

The Systems Approach for U.S. Soybeans

On-Farm Checklist

The following suite of recommended practices can help reduce weeds throughout the soybean production season and minimize weed seeds in harvested soybeans. Growers are encouraged to consider and use those best practices that are appropriate for their geographic area and their farm operation.



Weed Control



Weed management plan

- Regularly scout production areas to see which weed species are present.
- Make an extra effort to control ragweeds, cocklebur, Johnsongrass, and pigweeds. They represent 80 percent of all weed seeds detected by China.
- Carefully consider weed biology (i.e., emergence patterns, developmental stages, competitive ability, reproductive biology, fecundity, dispersal mechanisms, and persistence in the soil) when selecting weed management controls.
- Include a mix of chemical, cultural, and mechanical controls in your plan.
- Regularly vary weed management practices to eliminate weeds, avoid development of resistant traits, and discourage the buildup of any one weed type.
- Work with Extension agents or crop advisers to design short- and long-term plans tailored to your crop rotations, region, and weed species present in your fields.

Crop rotation and double-cropping

- Use two or more crops in a rotation to lower weed densities, increase crop yields, and improve soil quality.
- Select rotational crops that will be sprayed with herbicides with different modes of action to help minimize the evolution and spread of herbicide-resistant weeds.
- Consider double-cropping. The residue from the first crop helps to suppress weeds while the second crop is growing. This approach can increase field yield and reduce overall herbicide applications.

Cover crops

- Select a cover crop that is suitable for your region.
- Remove the cover crop right before planting soybeans (as early as 1 month or as late as 5 days before planting).
- Consider using a cover crop between soybean rows.

Herbicides

- Use a variety of herbicides with different modes of action and a combination of pre- and post-emergence herbicides with residual effects that will last the entire crop season.
- Seek advice from Extension agents and crop advisers on the appropriate tank mixes and tailoring the modes of action to your specific needs.

Field management

- Control weeds in field borders, including in ditches, along access roads, and in sloughs.
- Frequently mow the perimeter to create a barrier between the field and outlying areas.

Late-season weeds

- Consider using a pre-harvest herbicide or manual weed removal to control late-season weeds.

Tillage

- Consider incorporating some tillage, if possible, when other weed control measures are ineffective or not feasible.

Planting



- ❑ Start with clean seed. If using bin-run seed, thoroughly clean the seed to remove foreign material, including weed seeds.
- ❑ Avoid planting soybeans in fields with a history of heavy weed infestations until the weeds are brought under control.
- ❑ Plant soybeans in narrow rows to allow plants to quickly form a closed canopy and out-compete weeds for sun and water.
- ❑ Plant early in the season (late April to early May in the north; mid-April to mid-June in the south, depending on variety) to help plants compete against weeds and increase yields.
- ❑ Adjust irrigation timing and amount to minimize the benefit to weeds.
- ❑ Use soybean seed inoculated with nitrogen-fixing bacteria. This may be more effective than applying nitrogen fertilizer because most weeds have a higher capacity than the soybeans to use the fertilizer.



Harvesting



- ❑ Avoid harvesting soybeans growing in high-density weed patches.
- ❑ Adjust combine settings to remove weed seeds.
- ❑ Regularly clean storage bins, augurs and legs, transport vehicles, and farm equipment to prevent weed spread and cross-crop contamination, especially with corn, which China considers a noxious weed.
- ❑ Destroy weed seeds that are separated from grain or left in the field to keep them from entering the soil seed bank.

For more information, go to www.aphis.usda.gov/soybean-systems-approach