A Systems Approach for U.S. Soybeans

Reducing weed seeds in U.S. soybeans
Weed seeds threaten U.S. access to China’s market

Ragweed

Cocklebur

Johnsongrass

Pigweed
Soybean exports to China are critical to the U.S. economy

1 of every 3 bushels of U.S. soybeans goes to China

Valued at $12.4 billion in 2017

91% of the total value of U.S. grain exports to China
USDA-industry collaboration

- Goal: Keep U.S. soybeans moving to China without interruption while enhancing their value
- Examined entire supply chain from farm to point of export
- Identified practical opportunities to reduce weed seeds in soybeans
Farm-to-export systems approach

A suite of recommended best practices that can help reduce weed seeds in soybeans on farm, at U.S. grain elevators, and the point of export.

The systems approach is voluntary. Producers, handlers, and exporters are encouraged to consider and use those best practices that are appropriate for their geographic area and their farm or business operation.
Develop a tailored weed management plan

- Regularly scout production areas to see which weed species are present.
- Consider weed biology when selecting weed management controls.
- Include a mix of chemical, cultural, and mechanical controls.
- Regularly vary weed management practices to eliminate weeds, avoid development of herbicide resistance, 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 rotation, your region, and the weed species present in your fields.
General Weed Management

Rotate crops and double-crop

- 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 minimize the evolution and spread of herbicide-resistant weeds.

- Consider double-cropping. The residue from the first crop helps to suppress weeds, reduce erosion, and limit pest populations while the second crop is growing. This approach can increase field yield and reduce overall herbicide applications.
Use cover crops

- Cover crops can increase soybean yield and suppress weeds.
- 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.
Diversify herbicide use

- Use a variety of herbicides with different modes of action.
- Use 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 diversifying your herbicide use, identifying the appropriate tank mixes, and tailoring the modes of action to your specific needs.
General Weed Management

Manage weeds in field borders

- Control weeds in field borders, including in ditches, along access roads, and in sloughs.

- Frequently mow the perimeter to prevent weed reproduction and create a barrier between the field and outlying areas.
General Weed Management

Control late-season weeds

- Consider using a pre-harvest herbicide or manual weed removal to control late-season weeds.
- Incorporate some tillage, if possible, when other weed control measures are ineffective or not feasible.
Planting

- Start with clean seed.
- 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.
- 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.
- Use soybean seed inoculated with nitrogen-fixing bacteria.
- Adjust irrigation timing and amount to minimize the benefit to weeds.
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 avoid contaminating soybean with other grains, especially corn.
- Destroy weed seeds that are separated from grain or left in the field to keep them from entering the soil seed bank.
Handling

- Examine soybeans upon arrival for weed seeds, especially ragweed, Johnsongrass, cocklebur, pigweed, and volunteer corn, which China considers a noxious weed.

- Consider separating weed seeds from soybeans through mechanical cleaning or other means and then destroying the seeds.

- When handling soybeans that will be exported to China, ensure bins, belts, and scales are free of other grains, especially corn.
Sampling, Inspection, and Analysis

USDA and U.S. trade associations will monitor weed seed and foreign material content in soybeans to evaluate the effectiveness of the systems approach. This includes:

- Conducting a national survey at country and export elevators.
- Analyzing data to identify opportunities for improving the results of the systems approach.
Trade Support

USDA is working closely with China’s General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) to ensure uninterrupted trade in U.S. soybeans. This includes:

- Cooperation between USDA and AQSIQ to address technical issues.
- Expedited clearance in China of shipments that have 1% or less foreign material.
- Collaboration between USDA and AQSIQ to evaluate the effectiveness of the systems approach in December 2019.
Farm-to-export systems approach

By participating in the systems approach, everyone along the supply chain can help maintain and enhance the value and safety of U.S. soybeans.