What You’ll Learn...

- Kochia is an invasive, aggressive annual broadleaf weed affecting cropland and natural areas in the United States. Because of its distinctive characteristics, kochia is ranked as one of the most challenging weeds in cultivated fields.
- To achieve best results in managing kochia, use: proper crop seeding rates, high quality seed, scouting, timely herbicide applications, proper labeled herbicide rates, residual herbicides, and tank mixes and additives as needed.
- RT 3® herbicide plays central role in controlling many weeds, including managing kochia, in multiple cropping systems.

Kochia (Kochia scoparia) (Figure 1), a summer annual broadleaf, is becoming a pervasive weed throughout the western United States. The weed's aggressive growth and prolific seed production capabilities enable it to spread and compete with crops for moisture, light, and nutrients.

Growth Habit

Kochia plants can grow well under adverse growing conditions that are considered poor for most crops. Kochia germinates very early in the spring and continues to germinate throughout the growing season. The large quantity of seeds that are produced can be spread long distances very rapidly. The seed is dispersed in the fall when kochia becomes similar to “tumbleweeds” dropping seeds as they blow around. Seeds are typically found on the soil surface or at very shallow depths in the soil.

Management Recommendations

With the possibility of glyphosate resistant kochia in certain areas, farmers need to make sure that all the weeds are dead after every application. To accomplish this, labeled rates, tank mixes to add herbicides with different effective sites of action, and quality additives should be used. Also, fields should be scouted early as kochia has a short germination period in early spring and small weeds are easier to control. Shortening the spray interval to 30 to 40 days between applications and scouting fields three weeks after each application is recommended to evaluate control.

Management Tips to Minimize the Risk of Resistant Kochia

- Herbicides should be applied just prior to kochia emergence or when kochia is small and most susceptible to herbicides and before kochia begins rapid vegetative growth.
- The use of residual herbicides can help to control additional flushes of kochia and prevent seed production.
- Early crop-canopy closure can be achieved by planting high quality seed at the optimum planting date, depth, and seeding rate, and with fertilizer placed in close proximity to the seed row.
- Nozzles that can provide adequate coverage should be used. Follow recommendations to help improve coverage and minimize the risk of drift onto sensitive crops.
- A tank mix of herbicides with multiple effective sites of action should be used to help control weeds and help prevent the development of resistance.
- Full herbicide rate and proper application timing is critical to obtain greater kochia control.
- Clean equipment should be used to avoid transfer of kochia seeds between sites.

Figure 1. Kochia plant in early growth stage.
## RT 3® Fallow Rate Recommendations for Control of Kochia

| Pre - Plant & First Pass Fallow  
(April - May) | Second & Third Pass Fallow  
(June - Early July) | Third & Fourth Pass Fallow and  
Post Harvest  
(July - August or fall application) |
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<td><strong>Weeds:</strong> winter annual grasses, volunteer cereals, small wild oats, bolting winter annual mustards, prickly lettuce, small kochia, small Russian thistle, wild buckwheat, and western salsify, apply:</td>
<td><strong>Weeds:</strong> volunteer cereals, large wild oats, kochia, Russian thistle, wild buckwheat, prickly lettuce, and western salsify, apply:</td>
<td><strong>Suspected of having glyphosate resistant kochia:</strong></td>
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<td>32 oz/acre RT 3 + 0.25% v/v non ionic surfactant (NIS) + Ammonium sulfate (AMS) or a quality replacement.</td>
<td>32 oz/acre RT 3 + 2,4-D LV6 or 8 - 16 oz/acre 2,4-D amine + AMS or premix of a product containing 2,4-D and dicamba, or 2,4-D and Starane® Herbicide.</td>
<td>32 - 44 oz/acre RT 3 + 2,4-D amine + Dicamba at 0.5 ai/acre + 0.25% v/v NIS + AMS OR 32 - 44 oz/acre RT 3 + 16 oz/acre 2,4-D amine or premix of a product containing 2,4-D and dicamba + 0.25 ai/acre Metribuzin + 0.25% v/v NIS + AMS.</td>
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<td><strong>Suspected of having glyphosate resistant kochia:</strong> Tank mix 0.25 ai/acre Metribuzin + 16 oz/acre dicamba as a preemergence.</td>
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<td><strong>Weeds:</strong> volunteer wheat, little to no kochia, Russian thistle, and pigweeds, apply:</td>
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<td><strong>If emerged weeds are present,</strong> use the following recommendations: 16 - 24 oz/acre RT 3 + 8 oz/acre 2,4-D LV6 + 0.25% v/v NIS + AMS or a quality replacement. OR 16 oz/acre dicamba and/or a formulation of Starane® Herbicide (rate depends on formulation).</td>
<td>32 - 44 oz/acre RT 3 + 0.25% v/v non ionic surfactant (NIS) + Ammonium sulfate (AMS) or a quality replacement.</td>
<td><strong>Suspected of having glyphosate resistant kochia:</strong> Tank mix 0.25 ai/acre Metribuzin + 16 oz/acre dicamba as a preemergence.</td>
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<td><strong>Treat fields when weeds are actively growing and avoid treatments during extended cool periods.</strong> Note: Use of RT 3 + 2,4-D/dicamba or a tank mix with Ally® or Finesse® (see DuPont® labels for rates and restrictions) could also be considered, particularly if some of the tougher weeds such as wooly stage kochia, Russian thistle, wild buckwheat, western salsify, and prickly lettuce are a problem.</td>
<td></td>
<td><strong>If emerged weeds are present,</strong> use the following recommendations: 16 – 24 oz/acre RT 3 + 8 oz/acre 2,4-D LV6 + 0.25% v/v NIS + AMS or a quality replacement. OR 16 oz/acre Dicamba and/or a formulation of Starane® Herbicide (rate depends on formulation).</td>
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Always consult the product label for information on rates, additive recommendations, and appropriate tank mix.

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**Sources:**