

RO-NEET FOLLOWED BY POSTEMERGENCE AND LAY-BY HERBICIDES MIXED WITH GLYPHOSATE TO CONTROL GLYPHOSATE-RESISTANT WATERHEMP – HOLLOWAY, MN SITE 1

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Introduction

Glyphosate-resistant waterhemp continues to increase in Minnesota and North Dakota. This trial looks at the benefits of a soil-applied herbicide (Ro-Neet) followed by postemergence herbicides and split-applied lay-by herbicides mixed with glyphosate.

Materials and Methods

'Hilleshog 4022' Roundup Ready sugarbeet seed treated with Tachigaren at 45 grams product per 100,000 seeds and Poncho Beta was seeded May 4 at 60,825 seeds/A in six row plots 30 feet long in a cooperators' field having glyphosate-resistant waterhemp. Headline at 12 fl oz/A was applied in-furrow at planting to all plots. Preplant incorporated treatments were applied May 3 and incorporated 2 inches deep with a field cultivator with rolling baskets. Postemergence herbicide treatments were applied May 25, June 9 and June 24. All treatments were applied in 17 gpa water at 40 psi through XR8002 nozzles to the center four rows of six row plots. All postemergence treatments included N-Pak AMS at 2.5% v/v and Destiny HC at 1.5 pt/A. Quadris at 15.4 fl oz/A was applied to the entire experiment June 15. Sugarbeet injury and common lambsquarters control were evaluated May 26, June 9, June 24, July 8 and July 20. Waterhemp control was evaluated May 26, June 9, June 24, July 8, July 20 and August 24. Annual grass control was evaluated May 26 and July 20. Wild buckwheat control was evaluated May 26, June 24, July 8 and July 20. Common ragweed control was evaluated July 8 and July 20. Proline at 5.7 fl oz/A plus NIS at 0.25 %v/v, Agritin at 8 oz/A plus Manzate at 2 pounds/A, and Headline at 7 fl oz/A were applied on July 19, August 9, and August 26, respectively, over the entire trial area to control Cercospora. Sugarbeet from 20 feet of a center row in each plot was harvested September 7.

Table 1. Application information.

| Date of Application | May 3 | May 26 | June 9 | June 24 |
|---|---------|----------------------------------|--------------------------------|----------|
| Time of Day | 5:00 pm | 2:45 pm | 11:00 am | 12:35 pm |
| Air Temperature (°F) | 58 | 70 | 61 | 69 |
| Relative Humidity (%) | 22 | 31 | 47 | 59 |
| Soil Temp. (°F at 6") | 48 | 58 | 58 | 63 |
| Wind Velocity (mph) | 8 | 3 | 12 | 7 |
| Cloud Cover (%) | 0 | 10 | 95 | 90 |
| Soil Moisture | Good | Good | Good | Good |
| Sugarbeet Stage (range/Avg) | PPI | V1.0-V2.3/V2.0 | V6.0-V10.0/V8.5 | - |
| Waterhemp (range/Avg) Trt. 1 | PPI | cot-3 lf/2 lf; 0-0.25"/0.125" | cot-13 lf/9 lf; 0.125-5"/3" | - |
| Waterhemp (avg. density) Trt. 1 | PPI | 96/M ² | 166/M ² | - |
| Waterhemp (range/Avg) Trt. 2 | PPI | cot-3 lf/2 lf; 0-0.33"/0.125" | cot-10 lf/6 lf; 0.125-2"/1.25" | - |
| Waterhemp (avg. density) Trt. 2 | PPI | 104/M ² | 44/M ² | - |
| Waterhemp (range/Avg) Trt. 14 | PPI | cot-2 lf/1 lf; 0-0.125/0.125 | cot-10 lf/6 lf; 0.125-2"/1" | - |
| Waterhemp (avg. density) Trt. 14 | PPI | 10/M ² | 7/M ² | - |
| Com. Lambsquarters (range/Avg) Trt. 1 | PPI | 2-4 lf/2 lf; 0.25-0.75"/0.5" | 2-17 lf/12 lf; 0.25-7.5"/3" | - |
| Com. Lambsquarters (avg. density) Trt. 1 | PPI | 6/M ² | 18/M ² | - |
| Com. Lambsquarters (range/Avg) Trt. 2 | PPI | cot-4 lf/2 lf; 0.125-0.5"/0.33" | 4-8 lf/5 lf; 0.5-0.75"/0.67" | - |
| Com. Lambsquarters (avg. density) Trt. 2 | PPI | 5/M ² | 1/M ² | - |
| Com. Lambsquarters (range/Avg) Trt. 14 | PPI | cot-2 lf/2 lf; 0.125-0.33"/0.25" | 3-6 lf/4.5 lf; 0.33-0.75"/0.5" | - |
| Com. Lambsquarters (avg. density) Trt. 14 | PPI | 0.5/M ² | 0.5/M ² | - |
| Annual Grasses (range/Avg) Trt. 1 | PPI | 1-3 lf/2 lf; 0.25-1.25"/0.5" | 1-7 Till/4 Till; 1-5"/3" | - |
| Annual Grasses (avg. density) Trt. 1 | PPI | 7/M ² | 9/M ² | - |
| Annual Grasses (range/Avg) Trt. 2 | PPI | 1-3 lf/2 lf; 0.25-1"/0.75" | 3 lf-1T/1T; 0.75-1.75"/1.25" | - |
| Annual Grasses (avg. density) Trt. 2 | PPI | 5/M ² | 0.5/M ² | - |
| Annual Grasses (range/Avg) Trt. 14 | PPI | - | - | - |
| Annual Grasses (avg. density) Trt. 14 | PPI | 0/M ² | 0/M ² | - |
| Wild Buckwheat (range/Avg) Trt. 1 | PPI | cot-2 lf/1 lf; 0.33-1"/0.5" | 1-11 lf/3 lf; 0.75-11"/3" | - |
| Wild Buckwheat (avg. density) Trt. 1 | PPI | 13/M ² | 16/M ² | - |
| Wild Buckwheat (range/Avg) Trt. 2 | PPI | 1 lf/1 lf; 0.25-0.75"/0.5" | 2-3 lf/3 lf; 0.75-1.5"/1.25" | - |
| Wild Buckwheat (avg. density) Trt. 2 | PPI | 4/M ² | 1/M ² | - |
| Wild Buckwheat (range/Avg) Trt. 14 | PPI | cot-2 lf/1 lf; 0.25-1"/0.5" | 2-5 lf/3 lf; 0.5-3"/1.25" | - |
| Wild Buckwheat (avg. density) Trt. 14 | PPI | 9/M ² | 4/M ² | - |
| Common Ragweed (range/Avg) Trt. 1 | PPI | 1 N/1 N; 0.33"/0.33" | - | - |
| Common Ragweed (avg. density) Trt. 1 | PPI | 0.5/M ² | - | - |
| Common Ragweed (range/Avg) Trt. 2 | PPI | 1 N/1 N; 0.5"/0.5" | - | - |
| Common Ragweed (avg. density) Trt. 2 | PPI | 1/M ² | - | - |
| Common Ragweed (range/Avg) Trt. 14 | PPI | cot/cot; 0.25"/0.25" | - | - |
| Common Ragweed (avg. density) Trt. 14 | PPI | 0.25/M ² | - | - |

Results

Table 2. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (Stachler)

| Treatment ¹ | Rate lb ai/A or lb ae/A | Date of Applic. | (1) | (2) | (3) | (4) | (5) |
|--|---------------------------------------|--------------------|------------------------------|------------------------------|------------------------------|-------------------------------|------------------------------|
| | | | <u>May26</u> Sgbt Inju | <u>May26</u> Wahe Cntl | <u>May26</u> Colq Cntl | <u>May26</u> Grass Cntl | <u>May26</u> Wibw Cntl |
| Untreated Check | - | - | 0 | 0 | 0 | 0 | 0 |
| Roundup PM | 1.125 | May 25 | | | | | |
| Roundup PM | 0.75 | June 9, 24 | 0 | 0 | 0 | 0 | 0 |
| Roundup PM+Betanex | 1.125+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Betanex | 0.75+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 0 | 0 | 0 | 0 | 0 |
| Roundup PM+Betamix+Nortron | 1.125+12 fl oz/A+4 fl oz/A | May 25 | | | | | |
| Roundup PM+Betamix+Nortron | 0.75+16 fl oz/A+4 fl oz/A | June 9 | | | | | |
| Roundup PM+Betamix+Nortron | 0.75+24 fl oz/A+4 fl oz/A | June 24 | 0 | 0 | 0 | 0 | 0 |
| Roundup PM+Outlook | 1.125+14 fl oz/A | May 25 | | | | | |
| Roundup PM+Outlook | 0.75+10 fl oz/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 0 | 0 | 0 | 0 | 0 |
| Roundup PM+Outlook+Betanex | 1.125+14 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Outlook+Betanex | 0.75+10 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 0 | 0 | 0 | 0 | 0 |
| Roundup PM+Nortron+Outlook+Betamix | 1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Nortron+Outlook+Betamix | 0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 0 | 0 | 0 | 0 | 0 |
| Roundup PM+Dual Magnum | 1.125+1.5 pt/A | May 25 | | | | | |
| Roundup PM+Dual Magnum | 0.75+1 pt/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 0 | 0 | 0 | 0 | 0 |
| Roundup PM+Dual Magnum+Betanex | 1.125+1.5 pt/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Dual Magnum+Betanex | 0.75+1 pt/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 0 | 0 | 0 | 0 | 0 |
| Roundup PM+Dual Magnum+Nortron+Betamix | 1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Dual Magnum+Nortron+Betamix | 0.75+1 pt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 0 | 0 | 0 | 0 | 0 |
| Roundup PM+Warrant | 1.125+1.5 qt/A | May 25 | | | | | |
| Roundup PM+Warrant | 0.75+1 qt/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 0 | 0 | 0 | 0 | 0 |
| Roundup PM+Warrant+Betanex | 1.125+1.5 qt/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Warrant+Betanex | 0.75+1 qt/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 0 | 0 | 0 | 0 | 0 |
| Roundup PM+Warrant+Nortron+Betamix | 1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Warrant+Nortron+Betamix | 0.75+1 qt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 0 | 0 | 0 | 0 | 0 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM | 1.125 | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 22 | 85 | 88 | 95 | 26 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Betanex | 1.125+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Betanex | 0.75+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 23 | 87 | 92 | 96 | 28 |

Table continued on next page.

Table 2. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (continued)

| | | | (1) | (2) | (3) | (4) | (5) |
|--|---------------------------------------|---------|-----|-----|-----|-----|-----|
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Betamix+Nortron | 1.125+12 fl oz/A+4 fl oz/A | May 25 | | | | | |
| Roundup PM+Betamix+Nortron | 0.75+16 fl oz/A+4 fl oz/A | June 9 | | | | | |
| Roundup PM+Betamix+Nortron | 0.75+24 fl oz/A+4 fl oz/A | June 24 | 21 | 86 | 88 | 95 | 29 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Outlook | 1.125+14 fl oz/A | May 25 | | | | | |
| Roundup PM+Outlook | 0.75+10 fl oz/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 19 | 87 | 91 | 95 | 28 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Outlook+Betanex | 1.125+14 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Outlook+Betanex | 0.75+10 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 22 | 87 | 90 | 96 | 30 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Nortron+Outlook+Betamix | 1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Nortron+Outlook+Betamix | 0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 25 | 86 | 90 | 95 | 30 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Dual Magnum | 1.125+1.5 pt/A | May 25 | | | | | |
| Roundup PM+Dual Magnum | 0.75+1 pt/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 25 | 88 | 90 | 96 | 30 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Dual Magnum+Betanex | 1.125+1.5 pt/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Dual Magnum+Betanex | 0.75+1 pt/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 23 | 88 | 89 | 95 | 30 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Dual Magnum+Nortron+Betamix | 1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Dual Magnum+Nortron+Betamix | 0.75+1 pt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 19 | 85 | 87 | 93 | 29 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Warrant | 1.125+1.5 qt/A | May 25 | | | | | |
| Roundup PM+Warrant | 0.75+1 qt/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 22 | 86 | 90 | 95 | 30 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Warrant+Betanex | 1.125+1.5 qt/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Warrant+Betanex | 0.75+1 qt/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 20 | 87 | 88 | 95 | 30 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Warrant+Nortron+Betamix | 1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Warrant+Nortron+Betamix | 0.75+1 qt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 22 | 84 | 90 | 95 | 30 |

LSD (5%)

4 2 3 1 3

¹N-Pak AMS (liquid ammonium sulfate from Winfield Solutions) was included in all postemergence treatments at 2.5% v/v. Destiny HC (methylated seed oil from Winfield Solutions) was included in all postemergence treatments at 1.5 pt/A. Roundup PM=Roundup PowerMax formulation of glyphosate.

Experiment continued on next page.

Table 3. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (Stachler)

| Treatment ¹ | Rate | Date of Applic. | (6) | (7) | (8) | (9) | (10) |
|--|---------------------------------------|-----------------|------------------|------------------|------------------|------------------|-------------------|
| | | | June 9 Sgbt Inju | June 9 Wahe Cntl | June 9 Colq Cntl | July 20 Sgbt Inj | July 20 Wahe Cntl |
| Untreated Check | - | - | 0 | 0 | 0 | 0 | 0 |
| Roundup PM | 1.125 | May 25 | | | | | |
| Roundup PM | 0.75 | June 9, 24 | 2 | 71 | 91 | 0 | 51 |
| Roundup PM+Betanex | 1.125+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Betanex | 0.75+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 7 | 74 | 90 | 8 | 74 |
| Roundup PM+Betamix+Nortron | 1.125+12 fl oz/A+4 fl oz/A | May 25 | | | | | |
| Roundup PM+Betamix+Nortron | 0.75+16 fl oz/A+4 fl oz/A | June 9 | | | | | |
| Roundup PM+Betamix+Nortron | 0.75+24 fl oz/A+4 fl oz/A | June 24 | 7 | 71 | 93 | 14 | 61 |
| Roundup PM+Outlook | 1.125+14 fl oz/A | May 25 | | | | | |
| Roundup PM+Outlook | 0.75+10 fl oz/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 7 | 86 | 95 | 11 | 73 |
| Roundup PM+Outlook+Betanex | 1.125+14 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Outlook+Betanex | 0.75+10 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 7 | 92 | 93 | 10 | 92 |
| Roundup PM+Nortron+Outlook+Betamix | 1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Nortron+Outlook+Betamix | 0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 9 | 94 | 96 | 16 | 88 |
| Roundup PM+Dual Magnum | 1.125+1.5 pt/A | May 25 | | | | | |
| Roundup PM+Dual Magnum | 0.75+1 pt/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 6 | 88 | 92 | 9 | 79 |
| Roundup PM+Dual Magnum+Betanex | 1.125+1.5 pt/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Dual Magnum+Betanex | 0.75+1 pt/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 13 | 82 | 94 | 14 | 80 |
| Roundup PM+Dual Magnum+Nortron+Betamix | 1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Dual Magnum+Nortron+Betamix | 0.75+1 pt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 11 | 86 | 94 | 12 | 87 |
| Roundup PM+Warrant | 1.125+1.5 qt/A | May 25 | | | | | |
| Roundup PM+Warrant | 0.75+1 qt/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 4 | 84 | 91 | 9 | 73 |
| Roundup PM+Warrant+Betanex | 1.125+1.5 qt/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Warrant+Betanex | 0.75+1 qt/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 7 | 79 | 94 | 11 | 87 |
| Roundup PM+Warrant+Nortron+Betamix | 1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Warrant+Nortron+Betamix | 0.75+1 qt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 8 | 87 | 96 | 13 | 91 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM | 1.125 | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 6 | 86 | 94 | 9 | 74 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Betanex | 1.125+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Betanex | 0.75+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 14 | 94 | 96 | 10 | 90 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Betamix+Nortron | 1.125+12 fl oz/A+4 fl oz/A | May 25 | | | | | |
| Roundup PM+Betamix+Nortron | 0.75+16 fl oz/A+4 fl oz/A | June 9 | | | | | |
| Roundup PM+Betamix+Nortron | 0.75+24 fl oz/A+4 fl oz/A | June 24 | 15 | 93 | 97 | 10 | 83 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Outlook | 1.125+14 fl oz/A | May 25 | | | | | |
| Roundup PM+Outlook | 0.75+10 fl oz/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 10 | 98 | 99 | 18 | 97 |

Table continued on next page.

Table 3. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (continued)

| | | | (6) | (7) | (8) | (9) | (10) |
|--|---------------------------------------|---------|-----|-----|-----|-----|------|
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Outlook+Betanex | 1.125+14 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Outlook+Betanex | 0.75+10 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 15 | 97 | 97 | 12 | 99 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Nortron+Outlook+Betamix | 1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Nortron+Outlook+Betamix | 0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 16 | 98 | 96 | 16 | 97 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Dual Magnum | 1.125+1.5 pt/A | May 25 | | | | | |
| Roundup PM+Dual Magnum | 0.75+1 pt/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 13 | 98 | 99 | 15 | 97 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Dual Magnum+Betanex | 1.125+1.5 pt/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Dual Magnum+Betanex | 0.75+1 pt/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 18 | 98 | 97 | 11 | 98 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Dual Magnum+Nortron+Betamix | 1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Dual Magnum+Nortron+Betamix | 0.75+1 pt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 18 | 95 | 99 | 10 | 94 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Warrant | 1.125+1.5 qt/A | May 25 | | | | | |
| Roundup PM+Warrant | 0.75+1 qt/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 5 | 68 | 74 | 9 | 83 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Warrant+Betanex | 1.125+1.5 qt/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Warrant+Betanex | 0.75+1 qt/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 15 | 96 | 97 | 12 | 95 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Warrant+Nortron+Betamix | 1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Warrant+Nortron+Betamix | 0.75+1 qt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 17 | 98 | 97 | 15 | 98 |
| LSD (5%) | | | 5 | 7 | 6 | 9 | 10 |

¹N-Pak AMS (liquid ammonium sulfate from Winfield Solutions) was included in all postemergence treatments at 2.5% v/v. Destiny HC (methylated seed oil from Winfield Solutions) was included in all postemergence treatments at 1.5 pt/A. Roundup PM=Roundup PowerMax formulation of glyphosate.

Experiment continued on next page.

Table 4. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (Stachler)

| Treatment ¹ | Rate | Date of Applic. | (11) | (12) | (13) | (14) | (15) |
|--|---------------------------------------|-----------------|-------------------------|-------------------------|-------------------------|--------------------------|------------------------|
| | | | July 20 Colq Cntl | July 20 Wibw Cntl | July 20 Cora Cntl | July 20 Grass Cntl | Aug 24 Wahe Cntl |
| Untreated Check | - | - | 0 | 0 | 0 | 0 | 0 |
| Roundup PM | 1.125 | May 25 | | | | | |
| Roundup PM | 0.75 | June 9, 24 | 99 | 93 | 99 | 99 | 51 |
| Roundup PM+Betanex | 1.125+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Betanex | 0.75+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 98 | 84 | 99 | 97 | 60 |
| Roundup PM+Betamix+Nortron | 1.125+12 fl oz/A+4 fl oz/A | May 25 | | | | | |
| Roundup PM+Betamix+Nortron | 0.75+16 fl oz/A+4 fl oz/A | June 9 | | | | | |
| Roundup PM+Betamix+Nortron | 0.75+24 fl oz/A+4 fl oz/A | June 24 | 99 | 98 | 99 | 98 | 54 |
| Roundup PM+Outlook | 1.125+14 fl oz/A | May 25 | | | | | |
| Roundup PM+Outlook | 0.75+10 fl oz/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 99 | 83 | 99 | 99 | 64 |
| Roundup PM+Outlook+Betanex | 1.125+14 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Outlook+Betanex | 0.75+10 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 99 | 86 | 99 | 99 | 80 |
| Roundup PM+Nortron+Outlook+Betamix | 1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Nortron+Outlook+Betamix | 0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 99 | 97 | 99 | 99 | 79 |
| Roundup PM+Dual Magnum | 1.125+1.5 pt/A | May 25 | | | | | |
| Roundup PM+Dual Magnum | 0.75+1 pt/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 99 | 81 | 99 | 99 | 70 |
| Roundup PM+Dual Magnum+Betanex | 1.125+1.5 pt/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Dual Magnum+Betanex | 0.75+1 pt/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 99 | 93 | 98 | 99 | 68 |
| Roundup PM+Dual Magnum+Nortron+Betamix | 1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Dual Magnum+Nortron+Betamix | 0.75+1 pt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 99 | 99 | 99 | 99 | 73 |
| Roundup PM+Warrant | 1.125+1.5 qt/A | May 25 | | | | | |
| Roundup PM+Warrant | 0.75+1 qt/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 99 | 89 | 99 | 98 | 68 |
| Roundup PM+Warrant+Betanex | 1.125+1.5 qt/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Warrant+Betanex | 0.75+1 qt/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 99 | 94 | 99 | 99 | 72 |
| Roundup PM+Warrant+Nortron+Betamix | 1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Warrant+Nortron+Betamix | 0.75+1 qt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 99 | 99 | 99 | 99 | 80 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM | 1.125 | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 99 | 78 | 99 | 99 | 72 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Betanex | 1.125+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Betanex | 0.75+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 99 | 93 | 99 | 99 | 80 |

Table continued on next page.

Table 4. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (continued)

| | | | (11) | (12) | (13) | (14) | (15) |
|--|---------------------------------------|---------|------|------|------|------|------|
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Betamix+Nortron | 1.125+12 fl oz/A+4 fl oz/A | May 25 | | | | | |
| Roundup PM+Betamix+Nortron | 0.75+16 fl oz/A+4 fl oz/A | June 9 | | | | | |
| Roundup PM+Betamix+Nortron | 0.75+24 fl oz/A+4 fl oz/A | June 24 | 99 | 99 | 99 | 99 | 79 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Outlook | 1.125+14 fl oz/A | May 25 | | | | | |
| Roundup PM+Outlook | 0.75+10 fl oz/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 99 | 93 | 99 | 99 | 92 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Outlook+Betanex | 1.125+14 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Outlook+Betanex | 0.75+10 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 98 | 92 | 98 | 98 | 98 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Nortron+Outlook+Betamix | 1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Nortron+Outlook+Betamix | 0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 99 | 99 | 99 | 99 | 94 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Dual Magnum | 1.125+1.5 pt/A | May 25 | | | | | |
| Roundup PM+Dual Magnum | 0.75+1 pt/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 99 | 80 | 99 | 99 | 95 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Dual Magnum+Betanex | 1.125+1.5 pt/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Dual Magnum+Betanex | 0.75+1 pt/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 96 | 89 | 95 | 96 | 96 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Dual Magnum+Nortron+Betamix | 1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Dual Magnum+Nortron+Betamix | 0.75+1 pt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 99 | 99 | 99 | 99 | 90 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Warrant | 1.125+1.5 qt/A | May 25 | | | | | |
| Roundup PM+Warrant | 0.75+1 qt/A | June 9 | | | | | |
| Roundup PM | 0.75 | June 24 | 94 | 82 | 94 | 94 | 84 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Warrant+Betanex | 1.125+1.5 qt/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Warrant+Betanex | 0.75+1 qt/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 98 | 93 | 99 | 99 | 93 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | | |
| Roundup PM+Warrant+Nortron+Betamix | 1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | | |
| Roundup PM+Warrant+Nortron+Betamix | 0.75+1 qt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 99 | 98 | 99 | 99 | 98 |
| LSD (5%) | | | 3 | 9 | 3 | 4 | 10 |

¹N-Pak AMS (liquid ammonium sulfate from Winfield Solutions) was included in all postemergence treatments at 2.5% v/v. Destiny HC (methylated seed oil from Winfield Solutions) was included in all postemergence treatments at 1.5 pt/A. Roundup PM=Roundup PowerMax formulation of glyphosate.

Experiment continued on next page.

Table 5. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (Stachler)

| Treatment ¹ | Rate lb ai/A or lb ae/A | Date of Applic. | (16) | (17) | (18) | (19) |
|--|---------------------------------------|--------------------|------------------------------------|-----------------------------------|--------------------------------------|-----------------------------------|
| | | | Sept.7 Sgpt Popl plts/20' | Sept.7 Root Yield tons/A | Sept.7 Extract Sucrose lb/A | Sept.7 Extract Sucrose % |
| Untreated Check | - | - | 8 | 0.4 | 0 | 0 |
| Roundup PM | 1.125 | May 25 | | | | |
| Roundup PM | 0.75 | June 9, 24 | 47 | 13.5 | 3086 | 13.9 |
| Roundup PM+Betanex | 1.125+12 fl oz/A | May 25 | | | | |
| Roundup PM+Betanex | 0.75+16 fl oz/A | June 9 | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 47 | 12.6 | 3028 | 13.7 |
| Roundup PM+Betamix+Nortron | 1.125+12 fl oz/A+4 fl oz/A | May 25 | | | | |
| Roundup PM+Betamix+Nortron | 0.75+16 fl oz/A+4 fl oz/A | June 9 | | | | |
| Roundup PM+Betamix+Nortron | 0.75+24 fl oz/A+4 fl oz/A | June 24 | 51 | 10.9 | 2637 | 12.1 |
| Roundup PM+Outlook | 1.125+14 fl oz/A | May 25 | | | | |
| Roundup PM+Outlook | 0.75+10 fl oz/A | June 9 | | | | |
| Roundup PM | 0.75 | June 24 | 50 | 13.0 | 3072 | 13.0 |
| Roundup PM+Outlook+Betanex | 1.125+14 fl oz/A+12 fl oz/A | May 25 | | | | |
| Roundup PM+Outlook+Betanex | 0.75+10 fl oz/A+16 fl oz/A | June 9 | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 52 | 15.1 | 3383 | 13.6 |
| Roundup PM+Nortron+Outlook+Betamix | 1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A | May 25 | | | | |
| Roundup PM+Nortron+Outlook+Betamix | 0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A | June 9 | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 49 | 14.7 | 3353 | 14.4 |
| Roundup PM+Dual Magnum | 1.125+1.5 pt/A | May 25 | | | | |
| Roundup PM+Dual Magnum | 0.75+1 pt/A | June 9 | | | | |
| Roundup PM | 0.75 | June 24 | 50 | 14.2 | 3257 | 13.2 |
| Roundup PM+Dual Magnum+Betanex | 1.125+1.5 pt/A+12 fl oz/A | May 25 | | | | |
| Roundup PM+Dual Magnum+Betanex | 0.75+1 pt/A+16 fl oz/A | June 9 | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 50 | 14.4 | 3296 | 14.1 |
| Roundup PM+Dual Magnum+Nortron+Betamix | 1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | |
| Roundup PM+Dual Magnum+Nortron+Betamix | 0.75+1 pt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 51 | 14.2 | 3237 | 14.4 |
| Roundup PM+Warrant | 1.125+1.5 qt/A | May 25 | | | | |
| Roundup PM+Warrant | 0.75+1 qt/A | June 9 | | | | |
| Roundup PM | 0.75 | June 24 | 53 | 16.3 | 3890 | 15.2 |
| Roundup PM+Warrant+Betanex | 1.125+1.5 qt/A+12 fl oz/A | May 25 | | | | |
| Roundup PM+Warrant+Betanex | 0.75+1 qt/A+16 fl oz/A | June 9 | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 55 | 15.1 | 3431 | 14.7 |
| Roundup PM+Warrant+Nortron+Betamix | 1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | |
| Roundup PM+Warrant+Nortron+Betamix | 0.75+1 qt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 57 | 14.3 | 3278 | 15.2 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | |
| Roundup PM | 1.125 | June 9 | | | | |
| Roundup PM | 0.75 | June 24 | 51 | 12.7 | 2999 | 14.6 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | |
| Roundup PM+Betanex | 1.125+12 fl oz/A | May 25 | | | | |
| Roundup PM+Betanex | 0.75+16 fl oz/A | June 9 | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 44 | 12.6 | 3007 | 14.9 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | |
| Roundup PM+Betamix+Nortron | 1.125+12 fl oz/A+4 fl oz/A | May 25 | | | | |
| Roundup PM+Betamix+Nortron | 0.75+16 fl oz/A+4 fl oz/A | June 9 | | | | |
| Roundup PM+Betamix+Nortron | 0.75+24 fl oz/A+4 fl oz/A | June 24 | 46 | 16.3 | 3969 | 15.2 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | |
| Roundup PM+Outlook | 1.125+14 fl oz/A | May 25 | | | | |
| Roundup PM+Outlook | 0.75+10 fl oz/A | June 9 | | | | |
| Roundup PM | 0.75 | June 24 | 56 | 14.7 | 3501 | 15.7 |

Table continued on next page.

Table 5. Ro-Neet followed by POST and Lay-by Herbicides mixed with glyphosate to control glyphosate-resistant waterhemp, Holloway, MN, 2011. (continued)

| | | | (16) | (17) | (18) | (19) |
|--|---------------------------------------|---------|------|------|------|------|
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | |
| Roundup PM+Outlook+Betanex | 1.125+14 fl oz/A+12 fl oz/A | May 25 | | | | |
| Roundup PM+Outlook+Betanex | 0.75+10 fl oz/A+16 fl oz/A | June 9 | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 51 | 14.8 | 3480 | 14.9 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | |
| Roundup PM+Nortron+Outlook+Betamix | 1.125+4 fl oz/A+14 fl oz/A+12 fl oz/A | May 25 | | | | |
| Roundup PM+Nortron+Outlook+Betamix | 0.75+4 fl oz/A+10 fl oz/A+16 fl oz/A | June 9 | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 53 | 14.2 | 3337 | 14.9 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | |
| Roundup PM+Dual Magnum | 1.125+1.5 pt/A | May 25 | | | | |
| Roundup PM+Dual Magnum | 0.75+1 pt/A | June 9 | | | | |
| Roundup PM | 0.75 | June 24 | 46 | 13.4 | 3203 | 15.4 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | |
| Roundup PM+Dual Magnum+Betanex | 1.125+1.5 pt/A+12 fl oz/A | May 25 | | | | |
| Roundup PM+Dual Magnum+Betanex | 0.75+1 pt/A+16 fl oz/A | June 9 | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 51 | 14.5 | 3379 | 13.8 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | |
| Roundup PM+Dual Magnum+Nortron+Betamix | 1.125+1.5 pt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | |
| Roundup PM+Dual Magnum+Nortron+Betamix | 0.75+1 pt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 55 | 14.1 | 3352 | 14.0 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | |
| Roundup PM+Warrant | 1.125+1.5 qt/A | May 25 | | | | |
| Roundup PM+Warrant | 0.75+1 qt/A | June 9 | | | | |
| Roundup PM | 0.75 | June 24 | 57 | 15.3 | 3491 | 14.4 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | |
| Roundup PM+Warrant+Betanex | 1.125+1.5 qt/A+12 fl oz/A | May 25 | | | | |
| Roundup PM+Warrant+Betanex | 0.75+1 qt/A+16 fl oz/A | June 9 | | | | |
| Roundup PM+Betanex | 0.75+24 fl oz/A | June 24 | 50 | 12.8 | 2958 | 13.9 |
| Ro-Neet SB (PPI) | 5.3 pt/A | May 3 | | | | |
| Roundup PM+Warrant+Nortron+Betamix | 1.125+1.5 qt/A+4 fl oz/A+12 fl oz/A | May 25 | | | | |
| Roundup PM+Warrant+Nortron+Betamix | 0.75+1 qt/A+4 fl oz/A+16 fl oz/A | June 9 | | | | |
| Roundup PM+Nortron+Betamix | 0.75+4 fl oz/A+24 fl oz/A | June 24 | 53 | 14.0 | 3239 | 13.9 |
| LSD (5%) | | | 10 | 3.4 | 813 | 2.4 |

¹N-Pak AMS (liquid ammonium sulfate from Winfield Solutions) was included in all postemergence treatments at 2.5% v/v. Destiny HC (methylated seed oil from Winfield Solutions) was included in all postemergence treatments at 1.5 pt/A. Roundup PM=Roundup PowerMax formulation of glyphosate.

Summary

Significant sugarbeet injury was caused by Ro-Neet due to the soil being sandier than most soils in the area. Significant sugarbeet injury persisted during the growing season, especially treatments containing Ro-Neet followed by a lay-by herbicide mixed with Betamix plus Nortron or Betanex, however sugarbeet yield was not different for most treatments.

Roundup PowerMAX applied three times controlled 93 to 99% of wild buckwheat, common lambsquarters, and annual grass on July 20, but only controlled 51% of waterhemp on August 24, indicating the presence of glyphosate-resistant waterhemp at this location. Treatments containing Ro-Neet followed by Betamix plus Nortron or Betanex plus a lay-by herbicide controlled the most waterhemp.