

Common Lambsquarters Management in Soybeans



Common lambsquarters Distribution and Biology

- Common lambsquarters is one of the most prevalent weed species found in the U.S. Soybean Belt.
- This summer annual is one of the first to emerge in the spring with approximately 25 percent of the plants emerging prior to any spring tillage or burndown-herbicide application. While peak emergence is in mid- to late spring, lower numbers of common lambsquarters seedlings can emerge throughout the growing season.
- Due to common lambsquarters early emergence and rapid growth, it is extremely competitive with soybeans. One common lambsquarters plant per foot of row can reduce soybean yield by as much as 25 percent.
- Early-emerging common lambsquarters plants generally flower and set seed in late summer and fall. However, later-emerging plants have been reported to reach reproductive stages in as little as six weeks.
- Green common lambsquarters stems can disrupt soybean harvest by clogging up combines.
- Common lambsquarters plants produce an average of 72,500 seeds per plant.
- Common lambsquarters seeds have different dormancy requirements. Seed dormancy generally increases with increasing burial depth, and conditions needed to break dormancy include high levels of soil nitrate, exposure to light and fluctuating temperatures.
- Common lambsquarters seed is one of the most persistent in the soil seedbank. On average, it takes 12 years to reduce common lambsquarters seed in the soil seedbank by 50 percent and 78 years to deplete the seedbank by 99 percent.

Herbicide Resistance in Common Lambsquarters

- Since the early 1970s, common lambsquarters has evolved resistance to two different herbicide sites of action.

Common Lambsquarters has shown resistance to the herbicides listed below.

| Group # | Group 2 | Group 5 |
|------------------|-------------------|---------------------------|
| Site of Action | ALS Inhibitors | Photosystem II Inhibitors |
| Product Examples | Harmony®, Raptor® | atrazine, metribuzin |

- Currently, there are no confirmed populations of glyphosate-resistant common lambsquarters. However, differences in glyphosate sensitivity have been documented. The prevalence of common lambsquarters in Roundup Ready® soybean fields and anecdotal observations in several states suggest common lambsquarters populations are not being effectively controlled with glyphosate.
- Regardless of the current resistance profile of common lambsquarters, the continued exclusive use of one herbicide (i.e., glyphosate) or site of action will lead to more control failures and the evolution of glyphosate-resistant common lambsquarters.

Management of Common Lambsquarters in Soybeans

Follow the steps below for the best management of herbicide-resistant and sensitive common lambsquarters in soybeans. Cultural practices that help make soybeans more competitive with common lambsquarters will also improve the consistency of the herbicide programs listed below. These practices include altering planting date relative to weed emergence, planting soybeans in narrow rows and using higher seeding rates for greater crop competition. Implementing crop rotations with small grains also disrupts the life cycle of common lambsquarters discouraging its future success.

1. **Start clean!** Common lambsquarters present at the time of planting needs to be managed with either tillage or an effective burndown-herbicide application. Do not plant into existing stands of common lambsquarters.
 - *The consistency of common lambsquarters control is improved with the addition of 2,4-D ester at 16 fl. oz./A. to either glyphosate or Gramoxone® in the burndown*

application. Note: A minimum of seven days is needed between 2,4-D ester application and soybean planting.

— Effective soil-applied residual herbicides should be included with the burndown-herbicide application.

2. Apply an effective soil-applied (preemergence) herbicide. Common lambsquarters is most effectively controlled by soil-applied herbicides. Apply the **full rate** (according to label guidelines for soil type and organic-matter content) of an effective soil-applied herbicide prior to or soon after soybean planting (Table 1).

Table 1. Effective soil-applied herbicides for common lambsquarters control indicated by biotype.

| Herbicides | Group # | Susceptible | Resistance to: | |
|---------------------------------|------------------------|-------------|----------------|-----------------|
| | | | ALS (Group 2) | PS II (Group 5) |
| Authority® Assist/First/MAXX/XL | 14 & 2 | X* | X | X |
| Authority MTZ | 14 & 5 | X | X | X |
| Boundary® | 5 & 15 | X | X | |
| Canopy® | 2 & 5 | X | X | X |
| Canopy EX | 2 & 2 | X | | X |
| Command® | 13 | X | X | X |
| Envive®, Enlite® | 14 & 2 & 2 | X | X | X |
| Fierce® | 14 & 5 | X | X | X |
| FirstRate® | 2 | X | | X |
| Gangster® | 14 & 2 | X | X | X |
| Linex*® | 7 | X | X | X |
| Prefix™ | 14 & 15 | X | X | X |
| Prowl® | 3 | X | X | X |
| Pursuit®, OpTill®, OpTill PRO | 2, 2 & 15, 2 & 15 & 14 | X | | X |
| Python® | 2 | X | | X |
| Scepter® | 2 | X | | X |
| Sencor® | 5 | X | X | |
| Sonic® | 14 & 2 | X | X | X |
| Synchrony® | 2 & 2 | X | | X |
| Valor®, Valor XLT | 14, 14 & 2 | X | X | X |

*Will likely require subsequent POST applications for complete control.
 ‡"X" indicates good to excellent control of common lambsquarters.

3. If needed, make timely postemergence herbicide applications. There are few options available for postemergence common lambsquarters control. The effectiveness of postemergence herbicides is often based on common lambsquarters size. Table 2 lists postemergence herbicide options for common lambsquarters control.

Table 2. Postemergence herbicide options for common lambsquarters control based on size.

| Herbicides | Group # | Product rates (per acre) based on common lambsquarters size | | |
|-------------------------------|---------|---|-------------|-------------|
| | | < 4-in. | ≤6-in. | >6-in. |
| Harmony®* | 2 | 0.12 oz. | -- | -- |
| Raptor®* | 2 | 5 fl. oz. | -- | -- |
| Synchrony XP* | 2 & 2 | 0.5 oz. | -- | -- |
| <i>LibertyLink® soybeans</i> | | | | |
| Liberty | 10 | 22 fl. oz. | 29 fl. oz. | 36 fl. oz. |
| <i>Roundup Ready soybeans</i> | | | | |
| glyphosate | 9 | 0.75 lb. ae. | 1.0 lb. ae. | 1.5 lb. ae. |

‡Follow label guidelines for adjuvant selection for each.
 *Will not control ALS (Group 2)-resistant common lambsquarters.

4. Scout fields 10 to 14 days later for effectiveness. If common lambsquarters escapes initial control, glyphosate may be applied a second time in Roundup Ready soybeans or Liberty may be applied a second time in LibertyLink soybeans. However, these are "rescue" treatments and will increase the selection pressure for the evolution of herbicide resistance. Weeds not controlled with the second application should be tested for herbicide resistance.

For more information and links to additional resources, visit www.TakeActionOnWeeds.com.

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