Broadleaf weed control in hard red spring wheat with carfentrazone-ethyl at Rosemount, MN - 1998. Durgan, Beverly R. and Douglas Miller. The purpose of this experiment was to evaluate broadleaf weed control and crop injury with carfentrazone-ethyl and various tank mixes in hard red spring wheat. The experiment was conducted at Rosemount, MN on a Waukegon silt loam soil. Following soybeans, the experimental area was fall chisel plowed. In the spring, the area was fertilized with 50 lbs/A N and 70 lbs K. Sulfonylurea herbicide resistant kochia was spread across the plot area prior to tillage. The field was disked once, field cultivated once, and harrowed twice. ‘Butte 86’ hard red spring wheat was seeded on April 23 at 85 lbs/A. The experimental design was a randomized complete block with three replications and plot size was 10 by 25 ft. All herbicide treatments were applied to a 6 ft strip with a backpack type sprayer delivering 10 gpa at 35 psi using 11001 flat-fan nozzles. Visual weed control ratings, wheat injury ratings, and yields are presented in the tables. Environmental conditions and plant sizes are listed below.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Date</th>
<th>Time</th>
<th>Target weed or crop stage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>May 26</td>
<td>9:40-10:00 am</td>
<td>2-4&quot; weeds</td>
</tr>
</tbody>
</table>

Temperature (°F)
- air: 70
- soil (at 2") : 62
- Soil Moisture: moist
- Wind (mph): 4-6 E
- Sky: clear
- Rainfall before Application: Week 1 (inch) 0.59
- Rainfall after Application: Week 1 (inch) 1.10 Week 2 (inch) 0.02

Wheat
- leaf stage: 5.5 - 6.25
- tillers: 2-4
- height (inch): 6-11

Giant/Yellow foxtail
- density (#/ft²): 5
- leaf no.: 4-6
- height (inch): 2-5

Common lambsquarters
- density (#/ft²): 20
- leaf no.: 4-14
- height (inch): 0.5-7

Common Ragweed
- density (#/ft²): 1.5
- leaf no.: --
- height (inch): 3

Eastern black nightshade
- density (#/ft²): 0.33
- leaf no.: 5
- height (inch): 2

Kochia
- density (#/ft²): 4.5
- leaf no.: --
- height (inch): 3-4

Pennsylvania smartweed
- density (#/ft²): 2
- leaf no.: 3-5
- height (inch): 1-3

Redroot pigweed
- density (#/ft²): 3
- leaf no.: 1-4
- height (inch): 0.25-4

Velvetleaf
- density (#/ft²): 3
- leaf no.: cot-4
- height (inch): 1-4
Carfentrazone + surfactant alone resulted in lower common lambsquarters and Pennsylvania smartweed control compared to the tank mix combinations. The addition of 28% N increased control of these species. The high rate of bromoxynil resulted in the best overall control of all species. Thifensulfuron & tribenuron plus MCPA did not control the sulfonylurea herbicide resistant kochia, as expected. All carfentrazone treatments caused moderate injury on wheat. Poor wheat seed quality caused a reduced wheat stand and consequently, overall wheat yields were low. No treatment effects could be associated to wheat yield results.

Table. Broadleaf weed control in hard red spring wheat with carfentrazone-ethyl at Rosemount, MN - 1998 (Durgan and Miller).

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Rate</th>
<th>Weed Control (6/13)</th>
<th>Wheat</th>
<th>Injury</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Colq</td>
<td>Cone</td>
<td>Kocz</td>
<td>Pesw</td>
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<tr>
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<td>--------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>Carfentrazone-ethyl + NIS</td>
<td>0.008 + 0.25%</td>
<td>87</td>
<td>87</td>
<td>92</td>
<td>75</td>
</tr>
<tr>
<td>Carfentrazone-ethyl + NIS + 28%N</td>
<td>0.008 + 0.25% + 4.0%</td>
<td>94</td>
<td>88</td>
<td>94</td>
<td>80</td>
</tr>
<tr>
<td>Carfentrazone-ethyl + NIS + MCPA ester</td>
<td>0.008 + 0.25% + 0.375</td>
<td>94</td>
<td>90</td>
<td>97</td>
<td>86</td>
</tr>
<tr>
<td>Carfentrazone-ethyl + NIS + 2,4-D ester</td>
<td>0.008 + 0.25% + 0.375</td>
<td>98</td>
<td>96</td>
<td>97</td>
<td>85</td>
</tr>
<tr>
<td>Carfentrazone-ethyl + NIS + dicamba</td>
<td>0.008 + 0.25% + 0.125</td>
<td>97</td>
<td>97</td>
<td>98</td>
<td>89</td>
</tr>
<tr>
<td>Carfentrazone-ethyl + NIS + dicamba + MCPA ester</td>
<td>0.008 + 0.25% + 0.094 + 0.375</td>
<td>98</td>
<td>100</td>
<td>100</td>
<td>93</td>
</tr>
<tr>
<td>Carfentrazone-ethyl + NIS + thifensulfuron &amp; tribenuron</td>
<td>0.008 + 0.25% + 0.009 &amp; 0.005</td>
<td>96</td>
<td>91</td>
<td>92</td>
<td>84</td>
</tr>
<tr>
<td>Bromoxynil</td>
<td>0.25</td>
<td>96</td>
<td>93</td>
<td>96</td>
<td>90</td>
</tr>
<tr>
<td>Bromoxynil</td>
<td>0.5</td>
<td>99</td>
<td>98</td>
<td>99</td>
<td>96</td>
</tr>
<tr>
<td>Thifensulfuron &amp; tribenuron + MCPA ester + NIS</td>
<td>0.009 &amp; 0.005 + 0.375 + 0.25%</td>
<td>92</td>
<td>94</td>
<td>57</td>
<td>92</td>
</tr>
<tr>
<td>Weedy check</td>
<td>--</td>
<td>--</td>
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<td>Weedy check</td>
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<tr>
<td>LSD (P=.05)</td>
<td></td>
<td>5</td>
<td>ns</td>
<td>6</td>
<td>9</td>
</tr>
</tbody>
</table>

1 NIS = Class Preference nonionic surfactant.
2 28%N = 28% UAN fertilizer solution.
3 Premix = Harmony Extra 75DF.