

Efficiency in cool weather

Exp. No.: RSD-2-71

Start Date: November 14, 2006

Completion Date: November 21, 2006

Objective: To evaluate FeHEDTA activity against dandelion and white clover in cool weather.

Materials and Methods: This trial was conducted in an un-heated portion of the greenhouse, with the outside door left open. Ten dandelion plants of equal size (TAROF, 13 weeks old), 10 white clover plants of equal size (TRFRE, 18 weeks old) and 10 pots of perennial ryegrass (LOLPE, 6 weeks old) were selected for each treatment. The treatments were applied using a hand-trigger sprayer at 200 ml/m² and 400 ml/m². All treatments were applied once. Phytotoxicity / efficacy (%) was assessed on A1, A3 and A7.

Table 1. Environmental conditions at time of spraying.

| | A0 |
|-----------------|-----------|
| Date | 14-Nov |
| Time of Day | 3:00 PM |
| Air Temp (°C) | 15.6 |
| % Humidity | 87 |
| Dew Present | N |
| Soil Moisture | damp |
| Cloud Cover (%) | 100 |

Table 2. Environmental conditions for the duration of the study.

| | Values | Date |
|----------------|---------------|-------------|
| High Temp (°C) | 22.1 | 17-Nov |
| Low Temp (°C) | 4.6 | 16-Nov |
| Mean Temp (°C) | 9.2 | - |

Table 3. Plant stages at the commencement of this study.

| Measurements at A0 | TAROF | TRFRE | LOLPE |
|--------------------|--------------|------------|------------|
| Leaf # | 7-14 | 20+ | - |
| Plant Height (cm) | 29-42 (diam) | 12-19 | 2-3 |
| Growth Stage | vegetative | vegetative | vegetative |

Results:**Table 4.** Phytotoxicity / efficacy (%) against TAROF.

| | TAROF | chel | Appl | | Phyto (%) | | |
|---|------------------|-------------|-----------------------------|-----------|------------------|-----------|--|
| | | | Vol ml/m² | A1 | A3 | A7 | |
| 1 | Control | - | - | 0 | 0 | 0 | |
| 2 | FeHEDTA 0.4% Fe | - | 200 | 56 | 81 | 94 | |
| 3 | FeHEDTA 0.23% Fe | - | 400 | 49 | 76 | 94 | |
| 7 | Killex 0.6% | - | 200 | 5 | 8 | 16 | |
| 8 | Duplosan 0.2% | - | 200 | 3 | 10 | 18 | |

Table 5. Phytotoxicity / efficacy (%) against TRFRE.

| | TRFRE | chel | Appl | | Phyto (%) | | |
|---|------------------|-------------|-----------------------------|-----------|------------------|-----------|--|
| | | | Vol ml/m² | A1 | A3 | A7 | |
| 1 | Control | - | - | 0 | 0 | 0 | |
| 2 | FeHEDTA 0.4% Fe | - | 200 | 36 | 73 | 76 | |
| 3 | FeHEDTA 0.23% Fe | - | 400 | 30 | 64 | 69 | |
| 7 | Killex 0.6% | - | 200 | 20 | 23 | 35 | |
| 8 | Duplosan 0.2% | - | 200 | 17 | 16 | 30 | |

Table 6. Phytotoxicity (%) on LOLPE.

| | LOLPE | chel | Phytotoxicity (%) | | |
|---|------------------|-------------|--------------------------|-----------|-----------|
| | | | A1 | A3 | A7 |
| 1 | Control | - | 0 | 0 | 0 |
| 2 | FeHEDTA 0.4% Fe | - | 0 | 1 | 3 |
| 3 | FeHEDTA 0.23% Fe | - | 0 | 1 | 3 |
| 7 | Killex 0.6% | - | 0 | 0 | 2 |
| 8 | Duplosan 0.2% | - | 0 | 0 | 2 |

Conclusions:

Faster, more efficacious activity against TRFRE and TAROF was obtained with FeHEDTA than with either Killex or Duplosan in this study conducted in a cool environment. With the FeHEDTA treatments, the 0.23% Fe rate applied at 400 ml/m² was slightly less efficacious against both weeds than the 0.4% Fe rate applied at 200 ml/m². Minimal grass injury was seen for all herbicide treatments.

Exp. No.: RSD-2-77

Start Date: January 18, 2007

Completion Date: March 8, 2007

Objective: To evaluate FeHEDTA activity against dandelion and white clover in cool weather.

Materials and Methods: This trial was conducted in an un-heated portion of the greenhouse, with the door to the outside left open. Ten dandelion plants of equal size (TAROF, 19 weeks old), 10 white clover plants of equal size (TRFRE, 23 weeks old) and 10 pots of perennial ryegrass (LOLPE, 8 ½ weeks old) were selected for each treatment. The treatments were applied using a hand-trigger sprayer at 200 ml/m² or 400 ml/m². All treatments were applied once. Phytotoxicity / efficacy (%) was assessed on A4, A7, A14, A21, A28, A35, A42 and A49.

Table 1. Environmental conditions at time of spraying.

| | A0 |
|-----------------|-----------|
| Date | 18-Jan |
| Time of Day | 2:00 PM |
| Air Temp (°C) | 8 |
| Dew Present | N |
| Soil Moisture | damp |
| Cloud Cover (%) | 100 |

Table 2. Environmental conditions for the duration of the study.

| | Values | Date |
|----------------|---------------|-------------|
| High Temp (°C) | 26.1 | 7-Mar |
| Low Temp (°C) | -0.6 | 1-Mar |
| Mean Temp (°C) | 7.8 | - |

Table 3. Plant stages at the commencement of this study.

| Measurements at A0 | TAROF | TRFRE | LOLPE |
|--------------------|--------------|------------|------------|
| Leaf # | 12-17 | 20+ | - |
| Plant Height (cm) | 16-22 (diam) | 8-12 | 1-2 |
| Growth Stage | vegetative | vegetative | vegetative |

Results:**Table 4.** Phytotoxicity / efficacy (%) against TAROF.

| | <i>TAROF</i> | <i>chel</i> | <i>Appl</i> <i>Vol ml/m²</i> | <i>Phyto (%)</i> | | <i>Efficacy (%)</i> | | | | | |
|---|------------------|-------------|--|------------------|-----------|---------------------|------------|------------|------------|------------|------------|
| | | | | <i>A4</i> | <i>A7</i> | <i>A14</i> | <i>A21</i> | <i>A28</i> | <i>A35</i> | <i>A42</i> | <i>A49</i> |
| 1 | Control | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | FeHEDTA 0.4% Fe | 1 | 200 | 81 | 93 | 100 | 99 | 100 | 100 | 100 | 100 |
| 3 | FeHEDTA 0.23% Fe | 1 | 400 | 80 | 92 | 100 | 100 | 100 | 100 | 100 | 100 |
| 7 | Killex 0.6% | - | 200 | 28 | 48 | 58 | 49 | 61 | 82 | 88 | 97 |
| 8 | Duplosan 0.2% | - | 200 | 28 | 52 | 60 | 51 | 62 | 81 | 85 | 93 |

Table 5. Phytotoxicity / efficacy (%) against TRFRE.

| | <i>TRFRE</i> | <i>chel</i> | <i>Appl</i> <i>Vol ml/m²</i> | <i>Phyto (%)</i> | | <i>Efficacy (%)</i> | | | | | |
|---|------------------|-------------|--|------------------|-----------|---------------------|------------|------------|------------|------------|------------|
| | | | | <i>A4</i> | <i>A7</i> | <i>A14</i> | <i>A21</i> | <i>A28</i> | <i>A35</i> | <i>A42</i> | <i>A49</i> |
| 1 | Control | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | FeHEDTA 0.4% Fe | 1 | 200 | 69 | 81 | 90 | 96 | 98 | 98 | 98 | 98 |
| 3 | FeHEDTA 0.23% Fe | 1 | 400 | 65 | 83 | 89 | 94 | 96 | 95 | 95 | 95 |
| 7 | Killex 0.6% | - | 200 | 35 | 45 | 66 | 52 | 70 | 84 | 89 | 94 |
| 8 | Duplosan 0.2% | - | 200 | 31 | 45 | 63 | 50 | 72 | 88 | 94 | 97 |

Table 6. Phytotoxicity (%) on LOLPE.

| | <i>LOLPE</i> | <i>chel</i> | <i>Appl</i> <i>Vol ml/m²</i> | <i>Phytotoxicity (%)</i> | | | | | | | |
|---|------------------|-------------|--|--------------------------|-----------|------------|------------|------------|------------|------------|------------|
| | | | | <i>A4</i> | <i>A7</i> | <i>A14</i> | <i>A21</i> | <i>A28</i> | <i>A35</i> | <i>A42</i> | <i>A49</i> |
| 1 | Control | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | FeHEDTA 0.4% Fe | 1 | 200 | 0 | 1 | 14 | 14 | 17 | 14 | 17 | 4 |
| 3 | FeHEDTA 0.23% Fe | 1 | 400 | 0 | 1 | 15 | 17 | 17 | 15 | 14 | 5 |
| 7 | Killex 0.6% | - | 200 | 0 | 3 | 7 | 4 | 8 | 13 | 11 | 7 |
| 8 | Duplosan 0.2% | - | 200 | 0 | 2 | 7 | 5 | 8 | 14 | 9 | 5 |

Table 7. Stunting (%) of LOLPE.

| | <i>LOLPE</i> | <i>chel</i> | <i>Appl</i> <i>Vol ml/m²</i> | <i>Stunting (%)</i> | | | | | |
|---|------------------|-------------|--|---------------------|------------|------------|------------|------------|------------|
| | | | | <i>A14</i> | <i>A21</i> | <i>A28</i> | <i>A35</i> | <i>A42</i> | <i>A49</i> |
| 1 | Control | - | - | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | FeHEDTA 0.4% Fe | 1 | 200 | 17 | 18 | 26 | 37 | 30 | 14 |
| 3 | FeHEDTA 0.23% Fe | 1 | 400 | 15 | 19 | 25 | 37 | 35 | 16 |
| 7 | Killex 0.6% | - | 200 | 13 | 11 | 12 | 10 | 6 | 4 |
| 8 | Duplosan 0.2% | - | 200 | 12 | 12 | 17 | 19 | 8 | 5 |

Conclusions:

Both FeHEDTA treatments resulted in excellent herbicidal activity against both TAROF and TRFRE in the cooler weather conditions of this study. It took up to seven weeks after treatment for both commercial standards to catch up to the excellent activity of the FeHEDTA treatments. Unacceptable grass injury (i.e. >10%) was seen for all herbicide treatments at some point during this study, with the FeHEDTA treatments having a longer duration of unacceptable injury than the commercial standards. Grass stunting was also seen for all treatments, with the FeHEDTA treatments showing slightly elevated levels of stunting compared to Killex and Duplosan. However, the end of the study saw reduced grass injury and stunting for all herbicide treatments.

Exp. No.: H03-1-34A**Start Date:** February 4, 2009**Completion Date:** April 21, 2009**Objective:** To evaluate the speed of activity and efficacy of FeHEDTA at various times of the year.

Materials and Methods: This trial was conducted in the field. Plots $\frac{1}{4}$ m² in size were marked out in a creeping buttercup area (RANRE), an English daisy area (BELPE) and a false dandelion area (HRYRA) of the field. All treatments were replicated twice. The treatments were applied using a hand-trigger sprayer at 200 or 400 ml/m². Treatments were reapplied after 61 days on April 6, 2009. Killex was not reapplied. Killex was applied at a rate of 1.2 ml product/m² and an application volume of 200 ml/m². All Fe chelate treatments were formulated at a 1X chelation level. Phytotoxicity / efficacy (%) was assessed on A1, A2, A7, A14, A21, A28, A41, A49, A57, B8/A69 and B15 (A76).

Table 1. Environmental conditions at time of spraying.

| | A0 | B0 |
|-----------------|-----------|-----------|
| Date | 4-Feb | 6-Apr |
| Time of Day | 1:30 PM | 2:00 PM |
| Air Temp (°C) | 9.2 | 16.6 |
| % Humidity | 70 | 47 |
| Dew Present | yes | no |
| Soil Moisture | wet | wet |
| Cloud Cover (%) | 25 | 0 |

Table 2. Environmental conditions for the duration of the study.

| | A0 to B0 | | B0 to completion | |
|-----------------------------|-----------------|--|-------------------------|----------------|
| | Values | Date | Values | Date |
| High Temp (°C) | 15.8 | 6-Apr | 19.2 | 20-Apr |
| Low Temp (°C) | -4.7 | 10-Mar | 0.8 | 14-Apr |
| Mean Temp (°C) | 4.1 | - | 8.9 | - |
| High RH (%) | 98 | 5,6,11,23,24-Feb, 1,2,17,19,20-Mar, 1,2-Apr | 98 | 12-Apr, 17-Apr |
| Low RH (%) | 31 | 10-Mar, 25-Mar | 39 | 6-Apr |
| Mean RH (%) | 79.7 | - | 75.2 | - |
| Highest Rainfall Event (mm) | 0.8 | 10-Feb, 6-Mar | 1.2 | 12-Apr |
| Total Rainfall (mm) | 91 | - | 16.8 | - |

Table 3. Plants stages on the day of herbicide application (control treatment).

| | HRYRA | | BELPE | | RANRE | |
|---------------------------------|--------------|-----------|--------------|-----------|--------------|-----------|
| | A0 | B0 | A0 | B0 | A0 | B0 |
| Leaf # | 7-20+ | 8-20 | 4-10 | 4-13 | 20+ | 20+ |
| Plant Height (cm) | - | - | - | - | 2-8 | 3-8 |
| Plant Diameter (cm) | 6-18 | 7-20 | 4-6 | 4-7 | - | - |
| Growth Stage | veg | veg | veg | veg/flwr | veg | veg |
| Density (#/0.25m ²) | 48 | 50 | ~230 | ~230 | - | - |
| Coverage (%) | 45 | 48 | 70 | 73 | 85 | 80 |

Results:**Table 4.** Phytotoxicity / efficacy (%) against field HRYRA.

| | HRYRA | Appl Vol (ml/m ²) | Phyto (%) | | | Efficacy (%) | | | | | | Phy (%) | Eff (%) | |
|---|------------------|---|------------------|-----------|-----------|---------------------|------------|------------|------------|------------|------------|----------------|----------------|-----------|
| | | | A1 | A2 | A7 | A14 | A21 | A28 | A41 | A49 | A57 | | | B8 |
| 1 | Control | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | FeHEDTA 0.25% Fe | 200 | 18 | 33 | 80 | 87 | 88 | 87 | 85 | 83 | 83 | 90 | 94 | |
| 3 | FeHEDTA 0.25% Fe | 400 | 20 | 35 | 85 | 90 | 90 | 87 | 85 | 85 | 77 | 90 | 90 | |
| | | | Phyto (%) | | | Efficacy (%) | | | | | | | | |
| | | | A1 | A2 | A7 | A14 | A21 | A28 | A41 | A49 | A57 | A69 | A76 | |
| 4 | Killex 0.6% | 200 | 0 | 0 | 0 | 0 | 10 | 10 | 20 | 33 | 28 | 43 | 69 | |

Table 5. Phytotoxicity / Efficacy (%) on field BELPE.

| | BELPE | Appl Vol (ml/m ²) | Phyto (%) | | | Efficacy (%) | | | | | | Phy (%) | Eff (%) |
|---|------------------|---|------------------|-----------|-----------|---------------------|------------|------------|------------|------------|------------|----------------|----------------|
| | | | A1 | A2 | A7 | A14 | A21 | A28 | A41 | A49 | A57 | | |
| 1 | Control | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | FeHEDTA 0.25% Fe | 200 | 0 | 5 | 28 | 35 | 33 | 34 | 38 | 22 | 22 | 78 | 82 |
| 3 | FeHEDTA 0.25% Fe | 400 | 0 | 10 | 35 | 50 | 53 | 40 | 47 | 28 | 22 | 84 | 79 |
| | | | Phyto (%) | | | Efficacy (%) | | | | | | | |
| | | | A1 | A2 | A7 | A14 | A21 | A28 | A41 | A49 | A57 | A69 | A76 |
| 4 | Killex 0.6% | 200 | 0 | 0 | 0 | 0 | 0 | 5 | 15 | 15 | 20 | 23 | 28 |

Table 6. Phytotoxicity / Efficacy (%) on field RANRE.

| | RANRE | Appl Vol (ml/m ²) | Phyto (%) | | | Efficacy (%) | | | | | | Phy (%) | Eff (%) |
|---|------------------|---|------------------|-----------|-----------|---------------------|------------|------------|------------|------------|------------|----------------|----------------|
| | | | A1 | A2 | A7 | A14 | A21 | A28 | A41 | A49 | A57 | | |
| 1 | Control | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | FeHEDTA 0.25% Fe | 200 | 0 | 10 | 30 | 50 | 58 | 45 | 54 | 34 | 23 | 24 | 13 |
| 3 | FeHEDTA 0.25% Fe | 400 | 0 | 15 | 35 | 57 | 60 | 45 | 55 | 38 | 28 | 34 | 32 |
| | | | Phyto (%) | | | Efficacy (%) | | | | | | | |
| | | | A1 | A2 | A7 | A14 | A21 | A28 | A41 | A49 | A57 | A69 | A76 |
| 4 | Killex 0.6% | 200 | 0 | 0 | 0 | 5 | 8 | 17 | 20 | 24 | 18 | 18 | 18 |

Conclusions:

Very good activity against HRYRA was observed as early as 7 days after application and FeHEDTA maintained its efficacy for almost two months. The second application resulted in excellent activity. No significant difference was observed between the rates (200 and 400 ml/m²) of application throughout the period of study.

The initial activity of FeHEDTA against BELPE was moderate and the higher rate of application resulted in slightly higher efficacy in some readings. After the second application, very good activity was observed with no significant difference between the two rates.

The activity against RANRE was also moderate and the higher application rate resulted in slightly improved activity. However, the second application did not improve the activity but it was more effective than Killex.

Under the same conditions, Killex took at least two weeks or more to show the signs of phytotoxicity.

Overall, FeHEDTA activity was lower in this test when applied in February than in previous tests conducted at other times of year. Despite this, some activity was observed with FeHEDTA against RANRE and BELPE and FeHEDTA was more effective against these weeds than Killex. Good activity was observed with FeHEDTA against HRYRA. It is possible then to apply FeHEDTA against some weeds as early as late winter/early spring when the mean temperature is as low as 4°C.

Exp. No.: H03-1-34B

Start Date: April 6, 2009

Completion Date: May 21, 2009

Objective: To continue to evaluate the speed of activity and efficacy of FeHEDTA at various times of the year outdoors.

Materials and Methods: This trial was conducted in the field. Plots ¼ m² in size were marked out in a creeping buttercup area (RANRE), an English daisy area (BELPE) and a false dandelion area (HRYPRA) of the field. All treatments were replicated twice. The treatments were applied using a hand-trigger sprayer at 200 or 400 ml/m². Treatments were reapplied after 17 days on April 23, 2009. Killex was not reapplied. Killex was applied at a rate of 1.2 ml product/m² and an application volume of 200 ml/m². All Fe chelate treatments were formulated at a 1X chelation level. Phytotoxicity / efficacy (%) was assessed on A1, A8, A14, B7 (A24) and B14 (A31) and B28 (A45).

Table 1. Environmental conditions at time of spraying.

| | A0 | B0 |
|-----------------|-----------|-----------|
| Date | 6-Apr | 23-Apr |
| Time of Day | 2:00 PM | 1:30 PM |
| Air Temp (°C) | 16.6 | 11.2 |
| % Humidity | 47 | 58 |
| Dew Present | no | no |
| Soil Moisture | wet | wet |
| Cloud Cover (%) | 0 | 25 |

Table 2. Environmental conditions for the duration of the study.

| | <i>A0 to B0</i> | | <i>B0 to completion</i> | |
|-------------------------|-----------------|----------------|-------------------------|--------------------|
| | <i>Values</i> | <i>Date</i> | <i>Values</i> | <i>Date</i> |
| High Temp (°C) | 19.2 | 20-Apr | 21.6 | 17-May |
| Low Temp (°C) | 0.8 | 14-Apr | 2.9 | 24-Apr |
| Mean Temp (°C) | 8.7 | - | 10.2 | - |
| High RH (%) | 98 | 12-Apr, 17-Apr | 97 | 5,6-May, 11,14-May |
| Low RH (%) | 39 | 6-Apr | 18 | 27-Apr |
| Mean RH (%) | 75.1 | - | 71.8 | - |
| Highest Rain Event (mm) | 1.2 | 12-Apr | 1.6 | 2-May |
| Total Rainfall (mm) | 18 | - | 13.4 | - |

Table 3. Plants stages on the day of herbicide application (control treatment).

| | <i>HRYRA</i> | | <i>BELPE</i> | | <i>RANRE</i> | |
|---------------------------------|--------------|-----------|--------------|-----------|--------------|-----------|
| | <i>A0</i> | <i>B0</i> | <i>A0</i> | <i>B0</i> | <i>A0</i> | <i>B0</i> |
| Leaf # | 5-20+ | 5-20+ | 6-21 | 4-24 | 20+ | 20+ |
| Plant Height (cm) | - | - | - | - | 4-8 | 5-9 |
| Plant Diameter (cm) | 5-16 | 4-18 | 3-7 | 3-9 | - | - |
| Growth Stage | veg | veg | veg/flwr | veg/flwr | veg | veg |
| Density (#/0.25m ²) | 39 | 42 | ~260 | ~280 | - | - |
| Coverage (%) | 53 | 55 | 80 | 90 | 65 | 70 |

Results:

Table 4. Phytotoxicity / efficacy (%) against field HRYRA.

| | <i>HRYRA</i> | <i>Appl Vol</i> (ml/m ²) | <i>Phyto (%)</i> | | | <i>Efficacy (%)</i> | | |
|---|------------------|---|------------------|-----------|------------|---------------------|------------|------------|
| | | | <i>A1</i> | <i>A8</i> | <i>A14</i> | <i>B7</i> | <i>B14</i> | <i>B28</i> |
| 1 | Control | - | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | FeHEDTA 0.25% Fe | 200 | 33 | 82 | 75 | 85 | 91 | 88 |
| 3 | FeHEDTA 0.25% Fe | 400 | 42 | 88 | 78 | 96 | 95 | 92 |
| | | | <i>Phyto (%)</i> | | | <i>Efficacy (%)</i> | | |
| | | | <i>A1</i> | <i>A8</i> | <i>A14</i> | <i>A24</i> | <i>A31</i> | <i>A45</i> |
| 4 | Killex 0.6% | 200 | 0 | 25 | 33 | 64 | 68 | 65 |

Table 5. Phytotoxicity / Efficacy (%) on field BELPE.

| | BELPE | Appl Vol (ml/m ²) | Phyto (%) | | Eff (%) | Phyto (%) | | Efficacy (%) | |
|---|------------------|---|------------------|-----------|---------------------|------------------|------------|---------------------|---|
| | | | A1 | A8 | A14 | B7 | B14 | B28 | |
| 1 | Control | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | FeHEDTA 0.25% Fe | 200 | 29 | 77 | 60 | 94 | 89 | 88 | |
| 3 | FeHEDTA 0.25% Fe | 400 | 33 | 79 | 75 | 97 | 96 | 96 | |
| | | | Phyto (%) | | Efficacy (%) | | | | |
| | | | A1 | A8 | A14 | A24 | A31 | A45 | |
| 4 | Killex 0.6% | 200 | 0 | 10 | 14 | 25 | 37 | 37 | |

Table 6. Phytotoxicity / Efficacy (%) on field RANRE.

| | RANRE | Appl Vol (ml/m ²) | Phyto (%) | | Eff (%) | Phyto (%) | | Efficacy (%) | |
|---|------------------|---|------------------|-----------|---------------------|------------------|------------|---------------------|---|
| | | | A1 | A8 | A14 | B7 | B14 | B28 | |
| 1 | Control | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | FeHEDTA 0.25% Fe | 200 | 15 | 37 | 30 | 33 | 25 | 23 | |
| 3 | FeHEDTA 0.25% Fe | 400 | 18 | 44 | 35 | 39 | 29 | 28 | |
| | | | Phyto (%) | | Efficacy (%) | | | | |
| | | | A1 | A8 | A14 | A24 | A31 | A45 | |
| 4 | Killex 0.6% | 200 | 0 | 25 | 24 | 20 | 25 | 34 | |

Conclusions:

Very good activity against HRYRA and BELPE was observed as early as 8 days after application and FeHEDTA maintained its efficacy throughout the period of study. Compared to the observations in a previous study (H03-1-34A) conducted in early February, better activity against BELPE was noted in this study after the first application. Second application resulted in excellent activity in both studies. The activity against RANRE was moderate and slightly better than the previous study. No significant difference was observed between the rates (200 and 400ml/m²) of application with HRYRA; however, the higher rate of application resulted in slightly higher efficacy in some readings with BELPE and RANRE.

Under the same conditions, Killex took almost a week to show the signs of phytotoxicity. Overall, FeHEDTA was more effective against all the weeds compared to the previous study in February and the activity against HRYRA and BELPE was significantly higher than that of Killex. According to the results in H03-1-34A and this study, it is possible then to apply FeHEDTA against some weeds as early as late winter/early spring when the mean temperature is as low as 4°C and increased activity of the formulation can be observed by applying in early April.

Staining on hard surfaces

Exp. No.: H03-1-28

Start Date: January 26, 2009

Completion Date: February 16, 2009

Objective: To evaluate the staining potential of FeHEDTA at 0.25% Fe and 200 or 400 ml/m² on various hard surfaces.

Materials and Methods: This trial was conducted in the field. Plots 0.1 m² in size were marked out on stepping stones, concrete, gravel and wooden fencing on the Eco-care property. Treatments were not replicated and were applied using a hand-trigger sprayer at 200 or 400 ml/m². All treatments were applied once. All Fe chelate treatments were formulated at a 1X chelation level. Staining (%) was assessed on 2 hr, A1 and A21.

Table 1. Environmental conditions at time of spraying.

| | A0 |
|-----------------|-----------|
| Date | 26-Jan |
| Time of Day | 1:00 PM |
| Air Temp (°C) | 1.6 |
| % Humidity | 61 |
| Dew Present | no |
| Cloud Cover (%) | 0 |

Table 2. Environmental conditions for the duration of the study.

| | Values | Date |
|-----------------------------|---------------|--|
| High Temp (°C) | 9.5 | 4-Feb |
| Low Temp (°C) | -1.2 | 10-Feb |
| Mean Temp (°C) | 3.4 | - |
| High RH (%) | 98 | 27-Jan, 28-Jan, 2-Feb, 5-Feb, 6-Feb, 11-Feb |
| Low RH (%) | 51 | 15-Feb |
| Mean RH (%) | 83.7 | - |
| Highest Rainfall Event (mm) | 0.8 | 27-Jan, 10-Feb |
| Total Rainfall (mm) | 23 | - |

Results:**Table 3.** Staining (%) of hard surfaces.

| | | <i>FeHEDTA 0.25% Fe</i> | <i>Staining (%)</i> | | |
|---|-----------------|-----------------------------------|---------------------|-----------|------------|
| | | <i>App vol (ml/m²)</i> | <i>2 hours</i> | <i>A1</i> | <i>A21</i> |
| 1 | Stepping stones | 200 | 0 | 0 | 0 |
| | | 400 | 0 | 0 | 0 |
| 2 | Concrete | 200 | 0 | 0 | 0 |
| | | 400 | 0 | 0 | 0 |
| 3 | Gravel | 200 | 0 | 0 | 0 |
| | | 400 | 0 | 0 | 0 |
| 4 | Wooden Fence | 200 | 0 | 0 | 0 |
| | | 400 | 0 | 0 | 0 |

Conclusions:

No staining was observed on any of the hard surfaces after applying FeHEDTA at its lowest (200ml/m²) and the highest (400ml/m²) recommended application rates under the conditions given in Table 2. Therefore, the application of FeHEDTA on weeds grown in the cracks and crevices in concrete or between/around the stepping stones and gravel or by the wooden fences should not cause any staining problems.