 | 0.383 | 0.001 |
| TOTCOV | 8.000 | 0.253 | 0.145 |
| CJLSTEMS | 8.000 | 0.262 | 0.113 |
| CJLWTG | 8.000 | 0.134 | 1.000 |
| CJDWTG | 8.000 | 0.114 | 1.000 |
| OTHERLWT | 8.000 | 0.457 | 0.000 |
| OTHERDWT | 8.000 | 0.399 | 0.000 |
| TOTWTG | 8.000 | 0.236 | 0.235 |
| CJTOTCOV | 8.000 | 0.331 | 0.010 |
| CJTOTWT | 8.000 | 0.233 | 0.251 |
| OTHTOTWT | 8.000 | 0.434 | 0.000 |
| TOTLWT | 8.000 | 0.151 | 1.000 |
| TOTDWT | 8.000 | 0.117 | 1.000 |

20 MOS POST-BURN

KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

| VARIABLE | N-OF-CASES | MAXDIF | LILLIEFORS PROBABILITY (2-TAIL) |
|---|---|---|---|
| DEPTHCM | 8.000 | 0.189 | 0.662 |
| CJLCOV | 8.000 | 0.244 | 0.190 |
| CJDCOV | 8.000 | 0.208 | 0.456 |
| OTHERLCO | 8.000 | 0.449 | 0.000 |
| OTHERDCO | 8.000 | 0.500 | 0.000 |
| TOTCOV | 8.000 | 0.204 | 0.496 |
| CJLSTEMS | 8.000 | 0.275 | 0.075 |

| | | | |
|---|---|---|---|
| CJLWTG | 8.000 | 0.242 | 0.198 |
| CJDWTG | 8.000 | 0.188 | 0.675 |
| OTHERLWT | 8.000 | 0.443 | 0.000 |
| OTHERDWT | 8.000 | 0.500 | 0.000 |
| TOTWTG | 8.000 | 0.214 | 0.392 |
| CJTOTCOV | 8.000 | 0.228 | 0.283 |
| CJTOTWT | 8.000 | 0.213 | 0.407 |
| OTHTOTWT | 8.000 | 0.443 | 0.000 |
| TOTLWT | 8.000 | 0.240 | 0.208 |
| TOTDWT | 8.000 | 0.188 | 0.675 |

MAIDENCANE COMMUNITY
PRE-BURN

KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

| VARIABLE | N-OF-CASES | MAXDIF | LILLIEFORS PROBABILITY (2-TAIL) |
|---|---|---|---|
| DEPTHCM | 10.000 | 0.111 | 1.000 |
| PHLCOV | 10.000 | 0.178 | 0.556 |
| PHDCOV | 10.000 | 0.203 | 0.315 |
| PHTOTCOV | 10.000 | 0.236 | 0.120 |
| OTHERLCO | 10.000 | 0.333 | 0.002 |
| OTHERDCO | 10.000 | 0.366 | 0.000 |
| TOTCOV | 10.000 | 0.241 | 0.102 |
| PHLSTEMS | 10.000 | 0.163 | 0.759 |
| PHLWTG | 10.000 | 0.190 | 0.433 |
| PHDWTG | 10.000 | 0.260 | 0.054 |
| OTHERLWT | 10.000 | 0.420 | 0.000 |
| OTHERDWT | 10.000 | 0.403 | 0.000 |
| TOTWTG | 10.000 | 0.144 | 1.000 |
| PHTOTWT | 10.000 | 0.182 | 0.513 |
| OTHTOTWT | 10.000 | 0.440 | 0.000 |
| TOTLWT | 10.000 | 0.207 | 0.285 |
| TOTDWT | 10.000 | 0.274 | 0.032 |

12 MOS POST-BURN
KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

| VARIABLE | N-OF-CASES | MAXDIF | LILLIEFORS PROBABILITY (2-TAIL) |
|---|---|---|---|
| DEPTHCM | 8.000 | 0.153 | 1.000 |
| PHLCOV | 8.000 | 0.218 | 0.363 |
| PHDCOV | 8.000 | 0.204 | 0.495 |
| PHTOTCOV | 8.000 | 0.184 | 0.730 |
| OTHERLCO | 8.000 | 0.288 | 0.049 |
| OTHERDCO | 8.000 | 0.513 | 0.000 |
| TOTCOV | 8.000 | 0.219 | 0.357 |
| PHLSTEMS | 8.000 | 0.243 | 0.196 |
| PHLWTG | 8.000 | 0.326 | 0.012 |
| PHDWTG | 8.000 | 0.254 | 0.142 |
| OTHERLWT | 8.000 | 0.325 | 0.013 |
| OTHERDWT | 8.000 | 0.350 | 0.005 |
| TOTWTG | 8.000 | 0.173 | 0.875 |
| PHTOTWT | 8.000 | 0.200 | 0.537 |
| OTHTOTWT | 8.000 | 0.350 | 0.005 |
| TOTLWT | 8.000 | 0.326 | 0.012 |
| TOTDWT | 8.000 | 0.274 | 0.078 |

20 MOS POST-BURN

KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

| VARIABLE | N-OF-CASES | MAXDIF | LILLIEFORS PROBABILITY (2-TAIL) |
|---|---|---|---|
| DEPTHCM | 8.000 | 0.193 | 0.610 |
| PHLCOV | 8.000 | 0.229 | 0.276 |
| PHDCOV | 8.000 | 0.374 | 0.002 |
| PHTOTCOV | 8.000 | 0.178 | 0.815 |
| OTHERLCO | 8.000 | 0.463 | 0.000 |
| OTHERDCO | 8.000 | 0.347 | 0.005 |
| TOTCOV | 8.000 | 0.211 | 0.428 |
| PHLSTEMS | 8.000 | 0.133 | 1.000 |
| PHLWTG | 8.000 | 0.160 | 1.000 |
| PHDWTG | 8.000 | 0.286 | 0.054 |
| OTHERLWT | 8.000 | 0.486 | 0.000 |
| OTHERDWT | 8.000 | 0.336 | 0.008 |
| TOTWTG | 8.000 | 0.277 | 0.071 |
| PHTOTWT | 8.000 | 0.289 | 0.049 |
| OTHTOTWT | 8.000 | 0.286 | 0.054 |
| TOTLWT | 8.000 | 0.182 | 0.758 |
| TOTDWT | 8.000 | 0.197 | 0.572 |

FIRE TREATMENT SAMPLES.
SAWGRASS COMMUNITY.
PRE-BURN.

KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

| VARIABLE | N-OF-CASES | MAXDIF | LILLIEFORS PROBABILITY (2-TAIL) |
|---|---|---|---|
| DEPTHCM | 10.000 | 0.151 | 0.925 |
| CJLCOV | 10.000 | 0.258 | 0.059 |
| CJDCOV | 10.000 | 0.196 | 0.375 |
| OTHERLCO | 10.000 | 0.322 | 0.004 |
| OTHERDCO | 10.000 | 0.362 | 0.001 |
| TOTCOV | 10.000 | 0.211 | 0.253 |
| CJLSTEMS | 10.000 | 0.112 | 1.000 |
| CJLWTG | 10.000 | 0.245 | 0.090 |
| CJDWTG | 10.000 | 0.161 | 0.786 |
| OTHERLWT | 10.000 | 0.258 | 0.057 |
| OTHERDWT | 10.000 | 0.381 | 0.000 |
| TOTWTG | 10.000 | 0.206 | 0.288 |
| CJTOTCOV | 10.000 | 0.210 | 0.262 |
| CJTOTWT | 10.000 | 0.163 | 0.760 |
| OTHTOTWT | 10.000 | 0.283 | 0.023 |
| TOTLWT | 10.000 | 0.232 | 0.135 |
| TOTDWT | 10.000 | 0.194 | 0.390 |

12 MOS POST-BURN

KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

| VARIABLE | N-OF-CASES | MAXDIF | LILLIEFORS PROBABILITY (2-TAIL) |
|---|---|---|---|
| DEPTHCM | 8.000 | 0.285 | 0.055 |
| CJLCOV | 8.000 | 0.262 | 0.112 |
| CJDCOV | 8.000 | 0.262 | 0.114 |
| OTHERLCO | 8.000 | 0.269 | 0.093 |
| OTHERDCO | 8.000 | 0.291 | 0.045 |
| TOTCOV | 8.000 | 0.200 | 0.541 |
| CJLSTEMS | 8.000 | 0.234 | 0.248 |
| CJLWTG | 8.000 | 0.197 | 0.564 |
| CJDWTG | 8.000 | 0.222 | 0.332 |

| | | | |
|---|---|---|---|
| OTHERLWT | 8.000 | 0.185 | 0.712 |
| OTHERDWT | 8.000 | 0.374 | 0.002 |
| TOTWTG | 8.000 | 0.253 | 0.147 |
| CJTOTCOV | 8.000 | 0.264 | 0.106 |
| CJTOTWT | 8.000 | 0.150 | 1.000 |
| OTHTOTWT | 8.000 | 0.306 | 0.026 |
| TOTLWT | 8.000 | 0.190 | 0.657 |
| TOTDWT | 8.000 | 0.247 | 0.173 |

20 MOS POST-BURN

KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

| VARIABLE | N-OF-CASES | MAXDIF | LILLIEFORS PROBABILITY (2-TAIL) |
|---|---|---|---|
| DEPTHCM | 8.000 | 0.163 | 1.000 |
| CJLCOV | 8.000 | 0.214 | 0.397 |
| CJDCOV | 8.000 | 0.219 | 0.353 |
| OTHERLCO | 8.000 | 0.391 | 0.001 |
| OTHERDCO | 8.000 | 0.303 | 0.030 |
| TOTCOV | 8.000 | 0.227 | 0.293 |
| CJLSTEMS | 8.000 | 0.252 | 0.149 |
| CJLWTG | 8.000 | 0.323 | 0.014 |
| CJDWTG | 8.000 | 0.228 | 0.288 |
| OTHERLWT | 8.000 | 0.391 | 0.001 |
| OTHERDWT | 8.000 | 0.288 | 0.050 |
| TOTWTG | 8.000 | 0.188 | 0.672 |
| CJTOTCOV | 8.000 | 0.261 | 0.116 |
| CJTOTWT | 8.000 | 0.200 | 0.538 |
| OTHTOTWT | 8.000 | 0.286 | 0.052 |
| TOTLWT | 8.000 | 0.324 | 0.013 |
| TOTDWT | 8.000 | 0.257 | 0.131 |

MAIDENCANE COMMUNITY.
PRE-BURN

KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

| VARIABLE | N-OF-CASES | MAXDIF | LILLIEFORS PROBABILITY (2-TAIL) |
|---|---|---|---|
| DEPTHCM | 10.000 | 0.177 | 0.576 |
| PHLCOV | 10.000 | 0.166 | 0.719 |
| PHDCOV | 10.000 | 0.193 | 0.404 |
| PHTOTCOV | 10.000 | 0.159 | 0.808 |
| OTHERLCO | 10.000 | 0.459 | 0.000 |
| OTHERDCO | 10.000 | 0.524 | 0.000 |
| TOTCOV | 10.000 | 0.195 | 0.379 |
| PHLSTEMS | 10.000 | 0.186 | 0.474 |
| PHLWTG | 10.000 | 0.150 | 0.953 |
| PHDWTG | 10.000 | 0.178 | 0.557 |
| OTHERLWT | 10.000 | 0.489 | 0.000 |
| OTHERDWT | 10.000 | 0.524 | 0.000 |
| TOTWTG | 10.000 | 0.145 | 1.000 |
| PHTOTWT | 10.000 | 0.121 | 1.000 |
| OTHTOTWT | 10.000 | 0.501 | 0.000 |
| TOTLWT | 10.000 | 0.136 | 1.000 |
| TOTDWT | 10.000 | 0.206 | 0.292 |

12 MOS POST-BURN
KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

| VARIABLE | N-OF-CASES | MAXDIF | LILLIEFORS PROBABILITY (2-TAIL) |
|---|---|---|---|
| DEPTHCM | 8.000 | 0.188 | 0.675 |
| PHLCOV | 8.000 | 0.318 | 0.017 |
| PHDCOV | 8.000 | 0.311 | 0.022 |
| PHTOTCOV | 8.000 | 0.213 | 0.402 |
| OTHERLCO | 8.000 | 0.371 | 0.002 |
| OTHERDCO | 8.000 | 0.384 | 0.001 |
| TOTCOV | 8.000 | 0.192 | 0.626 |
| PHLSTEMS | 8.000 | 0.261 | 0.118 |
| PHLWTG | 8.000 | 0.176 | 0.831 |
| PHDWTG | 8.000 | 0.302 | 0.031 |
| OTHERLWT | 8.000 | 0.391 | 0.001 |
| OTHERDWT | 8.000 | 0.345 | 0.006 |
| TOTWTG | 8.000 | 0.182 | 0.752 |
| PHTOTWT | 8.000 | 0.184 | 0.734 |
| OTHTOTWT | 8.000 | 0.345 | 0.006 |
| TOTLWT | 8.000 | 0.176 | 0.833 |
| TOTDWT | 8.000 | 0.250 | 0.161 |

20 MOS POST-BURN

KOLMOGOROV-SMIRNOV ONE SAMPLE TEST USING STANDARD NORMAL DISTRIBUTION

| VARIABLE | N-OF-CASES | MAXDIF | LILLIEFORS PROBABILITY (2-TAIL) |
|---|---|---|---|
| DEPTHCM | 8.000 | 0.195 | 0.590 |
| PHLCOV | 8.000 | 0.276 | 0.074 |
| PHDCOV | 8.000 | 0.212 | 0.415 |
| PHTOTCOV | 8.000 | 0.215 | 0.386 |
| OTHERLCO | 8.000 | 0.513 | 0.000 |
| OTHERDCO | 8.000 | 0.312 | 0.021 |
| TOTCOV | 8.000 | 0.195 | 0.588 |
| PHLSTEMS | 8.000 | 0.158 | 1.000 |
| PHLWTG | 8.000 | 0.202 | 0.517 |
| PHDWTG | 8.000 | 0.155 | 1.000 |
| OTHERLWT | 8.000 | 0.513 | 0.000 |
| OTHERDWT | 8.000 | 0.217 | 0.371 |
| TOTWTG | 8.000 | 0.207 | 0.462 |
| PHTOTWT | 8.000 | 0.202 | 0.512 |
| OTHTOTWT | 8.000 | 0.217 | 0.367 |
| TOTLWT | 8.000 | 0.201 | 0.524 |
| TOTDWT | 8.000 | 0.212 | 0.418 |