

Glyphosate-resistant kochia

Kochia scoparia



Kochia is an annual weed, widely distributed across North America. It is typically found along roadsides, in seasonal wetlands, saline soils and crop production fields. It grows 2 to 5 feet (60–150 cm) tall, is densely branched, and has smooth margined, hairy-linear leaves (see Fig. 1).

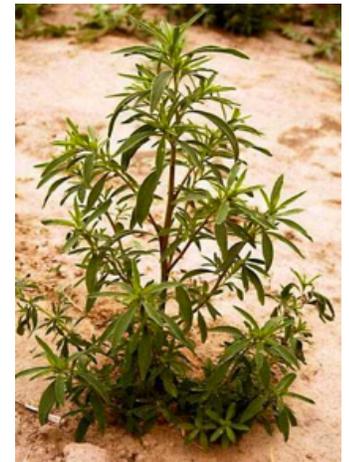


Fig. 1

Kochia is a prolific seed producer that spreads rapidly. As the plant matures it breaks off at the base. The wind then blows the dried plant matter, scattering the seeds in its path (see Fig. 2).

In 2007, glyphosate-resistant kochia (GRK) was first confirmed in the state of Kansas. At the time of writing, GRK has spread throughout Kansas and has been confirmed in Nebraska and North and South Dakota. Suspect cases have been reported in Montana and Colorado. In January 2012 GRK was first confirmed in Canada and at the time of writing a total of 11 cases have been confirmed. All but one of these fields are located in the dry land farming area of Southern Alberta, one field is located within the irrigation zone of S.Ab.



Fig. 2

The irrigation zone in Southern Alberta contains a high concentration of hybrid canola seed production. Agronomic practices in the irrigation zone reduce the selection pressure of GRK due to diversity of cropping systems, and hence reduce the risk of GRK development. However, the irrigation zone is still susceptible to the spread of GRK by wind. Hybrid canola seed companies are taking steps to limit the risk that GRK poses to certified hybrid canola seed production. These steps include:

EDUCATION

Training sessions are being organized by weed resistant management specialists. These sessions will provide seed production agronomists and technicians with the technical information needed to advise seed growers on best practices to avoid and eliminate the spread of herbicide resistant weeds.

FIELD MANAGEMENT

The Canadian Seed Growers Association (CSGA) Circular 6-2005 requires that all fields of spring sown *Brassica napus* (Argentine canola), for certified status must not be seeded on land which has produced canola, rapeseed, mustard or oilseed radish during the preceding three years. This mandatory four-year crop rotation will help reduce the risk of GRK proliferation in certified hybrid canola seed production fields.

Seed companies proactively inspect fields selected for future hybrid canola seed production prior to planting. Fields which are deemed to be high risk for canola volunteers, or are excessively weedy, are rejected for future seed production purposes.

Additionally:

- 1) Seed growers who grow hybrid seed canola under contract to seed companies apply a minimum of one herbicide which has a different mode of action to glyphosate. Examples of these broadleaf herbicides are: Clean Start, Edge (PPI), Muster, Lontrel or Liberty.
- 2) All canola seed companies routinely conduct field inspections after herbicide application to identify weed escapes, including kochia. If GRK is suspected to be present in the field, appropriate measures will be taken by seed growers and seed company staff to ensure that the GRK is not harvested with the seed.

POST HARVEST SEED PROCESSING

Kochia is very different in size, shape and density to canola seed (see Fig. 3). This allows conventional canola seed cleaning equipment to effectively remove kochia seed from canola seed lots.

Beginning in 2012, with the processing of the 2012 seed crop, hybrid canola seed companies will automatically re-clean any seed lots whose purity analysis detects kochia seed after cleaning (the target being zero detectable kochia seeds in any purity analysis representing a specific seed lot).



Fig. 3 Canola on the left and kochia on the right

WORK

Seed companies will continue to work hard to ensure the integrity of the Canadian hybrid canola seed supply. Individuals within the seed production value chain (seed companies, seed growers, seed processors) are committed to continually reviewing, sharing best practices and improving the stewardship program outlined in this document to reduce the spread of GRK through hybrid canola seed.

SUMMARY

Reaction to the detection of GRK by the hybrid canola seed industry has been immediate. The stewardship practices being implemented in hybrid canola seed production areas will significantly reduce the risk of spread of GRK.