

KOCHIA

Kochia scoparia L.

(Aka Burning bush, Mexican fireweed, mock cypress, fireweed poor man's alfalfa)



Overview:

Kochia (*Kochia scoparia*), also known as summer cypress and burning bush, is a weed on the increase in parts of Saskatchewan, particularly in the southwest region of the province. It is a weed native to Asia and central Europe and was introduced to Canada as an ornamental planting by European immigrants. It can be difficult to manage, mostly because of its ability to spread and quickly establish itself as a major weed, particularly during drought years.

Although not a predominant weed throughout Saskatchewan, it is a serious problem in the southwest region and in localized areas of central Saskatchewan, particularly on saline soils.

Kochia is a summer annual broadleaf weed that reproduces only by seed. Depending on growing conditions, it may range in height from 6 inches to 6 feet. When grown in competition with other plants, it grows upright and may reach 6 feet in height. When competition is absent it is bushy in nature, typically reaching heights of 3 to 4 feet.

Habitat:

Kochia is tolerant of drought and saline soils and does well under growing conditions considered poor for most crops. It is quick to invade and establish itself on saline spots within

fields. Under drought conditions, kochia roots can penetrate to a depth of 10 feet or more in the soil. Its extensive root system explains its ability to withstand drought and also explains why kochia is a predominant weed during drought years.

Identification:

The undersides of kochia cotyledons on seedlings are usually bright pink in colour. Adult kochia plants have many branches with stems that are often red tinged. There are numerous, hairy, pale green leaves with an alternate arrangement and tapered to points at the tips. The leaves often turn purplish red in the fall. Flowers are small and green and found in clusters in the axils of upper leaves and on short, dense spikes. Kochia seeds are nearly oval, 1.5 to 2.0 mm long, flattened with a groove on each side and dull brown in colour with yellow markings. Normally, kochia seeds are not threshed out but are enclosed in a chaffy, paper-like "hull".

Kochia seeds are short lived in the soil, with most of the seeds dying after one year. Therefore, most kochia problems result from plants that set seed the previous year. Kochia germinates in the early spring and is quite tolerant of frost. Because of its early germination, it is often in advanced stages of growth when other broadleaf weeds are ready to spray. Although kochia mainly germinates in the early spring,

additional flushes can germinate throughout the growing season making it difficult to control.

Kochia seed production ranges from 15,000 to 25,000 seeds per plant. Kochia is often referred to as a "tumbleweed" because the stem breaks off at the base of the plant in the fall allowing it to roll across fields like a large ball, which is an important way of spreading its seeds.

Kochia is a competitive weed. Kochia densities of 21 plants per m² have caused yield losses in wheat of approximately 33%, while extreme infestations of 195 plants per m² have reduced wheat yields by 73%.

Prevention:

Planting crop seed free of kochia will help prevent its introduction and keep kochia populations in check. Kochia falls within class 6, 'other weed seeds' of the Canada Seeds Act. This means that even certified crop seed may legally have some kochia seed in it, so be sure to check your seed source if kochia is a concern.

Control:

Cultural: Livestock will avoid Black henbane unless no other forage is available, therefore poisoning cases are rare. Dried plant matter in baled forage retains its toxic properties though and will be readily consumed. As kochia germinates early in the spring, delayed seeding and pre-seeding tillage or pre-seeding herbicides will help reduce in-crop weed densities. Crop rotations that use a combination of early and late sown crops and alternating seeding dates on individual fields will help keep kochia populations in check. Because the majority of kochia seeds don't live for more than one year, preventing seed production for a single year will help reduce kochia problems. Mowing or cutting for feed are effective ways of controlling kochia seed production, as long as the plants have not yet set seed.

A recent weed survey comparing zero and conventional tillage crop production systems shows that zero tillage could be an important tool for kochia management. Average kochia densities were 16.3 plants per m² in conventional till fields and only 0.4 plants per m² in zero till fields. Kochia is a shallow germinator and prefers drier, warmer soils which may explain why lower densities were found in the cool, moist soils of zero till fields. Refer to the factsheet "*Weed*

Management - Comparing Zero and Conventional Tillage" for more information.

Fall tillage for kochia control is usually not necessary as kochia is a spring germinator and seedlings do not survive the winter, but it may be important for controlling escaped plants or late germinating weeds that are about to set seed.

Chemical: A number of herbicides are registered for control of kochia. The key to success with most of these products is to spray early. Remember that kochia is one of the first weeds to emerge in the spring and is usually well advanced by the time other broadleaf weeds are ready to spray. Choose a herbicide that provides the widest possible window of application for kochia and the other weeds in your field. Good spray coverage is important for heavy infestations of kochia, especially when using contact herbicides.

Preharvest glyphosate (Roundup, Touchdown) treatments may be effective if kochia has set seed but is not yet mature. Immature seed will absorb glyphosate which can affect kochia seed viability. Usually, however, preharvest glyphosate is economical only if perennial weeds are present, as most field crops are normally cut before kochia seeds become mature and viable. Similarly, post-harvest herbicide treatments are not likely to be worthwhile unless other weeds are present or kochia is about to set seed.

Kochia Plan:

Pay attention to pre-seeding weed control. Kochia germinates early, therefore you may be able to substantially reduce in-crop infestations by using a herbicide or tillage on those early flushes.

Spray early. Because kochia is an early germinator, it is usually more advanced than other weeds and requires early field scouting to determine the correct stage for application. Most herbicides only control kochia when it is very small, so be prepared.

Prevent seed production. Kochia seeds are short-lived and preventing seed production will decrease next year's weed infestation. A good herbicide program combined with patch mowing or spraying and cutting for feed areas where kochia has escaped are all effective ways of preventing kochia from setting seed.

Watch out for herbicide resistance. Rotate your herbicide Groups to delay resistance development in kochia. Look for suspicious patches that could be resistant and test some kochia seed if you suspect resistance.

Biological: None researched to date.

