

# North Carolina State University

## TALL FESCUE QUICK BURNDOWN WITH GLYPHOSATE COMBINATIONS

Trial ID: 04-T32  
Location: OLD NCSU FIELD LAB

Study Director: L.S. WARREN  
Investigator: Fred Yelverton

### General Trial Information

**Study Director:** L.S. WARREN **Title:** RESEARCH ASSOCIATE  
**Affiliation:** NORTH CAROLINA STATE UNIVERSITY  
**Postal Code:** 27695 **E-mail:** leon\_warren@ncsu.edu  
**Investigator:** Fred Yelverton **Title:** PROFESSOR  
**Affiliation:** NORTH CAROLINA STATE UNIVERSITY  
**Postal Code:** 27695 **E-mail:** fred\_yelverton@ncsu.edu

### Trial Location

**City:** RALEIGH **Trial Status:** COMPLETED  
**State/Prov.:** NC **Initiation Date:** 9-13-04  
**Postal Code:** 27606  
**Country:** USA  
**Directions:**

### Objectives:

TO EVALUATE QUICK BURNDOWN GLYPHOSATE FORMULATIONS AND HIGH SURFACTANT LOAD FORMULATIONS ON TALL FESCUE AND SMOOTH CRABGRASS

### Conclusions:

### Cooperator/Landowner

**Cooperator:** BILL WHALEY **Country:** USA  
**Organization:** NORTH CAROLINA STATE UNIVERSITY **Phone No:** 982-4601  
**City:** RALEIGH  
**State/Prov:** NC  
**Postal Code:** 27606

### Crop Description

**Crop 1:** FESAR Festuca arundinacea Tall fescue  
**BBCH Scale:** BGRM

### Pest Description

**Pest 1 Type:** W **Code:** DIGIS Digitaria ischaemum  
**Common Name:** Crabgrass, smooth

### Site and Design

**Plot Width, Unit:** 4 FT **Site Type:** TURF - RESEARCH  
**Plot Length, Unit:** 8 FT **Tillage Type:** NA  
**Replications:** 4 **Study Design:** Randomized Complete Block

**Trial Initiation Comments:**

**Field Prep./Maintenance:**

### Soil Description

**% OM:** 0.71 **Texture:** SANDY CLAY LOAM  
**pH:** 5.2  
**CEC:** 5.3 **Fert. Level:** GOOD

### Moisture Conditions

**Overall Moisture Conditions:** AUG "; SEP "  
**Closest Weather Station:** REEDY CREEK FIELD LABORATORY **Distance:** 2 **Unit:** MI

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### Application Description

|                         | A           |
|-------------------------|-------------|
| Application Date:       | 9-13-04     |
| Time of Day:            | 4:15 PM     |
| Application Method:     | SPRAY       |
| Application Timing:     | POST        |
| Application Placement:  | BROFOL      |
| Applied By:             | L.S. WARREN |
| Air Temperature, Unit:  | 75 F        |
| % Relative Humidity:    | 75          |
| Wind Velocity, Unit:    | 1.9 MPH     |
| Dew Presence (Y/N):     | N           |
| Soil Temperature, Unit: | 75 F        |
| Soil Moisture:          | MOIST       |
| % Cloud Cover:          | 80          |

### Crop Stage At Each Application

|                          | A          |
|--------------------------|------------|
| Crop 1 Code, BBCH Scale: | FESAR BGRM |
| Stage Scale Used:        | BBCH       |
| Stage Majority, Percent: | MOWED 100  |
| Height, Unit:            | 4.0 IN     |

### Pest Stage At Each Application

|                            | A         |
|----------------------------|-----------|
| Pest 1 Code, Disc., Scale: | DIGIS W   |
| Stage Majority, Percent:   | MOWED 100 |
| Height, Unit:              | 4.0 IN    |
| Density, Unit:             | 3 FT2     |

### Application Equipment

|                       | A         |
|-----------------------|-----------|
| Appl. Equipment:      | BACSPR    |
| Operating Pressure:   | 28        |
| Pressure Unit:        | PSI       |
| Nozzle Type:          | FLAT FAN  |
| Nozzle Size:          | XR 8002VS |
| Nozzle Spacing, Unit: | 10 IN     |
| Band Width, Unit:     | 40 IN     |
| Boom Length, Unit:    | 40 IN     |
| Boom Height, Unit:    | 10 IN     |
| Ground Speed, Unit:   | 3 MPH     |
| Carrier:              | WATER     |
| Spray Volume:         | 32.5      |
| Volume Unit:          | GPA       |
| Propellant:           | COMCO2    |
| Tank Mix (Y/N):       | Y         |

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|                    |                |           |           |                |            |                 | W Weed       | W Weed      | W Weed      | W Weed      | W Weed      |
|--------------------|----------------|-----------|-----------|----------------|------------|-----------------|--------------|-------------|-------------|-------------|-------------|
|                    |                |           |           |                |            |                 | DIGIS        | DIGIS       | DIGIS       | DIGIS       | DIGIS       |
|                    |                |           |           |                |            |                 | 9-14-04      | 9-15-04     | 9-16-04     | 9-17-04     | 9-18-04     |
|                    |                |           |           |                |            |                 | PHYTO        | PHYTO       | PHYTO       | PHYTO       | PHYTO       |
|                    |                |           |           |                |            |                 | PERCENT      | PERCENT     | PERCENT     | PERCENT     | PERCENT     |
|                    |                |           |           |                |            |                 | L.S. WARREN  | L.S. WARREN | L.S. WARREN | L.S. WARREN | L.S. WARREN |
|                    |                |           |           |                |            |                 | 1            | 2           | 3           | 4           | 5           |
|                    |                |           |           |                |            |                 | 1 DA-A       | 2 DA-A      | 3 DA-A      | 4 DA-A      | 5 DA-A      |
|                    |                |           |           |                |            |                 | P            | P           | P           | P           | P           |
| Trt No.            | Treatment Name | Form Conc | Form Type | Rate Rate Unit | Other Rate | Other Rate Unit | Growth Stage | Appl Code   |             |             |             |
| 1                  | NUP 8C 03      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 0.0 d       | 3.8 c       | 18.8 cde    |
| 2                  | NUP 9H 01      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 0.0 d       | 3.8 c       | 21.3 cde    |
| 3                  | NUP 2D 01      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 0.0 d       | 0.0 c       | 15.0 def    |
| 4                  | NUP 2D 01      | 3.0 L     |           | 1.5 pt/a       |            |                 | SEP 13 A     |             | 0.0 d       | 1.3 c       | 17.5 de     |
| 5                  | NUP 3C 02      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 0.0 d       | 2.5 c       | 18.8 cde    |
| 6                  | NUP 3C 02      | 3.0 L     |           | 1.5 pt/a       |            |                 | SEP 13 A     |             | 0.0 d       | 1.3 c       | 21.3 cde    |
| 7                  | NUP 8B 04      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 1.3 cd      | 5.0 c       | 22.5 cde    |
| 8                  | NUP 8B 04      | 3.0 L     |           | 1.5 pt/a       |            |                 | SEP 13 A     |             | 1.3 cd      | 3.8 c       | 17.5 de     |
| 9                  | NUP 8D 04      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 0.0 d       | 5.0 c       | 25.0 cd     |
| 10                 | NUP 8D 04      | 3.0 L     |           | 1.5 pt/a       |            |                 | SEP 13 A     |             | 0.0 d       | 3.8 c       | 12.5 def    |
| 11                 | NUP 8E 04      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 0.0 d       | 6.3 c       | 18.8 cde    |
| 12                 | NUP 8E 04      | 3.0 L     |           | 1.5 pt/a       |            |                 | SEP 13 A     |             | 0.0 d       | 2.5 c       | 20.0 cde    |
| 13                 | NUP 8F 04      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 0.0 d       | 3.8 c       | 15.0 def    |
| 14                 | NUP 8J 04      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 0.0 d       | 2.5 c       | 7.5 ef      |
| 15                 | NUP 3C 02      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 0.0 d       | 7.5 c       | 33.8 c      |
|                    | NUP 6D 04      | L         |           | 2 fl oz/a      |            |                 | SEP 13 A     |             |             |             |             |
| 16                 | NUP 4J 04      | 76 WG     |           | 0.85 lb/a      |            |                 | SEP 13 A     |             | 2.5 c       | 43.8 b      | 73.8 b      |
| 17                 | NUP 4J 04      | 76 WG     |           | 1.7 lb/a       |            |                 | SEP 13 A     |             | 6.3 b       | 80.0 a      | 93.8 a      |
| 18                 | NUP 8K 04      | 3.1 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 7.5 ab      | 83.8 a      | 93.8 a      |
| 19                 | NUP 8G 04      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 0.0 d       | 5.0 c       | 13.8 def    |
| 20                 | NUP 8H 04      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 0.0 d       | 5.0 c       | 17.5 de     |
| 21                 | NUP 8M 04      | L         |           | 6.8 pt/a       |            |                 | SEP 13 A     |             | 6.3 b       | 85.0 a      | 91.3 a      |
| 22                 | NUP 8M 04      | L         |           | 13.6 pt/a      |            |                 | SEP 13 A     |             | 8.8 a       | 90.0 a      | 96.0 a      |
| 23                 | CHECK          |           |           |                |            |                 |              |             | 0.0 d       | 0.0 c       | 0.0 f       |
| LSD (P=.05)        |                |           |           |                |            |                 | 2.11         | 11.72       | 15.11       | 19.76       | 8.23        |
| Standard Deviation |                |           |           |                |            |                 | 1.49         | 8.29        | 10.68       | 13.98       | 5.82        |
| CV                 |                |           |           |                |            |                 | 101.86       | 42.84       | 32.13       | 23.74       | 7.95        |
| Grand Mean         |                |           |           |                |            |                 | 1.47         | 19.35       | 33.25       | 58.87       | 73.23       |
| Bartlett's X2      |                |           |           |                |            |                 | 0.178        | 67.227      | 47.0        | 27.695      | 27.028      |
| P(Bartlett's X2)   |                |           |           |                |            |                 | 1.00         | 0.001*      | 0.001*      | 0.089       | 0.134       |
| Friedman's X2      |                |           |           |                |            |                 | 39.087       | 51.188      | 61.087      | 60.457      | 64.223      |
| P(Friedman's X2)   |                |           |           |                |            |                 | 0.014        | 0.001       | 0.001       | 0.001       | 0.001       |
| Replicate F        |                |           |           |                |            |                 | 0.446        | 0.527       | 2.269       | 0.285       | 3.724       |
| Replicate Prob(F)  |                |           |           |                |            |                 | 0.7210       | 0.6651      | 0.0891      | 0.8360      | 0.0157      |
| Treatment F        |                |           |           |                |            |                 | 13.898       | 59.090      | 34.294      | 10.124      | 42.986      |
| Treatment Prob(F)  |                |           |           |                |            |                 | 0.0001       | 0.0001      | 0.0001      | 0.0001      | 0.0001      |

Means followed by same letter do not significantly differ (P=.05, LSD)  
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

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|                         |                |           |           |           |            |                 | W Weed       | W Weed      | W Weed      | W Weed      | W Weed      |          |         |
|-------------------------|----------------|-----------|-----------|-----------|------------|-----------------|--------------|-------------|-------------|-------------|-------------|----------|---------|
|                         |                |           |           |           |            |                 | DIGIS        | DIGIS       | DIGIS       | DIGIS       | DIGIS       |          |         |
| Pest Type               |                |           |           |           |            |                 |              |             |             |             |             |          |         |
| Pest Code               |                |           |           |           |            |                 |              |             |             |             |             |          |         |
| Crop Code               |                |           |           |           |            |                 |              |             |             |             |             |          |         |
| BBCH Scale              |                |           |           |           |            |                 |              |             |             |             |             |          |         |
| Crop Name               |                |           |           |           |            |                 |              |             |             |             |             |          |         |
| Rating Date             |                |           |           |           |            |                 | 9-20-04      | 9-21-04     | 9-22-04     | 9-23-04     | 10-4-04     |          |         |
| Rating Data Type        |                |           |           |           |            |                 | PHYTO        | PHYTO       | CONTROL     | CONTROL     | CONTROL     |          |         |
| Rating Unit             |                |           |           |           |            |                 | PERCENT      | PERCENT     | PERCENT     | PERCENT     | PERCENT     |          |         |
| Assessed By             |                |           |           |           |            |                 | L.S. WARREN  | L.S. WARREN | L.S. WARREN | L.S. WARREN | L.S. WARREN |          |         |
| Days After Last Applic. |                |           |           |           |            |                 | 7            | 8           | 9           | 10          | 21          |          |         |
| Trt-Eval Interval       |                |           |           |           |            |                 | 7 DA-A       | 8 DA-A      | 9 DA-A      | 10 DA-A     | 21 DA-A     |          |         |
| ARM Action Codes        |                |           |           |           |            |                 | P            | P           | P           | P           | P           |          |         |
| Trt No.                 | Treatment Name | Form Conc | Form Type | Rate Unit | Other Rate | Other Rate Unit | Growth Stage | Appl Code   |             |             |             |          |         |
| 1                       | NUP 8C 03      | 3.0       | L         | 3 pt/a    |            |                 | SEP 13 A     |             | 82.5 def    | 85.0 f      | 91.3 bc     | 97.3 abc | 100.0 a |
| 2                       | NUP 9H 01      | 3.0       | L         | 3 pt/a    |            |                 | SEP 13 A     |             | 90.8 a-d    | 95.5 a-d    | 97.8 ab     | 98.8 ab  | 100.0 a |
| 3                       | NUP 2D 01      | 3.0       | L         | 3 pt/a    |            |                 | SEP 13 A     |             | 90.0 a-d    | 98.0 abc    | 99.0 a      | 99.0 a   | 100.0 a |
| 4                       | NUP 2D 01      | 3.0       | L         | 1.5 pt/a  |            |                 | SEP 13 A     |             | 82.5 def    | 86.3 ef     | 85.8 c      | 97.3 abc | 100.0 a |
| 5                       | NUP 3C 02      | 3.0       | L         | 3 pt/a    |            |                 | SEP 13 A     |             | 85.0 def    | 93.0 a-f    | 94.5 ab     | 97.8 abc | 100.0 a |
| 6                       | NUP 3C 02      | 3.0       | L         | 1.5 pt/a  |            |                 | SEP 13 A     |             | 83.8 def    | 88.8 def    | 93.3 abc    | 96.8 abc | 100.0 a |
| 7                       | NUP 8B 04      | 3.0       | L         | 3 pt/a    |            |                 | SEP 13 A     |             | 87.5 b-e    | 91.3 a-f    | 94.5 ab     | 97.8 abc | 100.0 a |
| 8                       | NUP 8B 04      | 3.0       | L         | 1.5 pt/a  |            |                 | SEP 13 A     |             | 86.3 c-f    | 91.3 a-f    | 93.5 ab     | 96.8 abc | 100.0 a |
| 9                       | NUP 8D 04      | 3.0       | L         | 3.0 pt/a  |            |                 | SEP 13 A     |             | 83.8 def    | 95.3 a-d    | 97.5 ab     | 98.8 ab  | 100.0 a |
| 10                      | NUP 8D 04      | 3.0       | L         | 1.5 pt/a  |            |                 | SEP 13 A     |             | 77.5 f      | 90.0 b-f    | 92.0 abc    | 95.5 bc  | 100.0 a |
| 11                      | NUP 8E 04      | 3.0       | L         | 3 pt/a    |            |                 | SEP 13 A     |             | 86.3 c-f    | 93.0 a-f    | 95.8 ab     | 98.5 ab  | 100.0 a |
| 12                      | NUP 8E 04      | 3.0       | L         | 1.5 pt/a  |            |                 | SEP 13 A     |             | 81.3 def    | 91.3 a-f    | 93.3 abc    | 98.0 abc | 100.0 a |
| 13                      | NUP 8F 04      | 3.0       | L         | 3 pt/a    |            |                 | SEP 13 A     |             | 87.5 b-e    | 96.8 a-d    | 98.3 ab     | 98.0 abc | 100.0 a |
| 14                      | NUP 8J 04      | 3.0       | L         | 3 pt/a    |            |                 | SEP 13 A     |             | 80.0 ef     | 90.0 b-f    | 93.8 ab     | 95.0 c   | 100.0 a |
| 15                      | NUP 3C 02      | 3.0       | L         | 3 pt/a    |            |                 | SEP 13 A     |             | 88.3 a-e    | 91.3 a-f    | 91.8 abc    | 96.3 abc | 100.0 a |
|                         | NUP 6D 04      | L         |           | 2 fl oz/a |            |                 | SEP 13 A     |             |             |             |             |          |         |
| 16                      | NUP 4J 04      | 76        | WG        | 0.85 lb/a |            |                 | SEP 13 A     |             | 95.0 abc    | 94.3 a-e    | 95.8 ab     | 98.5 ab  | 100.0 a |
| 17                      | NUP 4J 04      | 76        | WG        | 1.7 lb/a  |            |                 | SEP 13 A     |             | 97.3 ab     | 97.5 a-d    | 97.8 ab     | 98.8 ab  | 100.0 a |
| 18                      | NUP 8K 04      | 3.1       | L         | 3 pt/a    |            |                 | SEP 13 A     |             | 98.0 a      | 98.8 ab     | 98.5 ab     | 98.0 abc | 100.0 a |
| 19                      | NUP 8G 04      | 3.0       | L         | 3 pt/a    |            |                 | SEP 13 A     |             | 85.0 def    | 91.3 a-f    | 97.3 ab     | 99.0 a   | 100.0 a |
| 20                      | NUP 8H 04      | 3.0       | L         | 3 pt/a    |            |                 | SEP 13 A     |             | 83.8 def    | 89.5 c-f    | 92.0 abc    | 96.3 abc | 100.0 a |
| 21                      | NUP 8M 04      | L         |           | 6.8 pt/a  |            |                 | SEP 13 A     |             | 97.3 ab     | 99.0 a      | 98.5 ab     | 99.0 a   | 100.0 a |
| 22                      | NUP 8M 04      | L         |           | 13.6 pt/a |            |                 | SEP 13 A     |             | 98.0 a      | 99.0 a      | 99.0 a      | 99.0 a   | 100.0 a |
| 23                      | CHECK          |           |           |           |            |                 |              |             | 0.0 g       | 0.0 g       | 0.0 d       | 0.0 d    | 0.0 b   |
| LSD (P=.05)             |                |           |           |           |            |                 | 9.98         | 8.94        | 7.58        | 3.40        | 0.00        |          |         |
| Standard Deviation      |                |           |           |           |            |                 | 7.06         | 6.32        | 5.36        | 2.40        | 0.00        |          |         |
| CV                      |                |           |           |           |            |                 | 8.43         | 7.11        | 5.9         | 2.57        | 0.0         |          |         |
| Grand Mean              |                |           |           |           |            |                 | 83.78        | 88.95       | 90.89       | 93.47       | 95.65       |          |         |
| Bartlett's X2           |                |           |           |           |            |                 | 34.82        | 44.785      | 63.355      | 50.49       | 0.0         |          |         |
| P(Bartlett's X2)        |                |           |           |           |            |                 | 0.007*       | 0.001*      | 0.001*      | 0.001*      | .           |          |         |
| Friedman's X2           |                |           |           |           |            |                 | 56.008       | 53.255      | 44.231      | 36.587      | 11.0        |          |         |
| P(Friedman's X2)        |                |           |           |           |            |                 | 0.001        | 0.001       | 0.003       | 0.026       | 0.975       |          |         |
| Replicate F             |                |           |           |           |            |                 | 0.832        | 1.394       | 0.834       | 0.780       | 0.000       |          |         |
| Replicate Prob(F)       |                |           |           |           |            |                 | 0.4812       | 0.2527      | 0.4801      | 0.5095      | 1.0000      |          |         |
| Treatment F             |                |           |           |           |            |                 | 29.642       | 39.248      | 56.160      | 288.566     | 0.000       |          |         |
| Treatment Prob(F)       |                |           |           |           |            |                 | 0.0001       | 0.0001      | 0.0001      | 0.0001      | 1.0000      |          |         |

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| Pest Type               |                |           |           |           |            |            | FESAR        | FESAR       | FESAR       | FESAR       | FESAR       |          |          |
|-------------------------|----------------|-----------|-----------|-----------|------------|------------|--------------|-------------|-------------|-------------|-------------|----------|----------|
| Pest Code               |                |           |           |           |            |            | BGRM         | BGRM        | BGRM        | BGRM        | BGRM        |          |          |
| Crop Code               |                |           |           |           |            |            | Tall fescue  | Tall fescue | Tall fescue | Tall fescue | Tall fescue |          |          |
| BBCH Scale              |                |           |           |           |            |            | 9-14-04      | 9-15-04     | 9-16-04     | 9-17-04     | 9-18-04     |          |          |
| Crop Name               |                |           |           |           |            |            | PHYTO        | PHYTO       | PHYTO       | PHYTO       | PHYTO       |          |          |
| Rating Date             |                |           |           |           |            |            | PERCENT      | PERCENT     | PERCENT     | PERCENT     | PERCENT     |          |          |
| Rating Data Type        |                |           |           |           |            |            | L.S. WARREN  | L.S. WARREN | L.S. WARREN | L.S. WARREN | L.S. WARREN |          |          |
| Rating Unit             |                |           |           |           |            |            | 1            | 2           | 3           | 4           | 5           |          |          |
| Assessed By             |                |           |           |           |            |            | 1 DA-A       | 2 DA-A      | 3 DA-A      | 4 DA-A      | 5 DA-A      |          |          |
| Days After Last Applic. |                |           |           |           |            |            | P            | P           | P           | P           | P           |          |          |
| Trt-Eval Interval       |                |           |           |           |            |            |              |             |             |             |             |          |          |
| ARM Action Codes        |                |           |           |           |            |            |              |             |             |             |             |          |          |
| Trt No.                 | Treatment Name | Form Conc | Form Type | Rate Unit | Other Rate | Other Rate | Growth Stage | Appl Code   |             |             |             |          |          |
| 1                       | NUP 8C 03      | 3.0 L     |           | 3 pt/a    |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 2.5 b       | 11.3 d-g | 22.5 def |
| 2                       | NUP 9H 01      | 3.0 L     |           | 3 pt/a    |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 3.8 b       | 13.8 c-f | 17.5 def |
| 3                       | NUP 2D 01      | 3.0 L     |           | 3 pt/a    |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 0.0 b       | 5.0 fg   | 25.0 d   |
| 4                       | NUP 2D 01      | 3.0 L     |           | 1.5 pt/a  |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 2.5 b       | 7.5 fg   | 13.8 ef  |
| 5                       | NUP 3C 02      | 3.0 L     |           | 3 pt/a    |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 2.5 b       | 8.8 fg   | 18.8 def |
| 6                       | NUP 3C 02      | 3.0 L     |           | 1.5 pt/a  |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 0.0 b       | 5.0 fg   | 12.5 f   |
| 7                       | NUP 8B 04      | 3.0 L     |           | 3 pt/a    |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 5.0 b       | 13.8 c-f | 22.5 def |
| 8                       | NUP 8B 04      | 3.0 L     |           | 1.5 pt/a  |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 1.3 b       | 11.3 d-g | 16.3 def |
| 9                       | NUP 8D 04      | 3.0 L     |           | 3.0 pt/a  |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 5.0 b       | 11.3 d-g | 23.8 de  |
| 10                      | NUP 8D 04      | 3.0 L     |           | 1.5 pt/a  |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 2.5 b       | 10.0 efg | 18.8 def |
| 11                      | NUP 8E 04      | 3.0 L     |           | 3 pt/a    |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 1.3 b       | 11.3 d-g | 22.5 def |
| 12                      | NUP 8E 04      | 3.0 L     |           | 1.5 pt/a  |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 1.3 b       | 23.8 bcd | 16.3 def |
| 13                      | NUP 8F 04      | 3.0 L     |           | 3 pt/a    |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 2.5 b       | 8.8 fg   | 21.3 def |
| 14                      | NUP 8J 04      | 3.0 L     |           | 3 pt/a    |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 0.0 b       | 8.8 fg   | 17.5 def |
| 15                      | NUP 3C 02      | 3.0 L     |           | 3 pt/a    |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 5.0 b       | 8.8 fg   | 22.5 def |
|                         | NUP 6D 04      | L         |           | 2 fl oz/a |            |            | SEP 13 A     |             |             |             |             |          |          |
| 16                      | NUP 4J 04      | 76 WG     |           | 0.85 lb/a |            |            | SEP 13 A     |             | 0.0 a       | 3.8 c       | 7.5 b       | 10.0 efg | 18.8 def |
| 17                      | NUP 4J 04      | 76 WG     |           | 1.7 lb/a  |            |            | SEP 13 A     |             | 1.3 a       | 5.0 bc      | 21.3 a      | 22.5 b-e | 46.3 bc  |
| 18                      | NUP 8K 04      | 3.1 L     |           | 3 pt/a    |            |            | SEP 13 A     |             | 0.0 a       | 8.8 a       | 18.8 a      | 25.0 bc  | 48.8 ab  |
| 19                      | NUP 8G 04      | 3.0 L     |           | 3 pt/a    |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 3.8 b       | 11.3 d-g | 20.0 def |
| 20                      | NUP 8H 04      | 3.0 L     |           | 3 pt/a    |            |            | SEP 13 A     |             | 0.0 a       | 0.0 d       | 2.5 b       | 7.5 fg   | 17.5 def |
| 21                      | NUP 8M 04      | L         |           | 6.8 pt/a  |            |            | SEP 13 A     |             | 0.0 a       | 6.3 b       | 18.8 a      | 32.5 b   | 37.5 c   |
| 22                      | NUP 8M 04      | L         |           | 13.6 pt/a |            |            | SEP 13 A     |             | 1.3 a       | 8.8 a       | 26.3 a      | 56.3 a   | 58.8 a   |
| 23                      | CHECK          |           |           |           |            |            |              |             | 0.0 a       | 0.0 d       | 0.0 b       | 0.0 g    | 0.0 g    |
| LSD (P=.05)             |                |           |           | 1.04      |            |            |              |             | 1.04        | 1.97        | 7.87        | 12.67    | 10.90    |
| Standard Deviation      |                |           |           | 0.74      |            |            |              |             | 0.74        | 1.39        | 5.57        | 8.96     | 7.71     |
| CV                      |                |           |           | 678.23    |            |            |              |             | 678.23      | 98.38       | 95.71       | 63.64    | 32.9     |
| Grand Mean              |                |           |           | 0.11      |            |            |              |             | 0.11        | 1.41        | 5.82        | 14.08    | 23.42    |
| Bartlett's X2           |                |           |           | 0.0       |            |            |              |             | 0.0         | 2.192       | 41.649      | 48.569   | 25.418   |
| P(Bartlett's X2)        |                |           |           | 1.00      |            |            |              |             | 1.00        | 0.533       | 0.001*      | 0.001*   | 0.186    |
| Friedman's X2           |                |           |           | 1.313     |            |            |              |             | 1.313       | 41.549      | 49.356      | 53.185   | 56.625   |
| P(Friedman's X2)        |                |           |           | 1.00      |            |            |              |             | 1.00        | 0.007       | 0.001       | 0.001    | 0.001    |
| Replicate F             |                |           |           | 2.000     |            |            |              |             | 2.000       | 0.563       | 0.453       | 1.611    | 1.066    |
| Replicate Prob(F)       |                |           |           | 0.1230    |            |            |              |             | 0.1230      | 0.6417      | 0.7159      | 0.1958   | 0.3699   |
| Treatment F             |                |           |           | 0.955     |            |            |              |             | 0.955       | 17.438      | 7.439       | 6.883    | 11.225   |
| Treatment Prob(F)       |                |           |           | 0.5299    |            |            |              |             | 0.5299      | 0.0001      | 0.0001      | 0.0001   | 0.0001   |

Means followed by same letter do not significantly differ (P=.05, LSD)  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

# North Carolina State University

## TALL FESCUE QUICK BURNDOWN WITH GLYPHOSATE COMBINATIONS

Trial ID: 04-T32  
Location: OLD NCSU FIELD LAB

Study Director: L.S. WARREN  
Investigator: Fred Yelverton

|                    |                |           |           |                |            |                 | FESAR        | FESAR       | FESAR       | FESAR       | FESAR       |          |          |
|--------------------|----------------|-----------|-----------|----------------|------------|-----------------|--------------|-------------|-------------|-------------|-------------|----------|----------|
|                    |                |           |           |                |            |                 | BGRM         | BGRM        | BGRM        | BGRM        | BGRM        |          |          |
|                    |                |           |           |                |            |                 | Tall fescue  | Tall fescue | Tall fescue | Tall fescue | Tall fescue |          |          |
|                    |                |           |           |                |            |                 | 9-20-04      | 9-21-04     | 9-22-04     | 9-23-04     | 10-4-04     |          |          |
|                    |                |           |           |                |            |                 | PHYTO        | PHYTO       | CONTROL     | CONTROL     | CONTROL     |          |          |
|                    |                |           |           |                |            |                 | PERCENT      | PERCENT     | PERCENT     | PERCENT     | PERCENT     |          |          |
|                    |                |           |           |                |            |                 | L.S. WARREN  | L.S. WARREN | L.S. WARREN | L.S. WARREN | L.S. WARREN |          |          |
|                    |                |           |           |                |            |                 | 7            | 8           | 9           | 10          | 21          |          |          |
|                    |                |           |           |                |            |                 | 7 DA-A       | 8 DA-A      | 9 DA-A      | 10 DA-A     | 21 DA-A     |          |          |
|                    |                |           |           |                |            |                 | P            | P           | P           | P           | P           |          |          |
| Trt No.            | Treatment Name | Form Conc | Form Type | Rate Rate Unit | Other Rate | Other Rate Unit | Growth Stage | Appl Code   |             |             |             |          |          |
| 1                  | NUP 8C 03      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 22.5 cde    | 47.5 d-h    | 52.5 cde    | 65.0 cd  | 98.5 a   |
| 2                  | NUP 9H 01      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 30.0 cd     | 63.8 bcd    | 71.3 ab     | 72.5 bcd | 98.0 a   |
| 3                  | NUP 2D 01      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 45.0 b      | 65.0 bcd    | 75.0 ab     | 95.0 a   | 99.0 a   |
| 4                  | NUP 2D 01      | 3.0 L     |           | 1.5 pt/a       |            |                 | SEP 13 A     |             | 18.8 de     | 31.3 hi     | 32.5 f      | 45.0 efg | 72.5 c-f |
| 5                  | NUP 3C 02      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 23.8 cde    | 56.3 b-f    | 68.8 bc     | 71.3 bcd | 98.8 a   |
| 6                  | NUP 3C 02      | 3.0 L     |           | 1.5 pt/a       |            |                 | SEP 13 A     |             | 17.5 de     | 28.8 i      | 31.3 f      | 27.5 g   | 58.8 ef  |
| 7                  | NUP 8B 04      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 32.5 bc     | 41.3 e-i    | 63.8 bcd    | 67.5 cd  | 95.5 ab  |
| 8                  | NUP 8B 04      | 3.0 L     |           | 1.5 pt/a       |            |                 | SEP 13 A     |             | 17.5 de     | 35.0 ghi    | 36.3 ef     | 45.0 efg | 73.8 b-e |
| 9                  | NUP 8D 04      | 3.0 L     |           | 3.0 pt/a       |            |                 | SEP 13 A     |             | 28.8 cd     | 58.8 b-e    | 76.3 ab     | 77.5 abc | 99.0 a   |
| 10                 | NUP 8D 04      | 3.0 L     |           | 1.5 pt/a       |            |                 | SEP 13 A     |             | 15.0 e      | 28.8 i      | 38.8 ef     | 37.5 fg  | 67.5 def |
| 11                 | NUP 8E 04      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 23.8 cde    | 40.0 f-i    | 65.0 bcd    | 67.5 cd  | 97.8 a   |
| 12                 | NUP 8E 04      | 3.0 L     |           | 1.5 pt/a       |            |                 | SEP 13 A     |             | 15.0 e      | 42.5 e-i    | 48.8 def    | 55.0 def | 69.5 def |
| 13                 | NUP 8F 04      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 25.0 cde    | 52.5 c-g    | 66.3 bcd    | 63.8 cde | 98.8 a   |
| 14                 | NUP 8J 04      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 17.5 de     | 51.3 c-g    | 61.3 bcd    | 67.5 cd  | 97.8 a   |
| 15                 | NUP 3C 02      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 30.0 cd     | 55.0 b-f    | 62.5 bcd    | 76.3 abc | 98.0 a   |
|                    | NUP 6D 04      | L         |           | 2 fl oz/a      |            |                 | SEP 13 A     |             |             |             |             |          |          |
| 16                 | NUP 4J 04      | 76 WG     |           | 0.85 lb/a      |            |                 | SEP 13 A     |             | 23.8 cde    | 26.3 i      | 32.5 f      | 28.8 g   | 50.0 f   |
| 17                 | NUP 4J 04      | 76 WG     |           | 1.7 lb/a       |            |                 | SEP 13 A     |             | 62.5 a      | 68.8 bc     | 75.0 ab     | 77.5 abc | 97.3 a   |
| 18                 | NUP 8K 04      | 3.1 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 67.5 a      | 72.5 ab     | 72.5 ab     | 77.5 abc | 82.5 a-d |
| 19                 | NUP 8G 04      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 28.8 cd     | 56.3 b-f    | 62.5 bcd    | 72.5 bcd | 98.0 a   |
| 20                 | NUP 8H 04      | 3.0 L     |           | 3 pt/a         |            |                 | SEP 13 A     |             | 20.0 cde    | 41.3 e-i    | 51.3 cde    | 62.5 cde | 98.8 a   |
| 21                 | NUP 8M 04      | L         |           | 6.8 pt/a       |            |                 | SEP 13 A     |             | 65.0 a      | 71.3 ab     | 78.8 ab     | 72.5 bcd | 93.3 abc |
| 22                 | NUP 8M 04      | L         |           | 13.6 pt/a      |            |                 | SEP 13 A     |             | 71.3 a      | 87.5 a      | 89.5 a      | 90.0 ab  | 95.5 ab  |
| 23                 | CHECK          |           |           |                |            |                 |              |             | 0.0 f       | 0.0 j       | 0.0 g       | 0.0 h    | 0.0 g    |
| LSD (P=.05)        |                |           |           |                |            |                 | 12.88        | 17.57       | 18.72       | 18.81       | 22.89       |          |          |
| Standard Deviation |                |           |           |                |            |                 | 9.11         | 12.42       | 13.23       | 13.30       | 16.19       |          |          |
| CV                 |                |           |           |                |            |                 | 29.87        | 25.49       | 23.2        | 21.63       | 19.21       |          |          |
| Grand Mean         |                |           |           |                |            |                 | 30.49        | 48.75       | 57.04       | 61.52       | 84.27       |          |          |
| Bartlett's X2      |                |           |           |                |            |                 | 28.022       | 34.013      | 27.004      | 20.195      | 154.182     |          |          |
| P(Bartlett's X2)   |                |           |           |                |            |                 | 0.083        | 0.026*      | 0.135       | 0.446       | 0.001*      |          |          |
| Friedman's X2      |                |           |           |                |            |                 | 63.465       | 65.274      | 61.992      | 62.171      | 57.728      |          |          |
| P(Friedman's X2)   |                |           |           |                |            |                 | 0.001        | 0.001       | 0.001       | 0.001       | 0.001       |          |          |
| Replicate F        |                |           |           |                |            |                 | 0.929        | 1.931       | 0.102       | 2.117       | 0.376       |          |          |
| Replicate Prob(F)  |                |           |           |                |            |                 | 0.4318       | 0.1336      | 0.9583      | 0.1070      | 0.7709      |          |          |
| Treatment F        |                |           |           |                |            |                 | 17.235       | 9.589       | 9.759       | 10.969      | 8.585       |          |          |
| Treatment Prob(F)  |                |           |           |                |            |                 | 0.0001       | 0.0001      | 0.0001      | 0.0001      | 0.0001      |          |          |

Means followed by same letter do not significantly differ (P=.05, LSD)  
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

### Trial Comments

09-14-04: (1 DAT) PHYTO MOST OBVIOUS ON MATURE SMOOTH CRABGRASS AND NOT ON THE YELLOW NUTSEDGE OR TALL FESCUE AT THIS TIME (BROWNISH-GREEN APPEARANCE)