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Effect of Event (ACP 1911) on Rough Turf Grasses at Coles County Airport, Illinois

Phena Khanjila Shimaka

This research is a product of the graduate program in Botany at Eastern Illinois University. Find out more about the program.

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Date \hspace{1cm} Author
EFFECT OF EVENT (ACP 1911) ON ROUGH TURF

GRASSES AT COLES COUNTY AIRPORT, ILLINOIS

(TITLE)

BY

Phena Khanjila Shimaka

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

Master of Science in Botany

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS

1988

YEAR

I HEREBY RECOMMEND THIS THESIS BE ACCEPTED AS FULFILLING
THIS PART OF THE GRADUATE DEGREE CITED ABOVE
**ABSTRACT**

*Event* is a plant growth regulator that was applied to rough turfgrass at Coles County Airport, Charleston-Mattoon at rates of 0, 8, 10 and 12 ounces per acre. Each of the 12 plots was divided into three sections "mowed", "mowed once" and "unmowed" at application time. The mowed portion was sampled at two week intervals for a six week period and biomass recorded in grams dry weight. Prior to mowing, all the plots were visually observed for broadleaf weeds control, height and seedhead suppression, discoloration and phytotoxicity.

The 12 ounces rate of *Event* significantly suppressed seedhead production, height, broadleaf weeds control and the biomass production. No discoloration nor phytotoxicity was observed. The results suggest the optimum application rate for maximum growth suppression is 12 ounces per acre.
Acknowledgements

I wish to express my thanks to my advisor, Dr. John Speer for his time, patience and constructive criticisms during my thesis writing; to my research director, Dr. Roger Darding for his ideas, honesty, time and patience in the effort to make this project a success.

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My gratitude goes to my special friends as well as family, the Shafers who have supported me in various ways throughout this study. To all of these people and many that I have not mentioned here, I will always be indebted.

Lastly my gratitude is extended to my husband, Joseph Lukhale for being patient and understanding in the course of my studies.
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INTRODUCTION

This study was developed at Coles County Airport to determine the effectiveness of Event as a plant growth regulator. Event was developed by American Cyanamide Company to control the growth rate of rough turf grasses. The Coles County Administrative Board annually spends from $25,000 to $30,000 to control grasses along the runway and other areas of the Airport. At this time, mowing is the only answer this problem. Therefore, this study is an attempt to find a chemical growth regulator which could reduce mowing costs.

Event is a mixture of two ammonium salts, imazapyr and imayethapyr. These two compounds are used as herbicides. Imazapyr (trade name Arsenal) controls annual and perennial grasses and broadleaved weeds at the recommended dosage. Imayethapyr (trade name Pursuit) is a herbicide that controls annual and perennial grasses as well as broadleaved weeds in soybeans according to a 1985 Technical Information Report by the American Cyanamid Company.

If these compounds, Imazapyr and Imayethapyr are mixed together, they form the compound which American Cyanamid has named Event that exhibits growth regulating properties which can be used on turf grasses. The dominant species of turf grass in the selected test plots are tall fescue (Festuca arindunacea Schreb.) and bluegrass (Poa pratensis L.). Other less dominant species of grasses are foxtail (Setareia sp.), species of Panicum and other species of grasses that were not identified. Broadleaf weeds such as Plantain, dandelion and red clover were also present.

Each plot was divided into three sections. The three sections
were then designated as one; this section was never mowed; two, mowed the day before the application of Event; three, mowed one day before the application of Event followed by mowing on two week intervals. Event as a plant growth regulator was applied only once. After the application, each plot was analyzed for height, weight of mowed grass, and seedhead suppression. Other parameters noted were the color of turfgrass and the effect of Event on broadleaf plants within the study area. This data were compiled with the following discussion of determined results.
LITERATURE REVIEW

Ever since the discovery of plant growth regulators over 30 years ago, many researchers have done studies on turfgrass for effectiveness of plant growth regulators. Every year, new growth regulators are tested with varying results. Therefore, attention has been focused on those regulators that prove promising to retard the growth of turfgrasses (25).

The usage of currently available regulators is most valuable in areas such as roadsides, around fence posts, airfields, golf courses, steep banks and home lawns (6,24,30). At the present time, mechanical mowing is the most effective and widely accepted as a means of turfgrass control. However, the advent of plant growth regulators is an alternative to replace mechanical mowing. This will reduce the expenditures of labour, fuel and wear of equipment. In addition, hard-to-mow areas may be managed. There are prospects for large markets for these new chemical regulators to control turfgrasses on highways, recreational fields, airports and home lawns where temporary injuries are acceptable, and considerable cost of mowing is cut down (9,12). Therefore, the development of plant growth regulators is looked upon as an effective alternative to mowing (20,30).

Recent studies (12,19) indicate that the current plant growth regulators on the market have serious side effects such as discoloration of the foliar parts and phytotoxicity. There has been change and improvement on the old plant growth regulators to eliminate discoloration and phytotoxicity to meet the demand of an ideal growth regulator (16,27,29). This ideal plant growth regulator would be that which slows the growth of turfgrass parts without completely inhibiting
the activities of the apical shoot or meristems. Event has been proven
to an ideal growth regulator such that it interferes with the
biosynthetic pathway of the shoots by reducing the growth and causes no
discoloration and phytotoxicity. This in turn helps the turfgrass to
recuperate normally (12,25).

Previous studies have demonstrated that regulators reduce the
frequency of mowing by suppressing seedhead production and foliar
growth by reducing cell division and elongation in meristematic regions
for a period of 4 to 10 weeks (12,13,23,26). In spite of the success
that has been achieved by the new plant growth regulators to retard the
growth of turfgrass, the turfgrass scientists have devoted their
research to developing a chemical regulator that would not yield
undersirable injuries such as phytotoxicity, discolouration, thinning,
reduced recuperative potential and aesthetic quality
(12,14,15,17,19,29,30). Duell et al (9) concludes that retardation of
turfgrasses from the application of the plant growth regulators
correlate to the rates applied and the factors leading to injuries
relates to the amount applied. Billot and Hentgen (4) attribute the
cause of phytotoxicity to improper formulation of existing herbicides.

In the study of Brown and White (5), the new commonly known plant
growth regulating chemicals were tested on turfgrass in combination
with nutrients. Wakefield and Fales (13,25) have indicated that the
use of nitrogen fertilizer in combination with plant growth retardants
yields excellent turfgrass. Inspite of nutrients addition and
successful growth retardation, the plant regulating chemicals still
caused discoloration and toxicity. However, Watschke (28) suggests
that such chemical regulators can be used in areas where the
discolouration and other injuries caused are acceptable. Such injuries would be acceptable in areas that are non-use, hazardous to mow or where discolouration of the foliage does not matter. Wakefield and Fales (25) suggest that these new regulators with injurious properties can be restricted on highways where appearance is not an important factor.

From the studies conducted (31), a few of these regulators stimulate the growth of shoot primordia which increase the density of the grass, at the same time retard the growth. These studies have shown that carefully selected growth regulators can be used on rough turfgrass on highway roadsides and on home lawns.

Event is a new grass growth regulator that was developed by American Cyanamid Company, Princeton, New Jersey U.S.A. It contains two ammonium salt compounds, imazapyr (Arsenal) and imayethapyr (Pursuit). These two compounds belong to a new class of herbicides, the imidazolinones (1,21). Imidazolinones herbicides have been found to be inhibitors of acetohydroxyacid synthase, the first enzyme in biosynthesis of valine, leucine and isoleucine (22).

Event has been found most effective on tall fescue (Festuca aruninacea Schreb.), perennial ryegrass (Lolium perenne L.), bluegrass (Poa pretensis L.) and bahiagrass (Paspalum notatum Flugge). Imazapyr and imayethapyr are herbicides that control both dicotyledons and monocotyledoneous species at the recommended rates. These compounds interfere with biosynthetic pathway of the three branched chain amino acids, valine, leucine and isoleucine (22). Therefore, these two compounds, when mixed together act as a chemical growth regulator by retarding the growth of turfgrasses.
Imazapyr (Arsenal) alone is a postemergence herbicide developed by American Cyanamid. Elkins and Temmen (10) found that imazapyr, in combination with imayethapyr at a lower rate, had significant growth retardant properties on tall fescue and broad leaved weeds. The discolouration noted in their studies was due to the high rate of application of the regulators. However, the results showed that the normal colour was returned quickly after the chemical regulator's activity diminished.

The structural formula for imazapyr (Arsenal) is as follows:

![Structural formula of imazapyr](image)

It has a molecular weight of 261.3 and is completely soluble in water at 1.0 to 1.5 % at 25° C. It freezes below -12.2° C and melts at 169 to 173° C. The compound is stable for 18 months at 25° C (11).

The compound is absorbed through the roots and vegetative shoots of both grasses and broad leaved weeds. The translocation mechanism takes place in the meristematic regions where the biosynthesis of the three amino acids, valine, leucine and isoleucine is interfered by inhibiting the enzyme acetohydroxyacid synthase (22). The inhibition of this enzyme further interferes with the synthesis of DNA, leading to
disruption of cell division and elongation of the meristematic tissues, hence retarding the growth (11).

Imayethapyr (Pursuit) like imazpyr, is a herbicide that controls annual and perennial grasses and broad leaved weeds. The field research conducted by Elkins and Temmen (10,11) shows that imayethapyr (Pursuit) alone at lower rates retards the growth of turfgrasses and control broad leaved weeds. This compound in combination with imazapyr has yielded excellent results on retarding the growth of grass. The degree of discolouration, phytotoxicity, seedhead suppression, broad leaved weed control, dry matter production and the density of the grasses in their study correlated with the rates of applications. Severe injuries resulted due to high rates. On the other hand, lower rates had no effect on seedhead suppression (11).

The structural formula for imayethapyr (Pursuit) is as follows:

The molecular weight is 289.3 and is water soluble and melts at 175° C. The translocation activity of this compound follows that of imazapyr.

Therefore, imazapyr and imayethapyr are the two active compounds that make up Event. Event retards foliar growth and controls production of seedheads of tall fescue, perennial ryegrass, bluegrass
and bahiagrass. It is recommended for usage in such areas as roadsides, airports, golf course institutional and industrial grounds (1).

This chemical reegulator is effective at retarding the growth of turfgrass at rates of 8 to 10 ounces per acre. Higher dosage is recommended for longer retardation of foliar growth (1,18).

Most of the research done indicates that, for the best results, Event should be applied on turfgrass at 100 % greenup and the addition of nonionic surfactants is essential. For the control of broad leaved weeds, it is suggested that, Event be mixed with the presently available methylarsonate herbicides but not imidazolinone or sulfonyleurea (1).
Materials and Methods

The experiment was conducted at the Coles County Airport five miles west of Charleston on U.S. Route 16 (18). Prior to staking the plots, the selected test area was mowed at the height of two inches in November 1987 and left to overwinter until early Spring 1988.

There were a total of twelve 6x30 feet plots each separated by a three feet area. Each plot was subdivided into three subplots of an unmowed 6x15 feet subplot, a 6 x 7.5 feet subplot mowed once prior to Event application, and a third 6x7.6 feet subplot mowed prior to Event application and every two weeks thereafter for a period of six weeks (Figure 1).

Event was measured according to the following formula so that the concentrations of 0, 8, 10 and 12 ounces per acre could be obtained.

gallons per minute = \frac{gallons \text{ per acre} \times \text{miles per hour} \times \text{width}}{5940}

width = \frac{30 \times 3 \times 20}{5940} = 0.303 \text{ gallons per minute}.

The following calculations were then done to obtain the total volume of mixture and the final measurements of Event and water in millilitres.

a. Nozzle tip 11003s at 40 psi = 0.303 gallons per minute.
b. 11003s at 40 psi and 20" spacing = 30 gallons per acre.
c. 1 gallon = 3785 milliliter.
d. 0.303 GPM x 3785 = 1146.9 ml/min./nozzle.

e. Plot size = \frac{6x30 \text{ ft}}{43,560 \text{ sq.ft/acre}} = 0.00413 \text{ acres.}
f. 0.00413 \text{ acres/plot x 3 plots} = 0.01239 \text{ acres.}
g. 12 oz/acre x 0.1239 acres = 0.1468 oz/0.01239 acres.
h. 29.6 ml/oz x 0.1468 oz = 4.4 ml of 12 oz/acre.
i. 30 gallons/acre x 0.01239 acre = 0.3717 gallons.
j. 0.3717 gallons x 128 oz/gal. x 29.6 ml/oz = 1408.3 ml of the total volume.

Final measurements

1. 12 oz/acre = 1408.3 ml - 4.4 ml Event = 1403.9 ml water.
2. 10 oz/acre = 1408.3 ml - 3.7 ml Event = 1404.6 ml water.
3. 8 oz/acre = 1408.3 ml - 2.9 ml Event = 1405.4 ml water.

The final measurements were determined to find out the exact amount of Event and water of the total volume to be mixed in milliliters.

The 12 test plots were randomly assigned rates 0, 8, 10 and 12 ounces per acre in triplicates. A CO₂ pressurized hand-held spray boom was calibrated to deliver 30 gallons per acre. This spray boom contains four single teejet 110°-1103 nozzle tips, each spaced 20 inches apart. The application was made by walking at three miles per hour, 40 psi boom pressurized and boom height of 18 inches. The actual application was done April 19, 1988. The humidity was 80 %, soil temperature recorded 65°F. and the wind was 20 miles per hour.

Every two weeks all the plots were visually inspected for height, colour, seedhead suppression and broadleaf weed control. The grass was cut at a two inches height and the clippings collected in the mowed plots. All the clippings were oven dried at 80°F for 24 hours, after which dry weight was recorded.
RESULTS

Broadleaf Weed Control

The broadleaved weeds commonly found in the established test plots were plaintin (*Plantago lanceolata* L.), Dendelion (*Taraxacum officinale* Weber.) and Red clover (*Trifolium pratense* L.). On May 10, two weeks after chemical regulator application, these weeds were found scattered in a few of the test plots. **Event** was most effective in suppressing weed growth at 12 ounces per acre. As shown in table 1 and 2 there is a direct correlation between rate of application of **Event** and weed growth suppression. The treated plots showed superior weed control in comparison to the untreated plots.

On May 25, all the weeds in the plots had been killed except those in the untreated plots that served as control. Even though these broadleaf weeds were killed by the chemical **Event**, red clover (*Trifolium pratense* L.) and Dendelion (*Taraxacum officinale* Weber.) were found in the test plots. However, on June 11, red clover and dendelion were noticeable in a few plots.

**Colour**

There was no turfgrass discolouration observed on May 10 and 25 in any of the test plots. The color of the treated plots was not different from the control plots.

**Seedhead suppression**

On May 10 and 25, all the plots were visually observed for the suppression of seedheads. These data are expressed as percentages of suppression when compared with control plots (Table 1 and 2). From these data, ten and twelve ounces per acre exhibited higher seedhead
suppression than eight ounces per acre. The untreated plots or control
show the least seedhead suppression (Figure 2). The "mowed once" plots
have the same results of seedhead suppression as the "mowed" plots
(Table 1).

The untreated plots in "mowed" and "mowed once" plots show 15
percent seedhead suppression due to the initial mowing before the plant
growth regulator was applied (Figure 2).

The seedhead suppression in the "unmowed" plots observed on May 10
correspond to the rates 8, 10 and 12 ounces per acre. In comparison to
the "mowed" and "mowed once" plots, the average percent of seedhead
suppression in the "unmowed" plots is lower (Figure 2). This means
that Event is excellent at suppressing seedhead if the turfgrass is
mowed prior to application. Even though the average percent in the
"unmowed" plots is lower than the "mowed" and "mowed once", 12 ounces
per acre proves more effective to suppress seedhead production. The 8
and 10 ounces application have a similar effect (Figure 3).

On May 25 the plots were visually observed for seedhead
suppression (Table 2). The "mowed" plots had significant seedhead
suppression. All the rates show average percent suppression over 90.
The control plots had a remarkable increase in seedhead suppression
compared to the untreated plots on May 10 (Figure 4).

There is a decrease in seedhead suppression in the "mowed once"
plots of all the three rates. The decrease in suppression declined
with the rates of plant growth regulator applied. The control plots
had no seedhead suppression at all (Figure 5).

Similarly, the "unmowed" plots decreased in suppression of
seedheads significantly. The average percent of seedhead suppression
is consistent with the rates (Figure 6). The degree of activity with Event decreases with the number of days after treatment.

**Dry matter yield**

The average weight of the "mowed" plots on May 10 was computed in grams (Table 3). The control and the 10 ounces per acre demonstrates a loss of 18 grams whereas 12 ounces per acre shows a loss of 20 grams. The 8 ounces per acre proves the most effective with a loss of 21 grams (Figure 7).

The mowed turfgrass collected in the sample plots were weighed and the data averaged in grams (Table 3). The control plots had the least loss in weight, thus 25.5 grams. Among the three concentrations of Event applied, 8 and 12 ounces per acre show significant weight loss of approximately 69 grams. The 10 ounces per acre, on the other hand, had a significant loss of 64.5 grams, a little less than the 8 and 12 ounces per acre (Figure 8). Both 8 and 12 ounces per acre of Event were the most outstanding at reducing the growth of the turfgrass.
DISCUSSION

From the visually observed results and the collected dry matter, Event's effectiveness varies with the rates. The higher rates prove to be more effective than the lower rates (Table 1 and 2).

It was observed that two weeks after application of Event at the rate of 10 and 12 ounces per acre, the broadleaf weeds appeared injured and had toxicity symptoms. The control plots and the 8 ounces per acre had no symptoms nor injuries. On May 25, four weeks after application, all the broadleaf weeds were controlled. This indicates that Event is most effective at 10 and 12 ounces per acre to control these weeds. Two weeks from this date, red clover and plaintin were found in the test plots. The re-emergence of these weeds could be attributed to the fact that, the weeds recuperated after the chemical activity wore out. On the other hand, the chemical may not have affected the soil, hence the seeds present in the soil from the previous season had the ability to germinate. Elkins and Temmen (10,11) found that imazapyr alone and in combination with imayethapyr (Event), had broadleaf weed control properties at a high dosage. Dobson et al (7) found that the broadleaf weeds are susceptible to imazapyr as a herbicide; therefore, combined with imayethapyr, it exhibits desirable growth control properties. In the thesis study by Kuhajda (18), he found Event most effective at the concentration of 10 ounces per acre to control the broadleaf weeds.

Even though no colour injury was observed in this study, Duel et al (8) noted discolouration on turfgrass as a result of high rates of application of the plant growth regulators. Elkins and Temmen (10,11) found unacceptable colour loss related to high rates and the
degree of phytotoxicity increased with high rates. The recovery of the colour was noted to take 40 to 50 days after application responding to the activity decline of Event. A Similar study carried on by Kuhajda (18) showed that Event does not cause any discolouration at the different rates applied. Any colour change was probably due to the severe drought experienced in the area at the time of this research. In 10 weeks, the area received only two inches of rainfall, which was not sufficient to sustain normal turfgrass colour. This ultimately led to burning and drying up of the turfgrass foliage.

The seedhead suppression observed on May 10 indicate that Event performed better at high rates. The "mowed" and "mowed once" plots display similar results. The control had a suppression of 15% primarily due to mowing. The suppression in the plots sprayed with 8 and 12 ounces per acre is the greatest and 8 ounces per acre moderately suppressed seedhead production (Table 1). The "unmowed" plots do not show very high degree of suppression compared to the plots discussed above.

The control has no suppression at all and the reduction in this instance is due to the mowing. It is then obvious that mowing has an effect on controlling the growth of the turfgrass. In this case, mowing in combination with the growth regulator, achieves greater results at suppressing seedhead production. It is, therefore, better to mow prior to application of Event. Elkins and Temmen (10) noted, in their research with imayethapry in combination with imazapyr that seedhead production was inhibited at high rates, 20 days after application. Duell et al (8) concluded that imazapyr combined with imayethapry (Event) at high concentration controlled seedhead production. These
findings demonstrate that 12 ounces per acre is the most effective at seedhead suppression of turfgrasses.

The most effective application rates to suppress seedhead of turfgrass observed on May 25 were 10 and 12 ounces per acre. The effect of suppression increased in the "mowed" plots but decreased in the "mowed once" and "unmowed" plots (Table 2). This obviously indicates that mowing before and after Event application enhances seedhead suppression. The control in the "mowed" plots is 67% suppression due to mowing alone, whereas in the "mowed once" and "unmowed" plots there is no effect. Elkins and Te11men (10,11) found that the degree of the effectiveness of the chemical diminishes with the number of days from the day of treatment. Therefore, it can be concluded that the decrease in suppression is because Event's activity was wearing out as time progressed. Pennucci and Jagschitze (19) discovered that mefluidide controlled seedhead suppression, particularly the tall fescue and the addition of a surfactant (Citowett Plus) improved the suppression at low rates. Therefore, it is summarized that the low rates of Event that do not control seedhead production can be improved by addition of surfactants.

Subsequent observations were unable to be done due to summer heat stress and mowing effect in those frequently mowed plots.

It should be noted that, although the data for height is not available, subjective observation indicate that the height of the turfgrass was significantly decreased. In all instances, the higher rates of Event were the most effective at reducing the growth of the foliar parts of the turfgrass. The mowed plots had an outstanding height reduction of 100% chiefly due to mowing effect and Event in the
The reduction in height declined in the "mowed once" plots and the "unmowed" plots. The "unmowed" plots showed the effect of Event alone on reducing the growth of turfgrass. It was observed that Event is most effective at retardation of turfgrass at the rate of 12 ounces per acre. It was also noted that the activity of Event at controlling the height is best achieved at the first two weeks after treatment. Hereafter, the effectiveness of Event starts to decrease. This was observed on both May 10 and 25. The water stress, on the other hand, may have slowed down the growth of the turfgrass.

Research conducted by Kuhajda (18) shows that Event was most effective at controlling the height of turfgrass at 10 ounces per acre. Related studies by Elkins and Temmen (10,11) show that more appreciable control of turfgrass is related to the high rates of the chemical regulator two weeks after treatment. However, in their studies, the high rates resulted in an objectionable colour and phytotoxicity, a problem that was not encountered in this study or in similar studies by Kuhajda (18).

Pennucci and Jagschitz (19) found, in their research with mefluidide alone and in combination with other growth regulators, that the chemical effectively suppressed the height of turfgrass, especially bluegrass, by the end of the 7th week. Any injury found was tied to scalping from heat, mowing and the combination of other chemicals.

The dry matter yield was greater on May 10 than May 25. On both dates, the control and 10 ounces had the highest amount (Table 3). The dry matter yield on May 10 indicates 8 ounces as the most effective followed by 12 ounces. This implies that 8 and 12 ounces reduced the
yield by 20 to 21 grams. The yields from May 25 show that 8 and 12 ounces retarded the growth of turfgrass by 70 grams. In general the data show that reduction in biomass production is best controlled by Event 4 weeks after application day. On the contrary, Kujhada (18) and Elkins and Temmen (10,11) found that dry matter yield correlated with the high rates. There was hardly anything to be mowed by June 11 due to drought experienced in the area.
CONCLUSION

From this study, the effectiveness of Event has been found to be optimum at a time of 4 weeks at the rate of 12 ounces per acre. At this rate and time, Event controls broadleaf weeds, suppresses seedhead production and the height of the turfgrass. The dry matter yield was less pronounced 4 weeks after treatment and by 8 and 12 ounces. There were no injuries, discolouration and phytotoxicity caused by the high rates. In addition, Event is event an outstanding turfgrass growth regulator at suppressing seedheads when turf mowed five days prior to application.

Therefore, Event reduces the number of mechanical mowing and cuts down the cost involved in maintaining turfgrass grounds. This particular area of study however, demands deep and extensive research by turfgrass scientists to reach the goal of replacing mechanical mowing with chemical mowing instead of combining the two to achieve the desired results.
Table 1: Percent of seedhead suppression two weeks after Event application.

<table>
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<th>Date of visual observation</th>
<th>oz/acre</th>
<th>&quot;mowed&quot; plot size 6x7.5 ft.</th>
<th>&quot;mowed once&quot; plot size 6x7.5 ft.</th>
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Table 2: Percent seedhead suppression four weeks after Event application.

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<th>&quot;mowed once&quot; plot size 6x7.5 ft</th>
<th>&quot;unmowed&quot; plot size 6x15 ft</th>
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<td>70</td>
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</table>

Table 3: The average weight in grams of turfgrass clippings.

<table>
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<th>Date application</th>
<th>oz/acre</th>
<th>5/10</th>
<th>5/25</th>
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<td>82</td>
<td>35.5</td>
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<td>80</td>
<td>30.5</td>
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<td>Plot #</td>
<td>Event Conc.</td>
<td>&quot;mowed&quot; plot size 6x7.5 ft</td>
<td>&quot;mowed once&quot; size 6x7.5 ft</td>
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<td>-------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
</tr>
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<tr>
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Figure 1: The twelve test plots at Coles County Airport showing randomized concentration of Event in three replicates and the subdivision of each plot into sizes 6 x 7.5 ft and 6 x 15 ft.
Figure 2: Average percentage of seedhead suppression in the mowed plots two weeks after Event application.
Figure 3: Average percentage of seedhead suppression in mowed once plots two weeks after Event application.
Figure 4: Average percentage of seedhead suppression in mowed plots four weeks after Event application.
Figure 5: Average percentage of seedhead suppression in mowed once plots four weeks after Event application.
Figure 6: Average percentage of seedhead suppression in unmowed plots four weeks after Event application.
Figure 7: Average dry weight of grass clippings two weeks after Event application.
Figure 8: Average dry weight of grass clippings four weeks after Event application.
LITERATURE CITED


