

**Table 4: Broadleaf Weed Control – GF-2210, Escalade 2, and Momentum FX2 – 2008**

|                 |   | Dandelion |          |          | Broadleaf Plantain |          |          | White Clover |          |          |
|-----------------|---|-----------|----------|----------|--------------------|----------|----------|--------------|----------|----------|
|                 |   | June 12   | June 26  | July 16  | June 12            | June 26  | July 16  | June 12      | June 26  | July 16  |
| Treatment       |   | 22 DAT-A  | 36 DAT-A | 56 DAT-A | 22 DAT-A           | 36 DAT-A | 56 DAT-A | 22 DAT-A     | 36 DAT-A | 56 DAT-A |
|                 |   | 8 DAT-B   | 22 DAT-B | 42 DAT-B | 8 DAT-B            | 22 DAT-B | 42 DAT-B | 8 DAT-B      | 22 DAT-B | 42 DAT-B |
|                 |   |           | 8 DAT-C  | 28 DAT-C |                    | 8 DAT-C  | 28 DAT-C |              | 8 DAT-C  | 28 DAT-C |
| percent control |   |           |          |          |                    |          |          |              |          |          |
| DMA 4           | A |           |          |          |                    |          |          |              |          |          |
| EF-1343         | A | 95.4 ab   | 95.7 a   | 11.5 c   | 50 b               | 100 a    | 9.5 c    | 95 a         | 99.8 a   | 95.4 de  |
| Spotlight       | A |           |          |          |                    |          |          |              |          |          |
| DMA 4           | B |           |          |          |                    |          |          |              |          |          |
| EF-1343         | B | 0 c       | 97.8 a   | 68.4 ab  | 0 c                | 33.3 bc  | 33.3 bc  | 0 b          | 91.6 a   | 93.9 e   |
| Spotlight       | B |           |          |          |                    |          |          |              |          |          |
| DMA 4           | C |           |          |          |                    |          |          |              |          |          |
| EF-1343         | C |           | 0 b      | 97.7 a   |                    | 0 c      | 100 a    |              | 55.1 b   | 96.4 cd  |
| Spotlight       | C |           |          |          |                    |          |          |              |          |          |
| Escalade 2      | A | 97.7 a    | 92.9 a   | 46.8 b   | 95.8 a             | 100 a    | 100 a    | 85.1 a       | 100 a    | 100 a    |
| Escalade 2      | B | 0 c       | 99 a     | 0 c      | 0 c                | 100 a    | 88.1 a   | 0 b          | 92.6 a   | 99.2 ab  |
| Escalade 2      | C |           | 0 b      | 98.9 a   |                    | 0 c      | 100 a    |              | 55.1 b   | 98.8 ab  |
| Momentum        | A | 94.6 b    | 93.6 a   | 2 c      | 43.3 b             | 66.7 ab  | 57.1 ab  | 95.7 a       | 99.3 a   | 98.6 ab  |
| Momentum        | B | 0 c       | 80.6 a   | 0 c      | 0 c                | 80.6 ab  | 100 a    | 22.9 b       | 92 a     | 97.8 bc  |
| Momentum        | C |           | 0 b      | 98 a     |                    | 0 c      | 100 a    |              | 55.1 b   | 97.4 bcd |
| Untreated       |   | 0 c       | 0 b      | 0 c      | 0 c                | 0 c      | 0 c      | 0 b          | 0 c      | 0 f      |
| LSD (p=0.05)    |   | 2.33      | 10.32    | 31.29    | 39.97              | 50.14    | 46.60    | 27.26        | 16.39    | 2.05     |

† Means followed by same letter do not significantly differ (P=0.05, LSD).

\* Rates in pt/A: DMA 4 at 2.9; EF-1343 at 0.25; Spotlight at 0.2; Escalade 2 at 3; Momentum FX2 at 4.

**Table 5: Broadleaf Weed Control – DAS Liquid Combos at High Water Volumes – 2008**

| Treatment       | Rate<br>(pt/A) | Dandelion          |                     |                     | White Clover       |                     |                     |
|-----------------|----------------|--------------------|---------------------|---------------------|--------------------|---------------------|---------------------|
|                 |                | June 6<br>16 DAT-A | June 19<br>29 DAT-A | July 16<br>56 DAT-A | June 6<br>16 DAT-A | June 19<br>29 DAT-A | July 16<br>56 DAT-A |
| percent control |                |                    |                     |                     |                    |                     |                     |
| Escalde 2       | 2              | 96 a               | 99.6 a              | 76.5 ab             | 93.9 a             | 100 a               | 100 a               |
| Escalde 2       | 3              | 94.5 ab            | 100 a               | 93.4 a              | 86.5 abc           | 100 a               | 100 a               |
| GF-2122         | 2              | 80.2 c             | 96.6 ab             | 78.3 ab             | 82.7 bc            | 100 a               | 100 a               |
| GF-2122         | 3              | 89.8 abc           | 86 c                | 55 c                | 86.5 abc           | 98.2 a              | 91.6 b              |
| Momentum FX2    | 3              | 81.3 bc            | 86.2 c              | 68.4 bc             | 79.7 c             | 98.9 a              | 95.6 ab             |
| Momentum FX2    | 4              | 84.8 abc           | 91.9 abc            | 75.7 abc            | 85.6 abc           | 100 a               | 97.7 a              |
| GF-2121         | 3              | 82.8 abc           | 88.8 bc             | 76 abc              | 88.5 abc           | 98.2 a              | 98.5 a              |
| GF-2121         | 4              | 78.7 c             | 95.2 abc            | 76.5 abc            | 90.5 ab            | 100 a               | 98 a                |
| Untreated       |                | 0 d                | 0 d                 | 0 d                 | 0 d                | 0 b                 | 0 c                 |
| LSD (p=0.05)    |                | 14.15              | 10.26               | 21.57               | 10.60              | 2.40                | 4.90                |

† Means followed by same letter do not significantly differ (P=0.05, LSD).

**Table 6: Broadleaf Weed Control – GF-2312 at High Water Volumes – 2008**

| Treatment       | Rate<br>(pt/A) | Dandelion |          | White Clover |          |
|-----------------|----------------|-----------|----------|--------------|----------|
|                 |                | June 2    | June 30  | June 2       | June 30  |
|                 |                | 28 DAT-A  | 56 DAT-A | 28 DAT-A     | 56 DAT-A |
| percent control |                |           |          |              |          |
| GF-2312         | 2              | 89.8 b    | 31       | 92.8 a       | 95.7 ab  |
| GF-2312         | 2.5            | 92.2 ab   | 18.4     | 94.6 a       | 96.4 ab  |
| GF-2312         | 3              | 97.1 a    | 3.7      | 98.2 a       | 100 a    |
| Trimec Classic  | 3.25           | 96.9 ab   | 26.3     | 92.6 a       | 93.8 ab  |
| Trimec Classic  | 3.5            | 92.8 ab   | 10.4     | 86.1 a       | 89.6 b   |
| Trimec Classic  | 4              | 97.6 a    | 24.7     | 92.8 a       | 97.3 ab  |
| Untreated       |                | 0 c       | 0        | 0 b          | 0 c      |
| LSD (p=0.05)    |                | 7.28      | NS       | 13.80        | 9.29     |

† Means followed by same letter do not significantly differ (P=0.05, LSD).  
NS indicates not significant.

**Table 7: Post Broadleaf Weed Control – Quinclorac and Triclopyr – 2008**

| Treatment       | Rate     | Dandelion            | Clover   | Plantain | Dandelion            | Clover  | Plantain | Dandelion            |
|-----------------|----------|----------------------|----------|----------|----------------------|---------|----------|----------------------|
|                 |          | Jun/20/08<br>22 DA-A |          |          | Jun/30/08<br>32 DA-A |         |          | Jul/16/08<br>48 DA-A |
| percent control |          |                      |          |          |                      |         |          |                      |
| QP QUIN         | 0.5 LB/A | 28.1 bc              | 81.2 bc  | 0.0      | 66.7 c               | 100.0 a | 22.2     | 42.1 cd              |
| QP QUIN         | 1 LB/A   | 35.1 b               | 73.1 c   | 0.0      | 74.9 bc              | 100.0 a | 16.7     | 84.7 a               |
| QP TRICLOPYR 4  | 0.5 QT/A | 65.8 a               | 84.2 abc | 0.0      | 69.9 c               | 100.0 a | 16.7     | 26.6 de              |
| QP TRICLOPYR 4  | 1 QT/A   | 77.9 a               | 91.8 ab  | 57.1     | 93.1 ab              | 100.0 a | 8.3      | 52.7 bcd             |
| QP QUIN         | 0.5 LB/A | 74.4 a               | 92.0 ab  | 0.0      | 98.3 a               | 100.0 a | 0.0      | 82.1 ab              |
| QP TRICLOPYR 4  | 0.5 QT/A |                      |          |          |                      |         |          |                      |
| QP QUIN         | 0.5 LB/A | 79.4 a               | 97.9 a   | 40.5     | 98.4 a               | 100.0 a | 59.3     | 73.2 abc             |
| QP TRICLOPYR 4  | 1 QT/A   |                      |          |          |                      |         |          |                      |
| QP QUIN         | 1 LB/A   | 74.9 a               | 93.2 ab  | 27.8     | 91.2 ab              | 100.0 a | 33.3     | 78.9 ab              |
| QP TRICLOPYR 4  | 0.5 QT/A |                      |          |          |                      |         |          |                      |
| QP QUIN         | 1 LB/A   | 74.5 a               | 93.8 ab  | 22.2     | 97.3 a               | 100.0 a | 58.3     | 82.3 ab              |
| QP TRICLOPYR 4  | 1 QT/A   |                      |          |          |                      |         |          |                      |
| UNTREATED       |          | 0.0 c                | 0.0 d    | 0.0      | 0.0 d                | 0.0 b   | 0.0      | 0.0 e                |
| LSD (P=.05)     |          | 30.34                | 15.06    | NS       | 20.09                | 0.00    | NS       | 31.28                |

† Means followed by same letter do not significantly differ (P=0.05, LSD).

NS indicates not significant.

**Table 8: Post Broadleaf Weed Control – Quinclorac and Triclopyr – 2008**

| Treatment      | Rate        | App<br>Timing | Broadleaf Plantain                            |
|----------------|-------------|---------------|---|
|                |             |               | Oct/19/08<br>167 DA-A<br>137 DA-B<br>102 DA-C |
|                |             |               | percent control                               |
| TURFLON ESTER  | 1 QT/A      | A             | 52.5 ab                                       |
| TRIMEC CLASSIC | 4 PT/A      | A             | 33.0 bc                                       |
| LONTREL        | 1.33 PT/A   | A             | 66.2 ab                                       |
| TURFLON ESTER  | 1 QT/A      | B             | 46.0 bc                                       |
| TRIMEC CLASSIC | 4 PT/A      | B             | 58.6 ab                                       |
| LONTREL        | 1.33 PT/A   | B             | 97.3 a  |
| TURFLON ESTER  | 1 QT/A      | C             | 97.4 a  |
| TRIMEC CLASSIC | 4 PT/A      | C             | 98.6 a  |
| LONTREL        | 1.33 PT/A   | C             | 99.0 a  |
| TURFLON ESTER  | 1 QT/A      | D             |   |
| TRIMEC CLASSIC | 4 PT/A      | D             |   |
| LONTREL        | 1.33 PT/A   | D             |   |
| UNTREATED      |             |               | 0.0 c   |
|                | LSD (P=.05) |               | 49.53   |

† Means followed by same letter do not significantly differ (P=0.05, LSD).

NS indicates not significant.

## 2008 Postemergence Broadleaf Weed Control

Seven postemergence broadleaf weed control trials were conducted at the HTRC in 2008. Dandelion (*Taraxacum officinale*), white clover (*Trifolium repens*) were well represented in each of the trials conducted at the Hancock Turfgrass Research Center (HTRC) in East Lansing, MI. Broadleaf plantain (*Plantago major*) control was evaluated if it was uniform in the trial area. Dandelion and buckhorn plantain (*Plantago lanceolata*) were well represented in trials conducted at the Evergreen Cemetery in Lansing, MI. Other trials were conducted to evaluate control of specific broadleaf weeds, such as, common chickweed (*Stellaria media*) and ground ivy (*Glechoma hederacea*). Percent control was determined for each species using the Henderson-Tilton pre-count/post-count method.

**The 2008 Broadleaf Weed Control – Pre and Post with Granular Dimension and Exp. Trial** was treated on April 30 (A) and May 29 (B). Dandelion, broadleaf plantain, and white clover were well represented in the trial area. Tables 1-3 contain the complete treatment list and results for this trial.

Dandelion: Almost 2 months after treatment (57 days after treatment A [DAT-A]), on June 26, treatments including Trimec Classic + the preemergence products (LSC2008-9,10, and 11) were still providing excellent control of dandelion. Trimec Classic alone provided moderate control at this point and LSC2008-11 + Trimec granular was providing good control of dandelion. The preemergence products alone did not provided some control of dandelion early on, but it was all lost by 51 DAT-A.

Broadleaf Plantain: Fifty-one and fifty-seven DAT-A, all liquid Trimec Classic treatments provided excellent control of broadleaf plantain, while the granular version provided moderate control. All other treatments provided little control of broadleaf plantain by this point.

White Clover: All treatments, except LSC2008-10, provided excellent control of white clover even 57 DAT-A.

Turf injury was not noticed in any plot for the duration of the trial.

Liquid treatments for the aforementioned trial were applied with a spray volume rate of 62 gallons per acre (GPA) with a CO<sub>2</sub> backpack sprayer equipped with four flat fan, 8002 nozzles.

Liquid treatments for the following trials were applied with a higher volume of water – 85 GPA with the same backpack sprayer.

**The 2008 Broadleaf Weed Control – GF-2210, Escalade 2, and Momentum FX2 Trial**

was treated on May 21 (A), June 4 (B), and June 18 (C). Dandelion, broadleaf plantain, and white clover were well represented in the trial area. Table 4 contains the complete treatment list and results for this trial.

Dandelion: All treatments provided excellent control of dandelion, although 56 DAT-A and 42 DAT-B, major dandelion re-growth was observed.

Broadleaf Plantain: Escalade 2 provided the best long-term control of broadleaf plantain, while Momentum FX2 provided good control also. DMA 4 + EF-1343 + Spotlight provided excellent short-term control of broadleaf plantain, but that control seemed to fade late in the trial period for the early applied treatment, especially.

White Clover: Fifty six DAT-A, all treatments were providing at least 94% control of white clover. DMA 4 + EF-1343 + Spotlight, however, did not perform quite as well as the other treatments regardless of timing.

Turf injury was not noticed in any plot for the duration of the trial.

**The 2008 Broadleaf Weed Control – DAS Liquid Combos at High Water Volumes**

was treated on May 21. Dandelion and white clover were well represented in the trial area. Broadleaf plantain populations, although evaluated, were not consistent enough to provide statistical differences between treatments – for this reason it is not presented. Table 5 contains the complete treatment list and results for this trial.

Dandelion: The high rate of Escalade 2 provided the best long-term control of dandelion, providing excellent control even 56 DAT. Twenty-nine DAT, the low rate of GF-2121, the low rate of Momentum FX2, and the high rate of GF-2122 provided less control of dandelion than the other treatments.

White Clover: All treatments provided excellent control of white clover 29 DAT. All treatments, except for the high rate of GF-2122, continued to control white clover 56 DAT.

Turf injury was not noticed in any plot for the duration of the trial.

**The 2008 Broadleaf Weed Control – GF-2312 at High Water Volumes** was treated on June 4. Dandelion and white clover were well represented in the trial area. Broadleaf plantain populations, although evaluated, were not consistent enough to provide statistical differences between treatments – for this reason it is not presented. Table 6 contains the complete treatment list and results for this trial.

Dandelion: The low rate of GF-2312 was the only treatment to statistically differ from other treatments – the high rate of GF-2312 and the high rate of Trimec Classic, which provided excellent control of dandelion by this point. Fifty-six DAT, enough re-growth of dandelion had taken place to lose any statistical differences between treatments.

White Clover: No treatment differed from another for white clover control 28 DAT. The high rate of GF-2312 provided the best control of white clover 56 DAT, while all other treatments provided very good control of white clover also.

Turf injury was not noticed in any plot for the duration of the trial.

**The 2008 Broadleaf Weed Control – QP (Quali-Pro) Quinclorac and QP Triclopyr** was treated on May 29, 2008. Dandelion and white clover were well represented in the trial area. Broadleaf plantain populations, although evaluated, were not consistent enough to provide

statistical differences between treatments. Table 7 contains the complete treatment list and results for this trial.

Dandelion: Forty-eight DAT, QP Quinclorac alone and all treatments including both QP Quin and QP Triclopyr were still providing good control. The three other treatment provided poor control.

White Clover: All treatments provided complete control of white clover 32 DAT.

No turf injury was noticed within the treatment area during the trial.

**The 2008 Broadleaf Plantain Control** was treated on May 12 (A), June 11 (B), July 11 (C), and October 9, 2008. Table 8 contains the complete treatment list and results for this trial from one population evaluation on October 19, 2008. Broadleaf plantain population evaluations have not yet been collected to compare the D timing treatments and are, therefore, not included in the table.

Although a spring evaluation of the weed population could reveal more about the efficacy of the timings and treatments, treatments applied at the C timing provided excellent control of broadleaf plantain. The only other treatment comparing to the C timing treatments was Lontrel at timing B.

No turf injury was noticed within the treatment area during the trial.

**The 2008 Broadleaf Weed Control – Cooling Degrees Trial** was treated on August 27, September 9, October 9, October 22, and November 6, 2008. Dandelion and white clover were well represented in the trial area.

Although we have found through research that the best broadleaf weed control herbicide application timing is the fall, we do not yet know at what point in the fall or winter these “fall treatments” become useless because the plants have stopped growing. The goal of this trial was to apply herbicides about 2 weeks apart until snow fell; then, to compare the efficacy of

the different timings to weather data collected on site and build a model to help us identify the point at which temperatures indicate that our herbicides will no longer be effective.

This trial will continue as data is collected this fall and the trial is repeated in 2009.

**Table 1: Broadleaf Weed Control – Pre and Post with Granular Dimension and Exp. – 2008 Dandelion**

|                             |   | <b>May 29</b> | <b>June 6</b> | <b>June 20</b> | <b>June 26</b> |
|-----------------------------|---|---------------|---------------|----------------|----------------|
| Treatment                   |   | 29 DAT-A      | 37 DAT-A      | 51 DAT-A       | 57 DAT-A       |
|                             |   |               | 8 DAT-B       | 20 DAT-B       | 26 DAT-B       |
| percent control - dandelion |   |               |               |                |                |
| LSC2008-10                  | A | 34.3 b        | 7.8 e         | 13.1 cd        | 15.1 c         |
| LSC2008-9                   | A | 62 a          | 60.4 bc       | 19.9 cd        | 9 c            |
| Trimec Classic              | B |               | 35.8 d        | 67.2 b         | 64.9 b         |
| LSC2008-11                  | A | 49.8 ab       | 59.1 bcd      | 29 c           | 11.3 c         |
| LSC2008-10                  | A | 34.9 b        | 43.3 cd       | 83.9 ab        | 89.6 a         |
| Trimec Classic              | B |               |               |                |                |
| LSC2008-9                   | A | 66.2 a        | 91.2 a        | 97.3 a         | 93.3 a         |
| Trimec Classic              | B |               |               |                |                |
| LSC2008-11                  | A | 54.3 ab       | 95.8 a        | 98.8 a         | 98 a           |
| Trimec Classic              | B |               |               |                |                |
| LSC2008-11                  | A | 50 ab         | 79 ab         | 83.5 ab        | 77.8 ab        |
| Trimec Gran.                | B |               |               |                |                |
| Untreated                   |   | 0 c           | 0 e           | 0 d            | 0 c            |
| Fert 19-0-6                 |   |               |               |                |                |
| LSD (p=0.05)                |   | 22.39         | 24.47         | 22.22          | 20.53          |

† Means followed by same letter do not significantly differ (P=0.05, LSD).

\*All granular products were applied at 150 lb/A and Trimec Classic was applied at 4 pt/A.

**Table 2: Broadleaf Weed Control – Pre and Post with Granular Dimension and Exp. – 2008 Broadleaf Plantain**

|                                      |        | <b>May 29</b> | <b>June 6</b>       | <b>June 20</b>       | <b>June 26</b>       |
|--------------------------------------|--------|---------------|---------------------|----------------------|----------------------|
| Treatment                            |        | 29 DAT-A      | 37 DAT-A<br>8 DAT-B | 51 DAT-A<br>20 DAT-B | 57 DAT-A<br>26 DAT-B |
| percent control – broadleaf plantain |        |               |                     |                      |                      |
| LSC2008-10                           | A      | 62 a          | 49.1 ab             | 38.3 b               | 46.8 c               |
| LSC2008-9                            | A      | 49.9 a        | 48.2 ab             | 24.2 bc              | 29.6 c               |
| Trimec Classic                       | B      |               | 31 b                | 97.5 a               | 98 a                 |
| LSC2008-11                           | A      | 57 a          | 56 a                | 30.1 b               | 28.5 c               |
| LSC2008-10<br>Trimec Classic         | A<br>B | 60.5 a        | 54.4 a              | 100 a                | 99.2 a               |
| LSC2008-9<br>Trimec Classic          | A<br>B | 40.7 a        | 51.6 ab             | 96.6 a               | 100 a                |
| LSC2008-11<br>Trimec Classic         | A<br>B | 41.4 a        | 48.9 ab             | 100 a                | 99 a                 |
| LSC2008-11<br>Trimec Gran.           | A<br>B | 53.7 a        | 50.5 ab             | 76.6 a               | 73.9 b               |
| Untreated<br>Fert 19-0-6             |        | 0 b           | 0 c                 | 0 c                  | 0 d                  |
| LSD (p=0.05)                         |        | 32.15         | 23.35               | 28.26                | 22.93                |

† Means followed by same letter do not significantly differ (P=0.05, LSD).

\*All granular products were applied at 150 lb/A and Trimec Classic was applied at 4 pt/A.

**Table 3: Broadleaf Weed Control – Pre and Post with Granular Dimension and Exp. – 2008 White Clover**

|                                |        | <b>May 29</b> | <b>June 6</b>       | <b>June 20</b>       | <b>June 26</b>       |
|--------------------------------|--------|---------------|---------------------|----------------------|----------------------|
| Treatment                      |        | 29 DAT-A      | 37 DAT-A<br>8 DAT-B | 51 DAT-A<br>20 DAT-B | 57 DAT-A<br>26 DAT-B |
| percent control – white clover |        |               |                     |                      |                      |
| LSC2008-10                     | A      | 35.4 b        | 40.4 b              | 28.4 b               | 23 b                 |
| LSC2008-9                      | A      | 94.7 a        | 97.6 a              | 97.5 a               | 97.7 a               |
| Trimec Classic                 | B      |               | 64.9 b              | 82.5 a               | 87.9 a               |
| LSC2008-11                     | A      | 87.8 a        | 92.7 a              | 93.3 a               | 95 a                 |
| LSC2008-10<br>Trimec Classic   | A<br>B | 30.7 bc       | 64.1 b              | 95.9 a               | 96.2 a               |
| LSC2008-9<br>Trimec Classic    | A<br>B | 93.3 a        | 96.2 a              | 100 a                | 100 a                |
| LSC2008-11<br>Trimec Classic   | A<br>B | 90.8 a        | 98.8 a              | 100 a                | 100 a                |
| LSC2008-11<br>Trimec Gran.     | A<br>B | 85.7 a        | 97 a                | 100 a                | 100 a                |
| Untreated<br>Fert 19-0-6       |        | 0 c           | 0 c                 | 0 c                  | 0 c                  |
| LSD (p=0.05)                   |        | 32.15         | 26.84               | 20.36                | 13.87                |

† Means followed by same letter do not significantly differ (P=0.05, LSD).

\*All granular products were applied at 150 lb/A and Trimec Classic was applied at 4 pt/A.