

# Growth Regulator Herbicides For Burndown Applications

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Control of existing weed vegetation prior to planting corn or soybean is achieved through the use of preplant tillage, herbicides, or sometimes both. Several herbicides can be used to control existing vegetation, but control is frequently improved when there is more than one herbicide active ingredient in the burndown application. For example, saflufenacil (the active ingredient in Sharpen and a component of Verdict, OpTill, and OpTill PRO) is an effective herbicide for burndown control of horseweed/marestail but often needs a tank-mix partner to enhance control of other winter annual broadleaf and grass species.

Growth regulator herbicides, most commonly 2,4-D, are frequently included in burndown applications. Both amine and ester formulations of 2,4-D are labeled for burndown applications before planting, but the ester formulation is usually preferred. The low water solubility of an ester reduces the potential for it to be moved into the soil by precipitation, where it could severely injure germinating crop seeds. Also, the ability of esters to better penetrate waxy leaf surfaces often results in improved control of large weeds, especially when air temperatures are cool.

The labels of some 2,4-D ester formulations (3.8 lb acid equivalent per gallon) allow preplant applications without a specified waiting interval between application and planting corn, while other formulations require a 7-day interval. When applied before planting soybean, a wait is required – at least 7 days after application of 1 pint per acre (0.5 lb ae), and 15 to 30 days (the interval varies by product) after application of up to 2 pints per acre (1.0 lb ae). In addition to waiting intervals, some labels indicate that no tillage operations can be performed for at least 7 days after application and that the seed furrow must be completely closed during the planting operation or severe crop injury may result. Factors that increase the likelihood of the 2,4-D coming in direct contact with the crop seed increase the probability of severe crop injury. Pay careful attention to label statements of any 2,4-D formulation used before crop planting.

Recent conversations have indicated that some retail applicators might be experiencing difficulty acquiring enough 2,4-D to meet the need

for burndown applications. Substituting an amine formulation of 2,4-D for an ester formulation is possible, but remember that there are some significant differences between these formulations (see Table 1):

- As mentioned, an amine formulation does not penetrate the leaf cuticle as easily as an ester formulation, and higher application rates of amine formulations are sometimes needed to provide the same level of control as lower rates of ester formulations.

- Amine formulations are less volatile but more water soluble than ester formulations and are moved into the soil more easily following precipitation.

- Movement of 2,4-D into the soil increases the likelihood of crop injury if the seed or germinating seedling comes in contact with the herbicide.

The interval between application of 2,4-D amine and soybean planting is longer (15 days for 1 pint or less, 30 days for more than 1 pint) than the interval with ester formulations.

Dicamba is another growth regulator herbicide sometimes included for control of existing vegetation before planting. Several commercially available products contain dicamba, but not all products are specifically labeled for application before crop (especially soybean) planting. In comparison with 2,4-D, dicamba provides more control of chickweed, henbit, and prickly lettuce; comparable control of dandelion; slightly less control of horseweed species; and less control of mustard species.

Application rates used in burndown applications can impact the interval between application and planting. For example, Clarity can be applied at up to 16 fluid ounces per acre before planting corn (use only 8 fluid ounces on coarse soils or medium- and fine-textured soils with less than 2.5% organic matter), with no interval between application and planting. However, before planting soybean, the 16-ounce rate would require a minimum accumulation of 1 inch of precipitation and a 28-day waiting interval between application and planting. An 8-ounce application rate still requires a minimum accumulation of 1 inch of precipitation, but the waiting interval is reduced to 14 days. These intervals must be observed before planting soybean or crop injury might occur.  $\Delta$

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**Table 1. Comparisons between amine and ester formulations of 2,4-D.**

<i>Amine salt</i>	<i>Ester</i>
Highly water-soluble	Generally insoluble in water
Low solubility in oils and waxes	Higher solubility in oils and waxes
Slow absorption into plant leaves	Faster absorption into plant leaves
Zero to very low volatility potential	Low to high volatility potential
Clear or slightly amber-colored in water	Milky when mixed in water
Does not mix well with liquid fertilizers	More compatible with liquid fertilizers
Less preferred formulation for no-till burndown applications	Preferred formulation for no-till burndown applications
Interval between application and soybean planting	Interval between application and soybean planting
1 pint (0.5 lb ae): 15 days	1 pint (0.5 lb ae): 7 days
2 pints (1.0 lb ae): 30 days	2 pints (1.0 lb ae): 15–30 days