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# Harvest Aid Weed Control IN SMALL GRAIN

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**Benefits.** Pre-harvest herbicide applications may be considered in fields where small grains are grown for seed or where dense weed infestations may inhibit harvest. Although weed control is most effective with spring herbicide applications, pre-harvest herbicides may be applied to desiccate and suppress weed escapes. Small grain seed fields are not eligible for certification if they contain noxious weed species that produce seed that cannot be separated from crop seed.

**Pre-harvest strategies.** Seed producers must decide between not spraying (risk losing the seed field) or spraying at late crop stage before weed seed forms (assume crop injury risk). The greatest risk of yield reduction and possible germination loss is during the period 5 to 7 days before heading until 7 to 10 days after heading. This covers pollination and the time when stress can cause severe kernel blast. Risk of yield loss continues to decline from this point until the kernel has filled.

Field research was conducted in 2007 and 2008 to demonstrate Briggs spring wheat tolerance to pre-harvest herbicide applications. Herbicide treatments (Table 1) were applied at a date earlier than recommended (50% seed moisture) and at a recommended time (35% moisture in 2007 and 16% moisture in 2008). Water carrier rates were 20 gallons/A, and XR8002 flat fan nozzles were used. Average wheat yields and test weights were similar among herbicide treatments and application timings. However, when Roundup was applied at 50% seed moisture, approximately 70 to 92% of the seedlings were abnormal (fig. 1), whereas only 2% of the seedlings were abnormal when Roundup was applied when seed moisture was 35% or less (fig. 2). Early applications of Clarity slightly reduced normal wheat seedling germination in 2008. Otherwise, wheat seedling emergence was not affected by most pre-harvest herbicide treatments or application timings.

Table 1. Pre-harvest herbicide treatments for the 2007 – 2008 field study	
Herbicide	Rate (per acre)
2,4-D ester 4L	1 qt
Clarity	0.5 pt
Ally + NIS	0.1 oz wt. + 0.25% v/v
Roundup WeatherMax + AMS	22 fl. oz + 2.5 lb
Aim + MSO	2 fl. oz + 0.25% v/v

**Roundup applied at 50% wheat seed moisture**

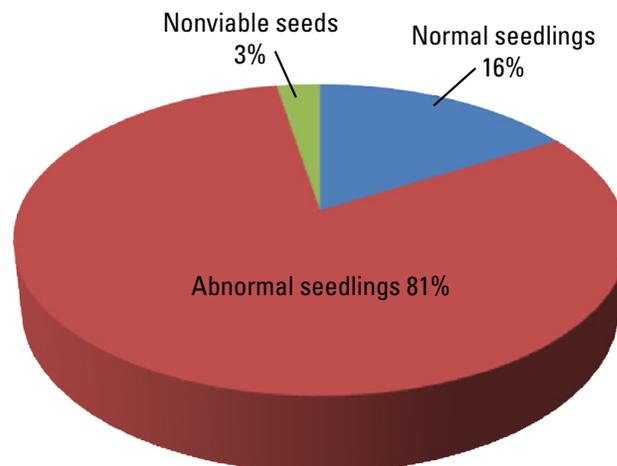


Figure 1. Percentage of normal, abnormal, and nonviable wheat seed after Roundup was applied at 50% wheat seed moisture.

**Roundup applied at less than 35% wheat seed moisture**

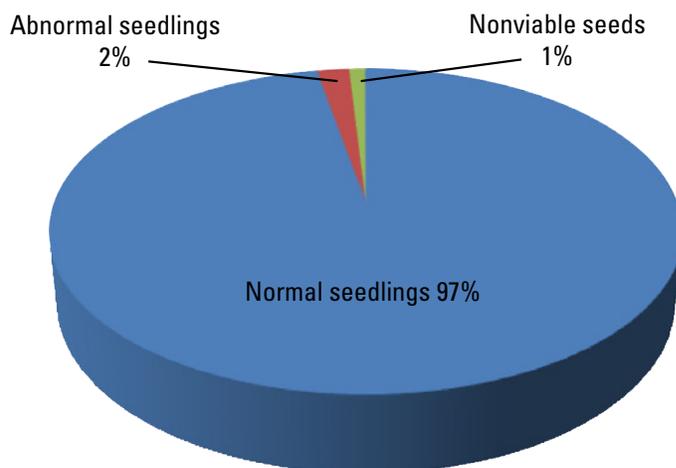


Figure 2. Percentage of normal, abnormal, and nonviable wheat seed after Roundup was applied at 16 – 35% wheat seed moisture.

Use extra caution to avoid drift to adjacent crops when pre-harvest spraying. Vapors from 2,4-D or dicamba (Clarity) may drift in to soybean fields, causing significant soybean injury. The risk vapor drift increases when temperatures exceed 85°F. Many crops are sensitive to herbicide injury during the pre-harvest application time.

Harvest aid treatments with 2,4-D may result in less-than-satisfactory wild buckwheat and kochia control. Research from 2008

demonstrated marginal control of broadleaf weed species (kochia, wild buckwheat, and common ragweed) from most pre-harvest herbicides (fig. 3). Expect poor burndown and considerable viable seed to be present in late-sprayed fields. Sunflower and cocklebur seed germination will be reduced considerably.

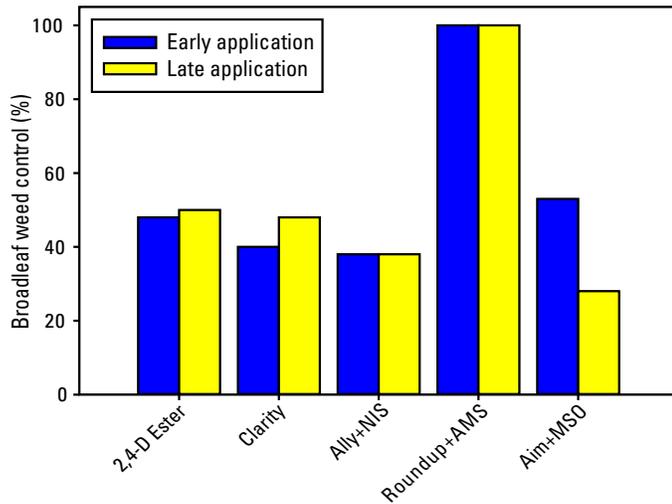


Figure 3. Broadleaf weed control after early (50% wheat seed moisture) or late (16% wheat seed moisture) pre-harvest herbicide applications in 2008.

#### BASIC TIPS

1. Always plan effective early season control in seed fields.
2. Watch fields carefully. Spraying must be done within 10 days of bloom to prevent weed seed production.
3. Use extra carrier water.
4. Spot-treat whenever possible.
5. Check seed germination soon after harvest.
6. Mow out thistle patches if necessary.

#### PRE-HARVEST HERBICIDE OPTIONS

**2,4-D Ester or Amine.** Several 2,4-D products are labeled for small-grain harvest aid applications after the hard dough stage. The labeler will not assume responsibility for application after early boot until dough stage. Treating too early when the nodes are green has caused stem breakage in some years. Treating too early increases risk of reducing crop seed germination. Apply at or after the hard dough stage. Rates of 0.5 lb a.e. 2,4-D low volatile ester or 0.5 to 1 lb a.e./A amine should be adequate unless weed plants are drought stressed and are not actively growing. Extra water improves results in dense canopies. Ester forms give faster action than amines but will also give more risk of flag leaf burn if the tissue is succulent. Some products do not include oats in pre-harvest treatments.

**Clarity.** The label includes pre-harvest application in winter wheat, spring wheat, or barley. Apply 8 fl. oz/A when in the hard dough stage and there is no green color in the stem nodes (joints). Allow 7 days before harvest. May tank mix with 2,4-D for barley or 2,4-D, Ally, or Roundup Ultra for wheat. Effective on buckwheat and kochia. Do not graze or feed straw from treated fields. There is a risk of reduced germination in immature heads. Test germination if crop is used for seed purposes.

**Ally XP.** Use in wheat, barley, or triticale at 0.1 oz/A. May tank mix with Roundup or 0.5 to 1 pt/A 2,4-D 4L with surfactant at 1 to 2 qt/100 gallons of solution. Wheat should be at hard dough stage but allow at least 10 days before harvest. Do not feed straw or graze stubble in treated fields.

**Aim.** May be used as a weed defoliant or desiccant in wheat, barley, triticale, oats, millet or sorghum for broadleaf weed species such as morningglories, pigweeds, and velvetleaf after small-grain maturity and the grain has begun to dry down. Apply 1 to 2 fl. oz/A at least 3 days before harvesting. A NIS (0.25% v/v), COC (1 to 2% v/v), or MSO (1 to 2% v/v) adjuvant is required. May also add liquid N fertilizer at 2 to 4% v/v or AMS at 2 to 4 lbs/A. Use a minimum of 10 gpa of carrier for ground applications or 5 gpa for aerial applications. May tank mix with other pre-harvest herbicides.

**Glyphosate (Roundup) products.** Pre-harvest application is not recommended for barley or wheat seed crops, due to risk of reduced germination or vigor. Several glyphosate products are labeled for feed barley or wheat. Labeled Roundup products include Roundup Original, UltraMax, UltraMax II, OriginalMax, and WeatherMax. Maximum rate is 32 oz for 3 lb ae, 26 oz for 4 lb ae, or 22 oz for 4.5 lb ae (OriginalMax, WeatherMax, PowerMax). Apply in wheat after hard dough stage (less than 30% moisture), or in barley at less than 20% moisture. Allow at least 7 days before harvest. Use 3 to 10 gpa carrier for air or 10 to 20 gpa for ground. Control of grass, kochia, and most weeds has been very good if the weeds are growing actively. There is very slow response if weeds are drought stressed. Check labels for other registered glyphosate products.



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