Managing Burcucumber in Agronomic Crops

Burcucumber (Sicyos angulatus) is a summer annual broadleaf weed that is becoming a serious problem in agronomic crops. Because of its prolonged seedling emergence and aggressive growth habit, burcucumber is not easily controlled using conventional weed-management strategies. Like most weeds, burcucumber can not be eradicated; however, an integrated control approach can reduce the size of burcucumber infestations and slow or stop the weed’s further spread.

Burcucumber can be identified by its pentagon-shaped leaves, long vines, and spiny seed clusters (Fig. 1). The individual seeds are flattened, have a hard seed coat about the size of a watermelon seed, and are enclosed in a prickly, fleshy shell or pericarp. The hard seed coat contributes to the burcucumber’s prolonged seed dormancy, which means that fields currently infested with burcucumber will have a lasting seed reservoir in the soil and the potential for a burcucumber problem for many years.

In Pennsylvania, burcucumber emerges from early May through mid-August, although plants emerging after mid-July often do not produce viable seed. Vines of some mature plants can be over 20 feet long and can span more than six corn rows. Because of this aggressive growth habit, burcucumber can reduce crop yield significantly and make harvesting of both grain and forage nearly impossible. Burcucumber begins to flower in August and continues to produce flowers until it is killed by frost. Seed clusters composed of 2 to 30 seeds form shortly after flowering and remain green and fleshy through mid-September. After drying, the seed clusters shatter, depositing the seeds on the ground.

Burchcucumber, also known as wild pickle, star cucumber, and nimble kate, can be confused with the less commonly encountered wild cucumber (Echinocystis lobata). Wild cucumber has clearly defined star-shaped leaves and large, prickly, egg-shaped fruits containing numerous seeds; it usually is found along woodlands, stream banks, roadsides, and wasteplaces.
The goal of an integrated weed-management program is to provide reliable, effective, economic weed control while minimizing environmental risks. An integrated program for burcucumber combines multiple methods of control to reduce burcucumber interference with the crop. The methods of control may be preventive, cultural, mechanical, or chemical.

**PREVENTION**

Once established in a field, burcucumber is virtually impossible to eradicate; therefore, preventing the spread of burcucumber into new fields is an important step in managing this problem weed. Burcucumber seed is spread by many means, but of primary importance to the grower is the spread of seed by harvesting equipment. The following strategies can help you minimize the spread of burcucumber:

- Thoroughly clean all tillage and harvesting equipment before removing it from an infested field. Simply letting the harvest equipment run to clean itself out will not remove all burcucumber seeds; therefore, use a pressure washer or compressed air for a thorough cleanup. Burcucumber vines with seed can wrap around disks, shanks, and harvest reels, especially on tillage equipment and forage harvesters.
- Avoid harvesting heavily infested areas for grain. Burcucumber seed may pass through a combine and back out into the field or into the grain bin. Because of its size and density, burcucumber seed is difficult to separate from contaminated corn or soybean seed.
- Plant only certified weed-free crop seed. If planting non-certified seed, be familiar with the source of the seed and be certain the field did not have a burcucumber problem.
- Lastly, scout fields to locate burcucumber and isolate and control small infestations before they become large problems. Most infestations of burcucumber start as small patches near the edge of a field. Without management, the entire field can become polluted with burcucumber within a 4- or 5-year period.

**CULTURAL CONTROL**

Encouraging aggressive crop growth through good cultural practices can help manage all weeds. The following cultural practices encourage crop growth and vigor:

- Follow soil test recommendations for fertilizer and lime.
- Plant high-yielding varieties adapted to your climate, soil, and field conditions.
- Scout fields regularly for weeds, diseases, and insects, and control them when necessary.
- Include in the rotation crops that provide early competition, such as alfalfa or small grains.
- Harvest burcucumber-infested fields for silage to prevent viable seed production.

**CHEMICAL CONTROL**

Mechanical control methods include hand-pulling, hoeing, mowing, plowing, disking, cultivating, and early harvesting. Hoeing and hand-pulling work well for controlling individual plants or isolated burcucumber patches, but are impractical for larger infestations. Mowing will destroy emerged vines and prevent burcucumber seed production in hayfields, pastures, and noncropland areas. Small grain crops can be harvested before burcucumber is competitive or produces mature seed. Mowing or tillage after this harvest will prevent burcucumber seed production that season.

Preplant tillage can bury weed seeds deeply enough to prevent their germination, but since burcucumber can germinate and emerge from depths of up to six inches, tillage tends to encourage multiple flushes of burcucumber throughout the growing season. Penn State research suggests that burcucumber may be better controlled in no-till fields as opposed to conventional or minimum-tilled fields. In no-till situations, burcucumber seeds are left near the soil surface where they may not germinate or may germinate over a shorter emergence cycle. The apparent advantage of no-till may be due to both a shorter emergence cycle and better postemergence herbicide performance. In conventional or reduced-tillage systems, cultivating, especially in conjunction with a herbicide program, also may provide control of burcucumber; however, the impact of cultivation on subsequent burcucumber flushes is not known.

Since burcucumber seeds mature relatively late in the season, harvesting or destroying the crop early can prevent viable burcucumber seed production. Penn State research shows that ensiling green burcucumber seed is an effective technique for killing viable seed, but that ensiling does not affect mature seed (Table 1). This suggests that early harvesting of a crop as silage may prevent viable seed production in burcucumber-infested fields. Silage harvest also prevents mature seed from reentering the field through the combine.

**CHEMICAL CONTROL**

Herbicides, when combined with preventive, cultural, and mechanical control methods, are an essential component of a burcucumber-control program in corn and soybeans. To ensure effective, safe, and economical herbicide use, always:

- Select the appropriate herbicide for your weed problem and crop. Stage of weed and crop growth, temperature, soil moisture, and soil pH can affect herbicide performance. For additional information, refer to the Penn State Field Crop Weed Control Guide or consult your county extension educator.

### Table 1. Effect of an eight-week ensiling period on burcucumber seed viability at different seed maturities.

<table>
<thead>
<tr>
<th>Burcucumber Seed Maturity</th>
<th>Viability*</th>
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<tbody>
<tr>
<td>Immature (milk to dough stages)</td>
<td>2%</td>
</tr>
<tr>
<td>Mature</td>
<td>87%</td>
</tr>
</tbody>
</table>

*As compared to nonensiled seeds.

Taken from Messersmith, D. T., M. S. Thesis, Penn State University, 1997.
• Read the herbicide label carefully and follow directions. The label provides important information on safe use, application, disposal, and storage.
• Apply herbicides at the proper time.
• Apply the recommended amount to avoid crop injury, soil residues, or poor control.
• Calibrate application equipment several times during the season to ensure that the correct amount of herbicide is applied.
• Wear protective clothing.
• Learn to predict weed problems. Scout fields regularly and record the types and locations of weeds present. Use field records to plan an integrated control program.

Control in Corn

Because burcucumber can emerge throughout the growing season, it is difficult to manage with herbicides that lack residual activity. Seedling burcucumber can be killed with a number of effective postemergence herbicides; however, season-long control of burcucumber rarely is achieved with any herbicide. A recommended control strategy consists of a preemergence application containing atrazine or Princep followed by cultivation or a postemergence herbicide application. Several herbicides are labeled for controlling or suppressing burcucumber in agronomic crops, but only those that provide more consistent control will be discussed in the following sections and included in Table 2.

Soil-Applied Treatments

Atrazine 4L or 90DF and/or Princep 4L or 90DF (simazine) both are members of the triazine herbicide family. They are effective for a short time on burcucumber, but generally require cultivation or a sequential herbicide treatment. For effective soil activity, apply a minimum of 1.5 to 2 quarts of Atrazine 4L or Princep 4L (equivalent 90DF) per acre. On highly erodible land with less than 30 percent crop residue, apply no more than 1.6 quarts of atrazine per acre. Numerous prepackaged products (e.g., Bicep II, Guardsman, Harness Xtra, Marksman, Surpass 100, etc.) contain atrazine. These commonly used herbicides can provide initial suppression of burcucumber, but also require further control measures. Additional atrazine can be applied postemergence, but do not exceed 2.5 pounds per acre per season. Both atrazine and Princep have crop-rotation restrictions and can leave soil residues. See the herbicide label for specific restrictions. Products containing atrazine are restricted-use pesticides, and both atrazine and Princep have environmental hazard warnings on their labels.

Foliar-Applied Treatments

Make foliar applications to corn within recommended crop-growth stages, and when burcucumber is less than 12 inches long and has not yet vined. Generally, foliar-applied herbicides require additives to be mixed with the spray solution. Spray-additive recommendations can continually change; therefore, refer to a current herbicide product label or the Penn State Field Crop Weed Control Guide for specific recommendations or restrictions.

Atrazine 4L provides 75 to 85 percent control of burcucumber. Apply 1.5 to 2 quarts of Atrazine 4L per acre to corn up to 12 inches tall. Add 1 quart of crop oil concentrate per acre to the spray solution. Do not include crop oil if the corn is under stress from prolonged cold, wet weather or other stress factors. The addition of atrazine (up to 2 lb a.i./A) to other postemergence herbicides improves the control of burcucumber. Atrazine has crop-rotation restrictions and can leave soil residues. See the herbicide label for specific restrictions. Products containing atrazine are restricted-use pesticides and have environmental hazard warnings on their labels.

Beacon 75WG (primisulfuron) provides 80 to 85 percent initial control of burcucumber with slight residual activity. Apply 0.76 ounce of Beacon 75WG per acre to corn between 4 and 20 inches tall. Include an appropriate additive with the spray solution. Tank-mixing with atrazine and/or Banvel/Clarity will provide more consistent control.

Buctril 2E (bromoxynil) provides 75 to 85 percent control of small burcucumber plants with no soil activity. Apply 1.5 to 2 pints of Buctril 2E per acre before burcucumber reaches 4 inches tall but after corn is in the four-leaf growth stage. Tank-mixing atrazine (up to 1.2 lb a.i./A) with Buctril improves burcucumber control.

Buctril+atrazine 3L, a prepackaged product, also is available. Apply 2 to 3 pints of Buctril+atrazine 3L per acre before corn is 12 inches tall and burcucumber is 4 inches tall.

Exceed 57WG (prosulfuron + primisulfuron) provides 85 to 90 percent burcucumber control with some residual control. Exceed is a 1:1 mixture of primisulfuron (Beacon) and prosulfuron (Peak). Apply 1 ounce of Exceed 57WG per acre to corn between 4 and 20 inches tall and directed between 20 and 30 inches from the ground. Include an approved additive with the spray solution. Tank-mixing with atrazine and/or Banvel will provide more consistent control.

Liberty 1.67L (glufosinate) provides 75 to 85 percent control of burcucumber with no residual control. This treatment can be applied to Liberty Link or glufosinate-resistant corn hybrids only. Apply 20 to 28 ounces of Liberty plus 3 pounds of ammonium sulfate per acre before burcucumber is 6 inches tall. Add atrazine, at 1 quart per acre, to the spray solution for more consistent control.

Marksman 3.2L (dicamba + atrazine) provides 80 to 85 percent control of burcucumber with some residual control. Apply up to 3.5 pints of Marksmen per acre (or an equivalent tank mixture of 0.5 to 1 pint Banvel/Clarity 4S and 1 to 2 quarts atrazine 4L) plus appropriate additives to corn up to 8 inches tall. Do not apply more than 2.5 pounds of atrazine per acre per year. See previous comments on atrazine use.

Roundup Ultra 4S (glyphosate) can provide 85 to 90 percent burcucumber control with no residual control. This treatment can be applied over-the-top to Roundup Ready corn hybrids only. Apply 1 quart of Roundup Ultra per acre in 10 to 20 gallons of spray solution per acre. Apply an early postemergence application of Roundup Ultra, and tank-mix with Harness Xtra, Bicep II, etc. for residual
activity and improved control of burcucumber and other weed species. A sequential application of Roundup Ultra may be needed to achieve season-long control of burcucumber. Preharvest applications of up to 3 quarts per acre are allowed on all corn hybrids as a harvest aid. Apply when the grain has 35 percent or less moisture, after the maximum kernel fill is complete (physiological maturity), and at least 7 days before harvest.

**Control in Soybeans**
Because of several effective soybean herbicides, burcucumber control in soybeans may be easier and less costly than it is in corn. In addition, rescue treatments and later access are more feasible in soybeans than in corn. Planting soybeans in 30-inch rows can allow for cultivation and for later postemergence herbicide applications; however, the quick canopy closure that occurs in narrower rows also can help to reduce later emerging weeds, including burcucumber.

**Soil-Applied Treatments**
Soil-applied treatments in soybeans will not provide adequate control of burcucumber. Although several preemergence herbicides can suppress burcucumber growth, an additional foliar-applied herbicide will be necessary for season-long control. These soil-applied products include: Canopy XL 56.3DF (sulfentrazone + chlorimuron), Canopy 75DF (chlorimuron + metribuzin), Pursuit 70DG (ima- zethapyr), Pursuit Plus 2.9E (imaizethapyr + pendimethalin), Scepter 70DG (imaziquin), Sencor/Lexone 75DF (metribuzin), Steel 2.59E (imaizethapyr + imazaquin + pendimethalin), and Squadron 2.33E (imazaquin + pendimethalin). Refer to the current product labels or to the Penn State Field Crop Weed Control Guide for application information and other important restrictions.

**Foliar-Applied Treatments**
Make foliar applications to soybeans within recommended crop-growth stages, and when burcucumber is less than 12 inches long and has not yet vined. Generally, foliar-applied herbicides require additives to be mixed with the spray solution. Spray-additive recommendations can continually change; therefore, refer to a current herbicide product label or the Penn State Field Crop Weed Control Guide for specific recommendations or restrictions.

**Classic 25DF** (chlorimuron) can provide 75 to 85 percent control of burcucumber with some residual activity. Apply 0.75 ounce of Classic 25DF per acre, with the proper additives in the spray solution, to soybeans with at least one trifoliate leaf. Classic must be applied at least 60 days before harvest. Be aware of the special use directions when applying Classic after Canopy. See the Classic label for additional information, follow rate, and recrop restrictions.

**Liberty 1.67L** (glufosinate) provides 75 to 85 percent control of small burcucumber plants, but does not provide residual control. This treatment can be applied to Liberty Link or glufosinate-resistant soybean varieties only. Apply 20 to 28 ounces of Liberty plus 3 pounds of ammonium sulfate per acre before the burcucumber is 6 inches tall. Tank-mixing with another herbicide that is effective on burcucumber will improve performance.

**Roundup Ultra 4S** (glyphosate) can provide 85 to 90 percent burcucumber control with no residual control. This treatment can be applied over-the-top to Roundup Ready soybean varieties only. Apply 1 quart of Roundup Ultra per acre in 10 to 20 gallons of spray solution per acre. To achieve the best control, apply Roundup Ultra about 1 month after planting. A sequential application of Roundup Ultra may be needed to achieve season-long control of burcucumber. Preharvest applications of 1 to 3 quarts per acre are allowed on all soybean varieties as a harvest aid. Apply after the pods have set and lost all green color, and at least 7 days before harvest.

**Synchrony STS SP 42DF** (chlorimuron + thifensulfuron) can provide 85 to 90 percent control of burcucumber with some residual activity. Synchrony is a 3:1 mixture of chlorimuron (Classic) and thifensulfuron (Pinnacle) designed to be used on STS soybean varieties only. Severe crop injury or yield loss may result if it is applied to varieties not designated as STS. Apply 0.5 ounce of Synchrony per acre (or one pack per 4 acres) after the first soybean trifoliate has fully expanded and no later than 60 days before harvest. Include a proper spray additive in the spray solution. Refer to the Synchrony label for recrop restrictions or additional information.

**Expert 75WG** (CGA-277476; oxasulfuron), a new experimental soybean herbicide, had not yet received federal registration at the time of printing; however, research suggests that Expert provides burcucumber control in soybeans similar to that of Classic 25DF.

**Control in Alfalfa and Small Grains**
Bercucumber is less of a problem in alfalfa or small grains, and a herbicide application often is not necessary. An exception may apply with new spring-seeded forages or cereals such as oats. Because of its seed longevity, burcucumber may become problematic again when a field is rotated back to corn or soybeans.

Because of frequent cutting, burcucumber usually is not able to compete in established forage stands. In new spring seedings, Buctril 2E (bromoxynil) will control small burcucumber plants in newly seeded alfalfa. Apply 1 to 1.5 pints of Buctril 2E to spring-seeded alfalfa with at least four trifoliate leaves. Unacceptable crop injury may occur if Buctril is applied when temperatures are expected to exceed 70°F at or during the three days following application.

Small grain crops are able to compete well with burcucumber because of their vigorous growth and dense canopy in the spring. Also, small grains are harvested before burcucumber has a chance to reach a significant size and interfere with the crop. Bucrucer may compete with spring oats, however, especially if the oats are seeded late in the spring. For small infestations, hand pulling the burcucumber is recommended. If burcucumber begins to thrive, harvest the oat crop as a forage, or apply 0.5 ounce of Peak 57WG per acre or Harmony Extra 75DF at 0.3 to 0.4 ounce per acre. Include an appropriate spray additive in the spray mixture. Buctril 2E at 1 to 2 pints per acre also could be applied to reduce burcucumber competition. Refer to the specific product label for information on application and crop rotations.
Spot Treatments, Harvest Aid Applications, and Nonselective Control

Roundup Ultra 4S (glyphosate) can be used to control emerged burcucumber prior to planting, or for burcucumber control in noncropland areas. Roundup also can be used to spot-treat heavy infestations in a crop to prevent burcucumber seed production. Apply 1 quart of Roundup Ultra per acre in 10 to 20 gallons of water per acre. For smaller areas, mix Roundup Ultra at a 1 percent solution rate (1.3 fluid ounces per gallon of water).

In addition, Roundup Ultra is labeled for use as a harvest aid in all varieties of soybeans, corn, and wheat. As a harvest aid, apply up to 3 quarts per acre in soybeans and corn and no more than 1 quart per acre in wheat. The application must be made after the crop hasphysiologically matured and 7 days before harvest. Refer to the Roundup Ultra label for specific information and restrictions. Roundup is nonselective and will injure or kill any susceptible plant it touches. Roundup Ultra does not require additional adjuvants to be included in the spray mixture. Because Roundup has no soil activity, it will not control weeds that germinate after application.

Table 2. Herbicides for burcucumber control in field crops.

<table>
<thead>
<tr>
<th>HERBICIDE</th>
<th>CROP</th>
<th>PRODUCT/A</th>
<th>CONTROL RATING</th>
<th>COMMENTS</th>
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<tbody>
<tr>
<td><strong>Preemergence</strong></td>
<td></td>
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<tr>
<td>Atrazine 4L or Atrazine 90DF</td>
<td>corn</td>
<td>1.5–2 qt 4L or 1.7–2.2 lb 90DF</td>
<td>6</td>
<td>Preemergence atrazine applications provide early season suppression of burcucumber. An additional herbicide treatment or cultivation will be necessary. Atrazine is a component of several prepackaged products including Bicep II, Guardsman, Harness Xtra, Marksmen, and Surpass 100. On highly erodible land with &lt;30% organic matter, do not apply more than 1.6 lb atrazine prior to crop emergence. Do not apply more than 2.5 lb atrazine per acre per year. Follow recrop restrictions. Refer to current product label for additional information. (Restricted-use pesticide and water quality advisory)</td>
</tr>
<tr>
<td>Princep 4L or Princep 90DF (simazine)</td>
<td>corn</td>
<td>1.5–2 qt 4L or 1.7–2.2 lb 90DF</td>
<td>6</td>
<td>Princep suppresses early season burcucumber growth. An additional herbicide treatment or cultivation will be necessary. Tank-mixing atrazine with Princep improves burcucumber control and broadens weed-control spectrum. Follow recrop restrictions. Refer to current product label for additional information. (Water quality advisory)</td>
</tr>
<tr>
<td><strong>Postemergence</strong></td>
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</tr>
<tr>
<td>Atrazine 4L or Atrazine 90DF</td>
<td>corn</td>
<td>1.5–2 qt 4L or 1.7–2.2 lb 90DF</td>
<td>8</td>
<td>Consider previous atrazine applications and do not exceed 2.5 lb atrazine/A/yr. Apply before burcucumber and corn are 12 inches tall. Add 1 qt of crop oil concentrate/A to spray solution. For best results, tank-mix atrazine with other herbicides that are effective on burcucumber. If corn is under stress from prolonged cold, wet weather, or other factors, this treatment may cause crop injury. Refer to current atrazine label for use restrictions and additional information. (Restricted-use pesticide and water quality advisory)</td>
</tr>
<tr>
<td>Beacon 75WG (primisulfuron)</td>
<td>corn</td>
<td>0.76 oz</td>
<td>8</td>
<td>Beacon application should be made when corn is between 4 and 20 inches tall and burcucumber is 1 to 4 inches tall and actively growing. Include an approved additive with the spray solution. Tank-mix with Banvel/Clarity or atrazine to provide more consistent control. Refer to current label for additional information.</td>
</tr>
<tr>
<td>Buctril 2E (bromoxynil) or</td>
<td>corn, alfalfa, small grains</td>
<td>1.5–2 pt (corn, small grains) 1–1.5 pt (alfalfa)</td>
<td>8</td>
<td>Apply Buctril when burcucumber is 1 to 4 inches tall and after corn has reached the four-leaf growth stage, when alfalfa has at least four trifoliates, or before small grains reach boot stage. Include a proper spray additive with the spray solution. Buctril may cause temporary leaf burning to the crop. In corn, tank-mixing with Banvel/Clarity or atrazine improves control. Refer to label for additional details.</td>
</tr>
<tr>
<td>Buctril+3L (bromoxynil + atrazine)</td>
<td>corn</td>
<td>2–3 pt</td>
<td>8+</td>
<td>Buctril+atrazine is a premixed product. Apply before corn reaches 12 inches tall. Surfactants or crop oils may be added to the tank, but the risk of crop injury increases. Refer to current product label for additional information. (Restricted-use pesticide and water quality advisory)</td>
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(continued)
<table>
<thead>
<tr>
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<tr>
<td><strong>Postemergence</strong></td>
<td></td>
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</tr>
<tr>
<td>Classic 25DF</td>
<td>soybeans</td>
<td>0.75 oz</td>
<td>8</td>
<td>For best results, apply treatment when burcucumber is &lt;6 inches tall and soybeans have at least one trifoliate leaf; both should be actively growing. Always include a proper adjuvant with this product. If the soil pH is less than 7.0 at Classic rates of 0.5 oz/A or greater, do not plant corn for at least 9 months after application. Classic must be applied 60 days before harvest.</td>
</tr>
<tr>
<td>Exceed 57WG</td>
<td>corn</td>
<td>1 oz</td>
<td>8+</td>
<td>Exceed is a premix of primisulfuron (Beacon) and prosulfuron (Peak). Exceed can be applied to 4+ to 20-inch-tall corn as an over-the-top application or with drop nozzles when corn is 21 to 30 inches tall. For best results, apply when burcucumber is 1 to 8 inches tall and actively growing. A nonionic surfactant or crop oil concentrate must be added to the spray solution. Exceed can provide some suppression of larger burcucumber plants. Tank-mix with atrazine and/or Banvel/Clarity to enhance activity. Refer to the label for any additional information.</td>
</tr>
<tr>
<td>Harmony Extra 75DF</td>
<td>small grains (esp. spring oats)</td>
<td>0.3–0.4 oz</td>
<td>8+</td>
<td>Use as a burcucumber “rescue” treatment in spring oats. Apply to spring oats from three-leaf to before jointing stage. Include a nonionic surfactant. Do not use on Ogle, Porter, or Premier oat varieties. Do not harvest sooner than 45 days after application. May be tank-mixed with Banvel or Buctril.</td>
</tr>
<tr>
<td>Liberty 1.67L</td>
<td>Liberty Link corn and soybeans</td>
<td>20–28 fl oz</td>
<td>8</td>
<td>For use on Liberty Link or glufosinate-resistant corn and soybean varieties only. Apply before burcucumber reaches 12 inches in length. Include 3 lb/A ammonium sulfate in the spray solution. Sequential applications may be necessary. In corn, tank-mix with atrazine or Banvel/Clarity for enhanced activity. Refer to product label for additional information.</td>
</tr>
<tr>
<td>Marksman 3.2L</td>
<td>corn</td>
<td>2–3.5 pt</td>
<td>8</td>
<td>Marksman contains 1.1 lb dicamba (Banvel) plus 2.1 lb atrazine per gallon. Consider previous atrazine applications and do not exceed 2.5 lb atrazine/A/yr. Apply Marksman up to the five-leaf stage of corn and before burcucumber exceeds 12 inches long. Include an approved spray adjuvant with the spray solution. Refer to the label for specific information. <em>(Restricted-use pesticide and water quality advisory)</em></td>
</tr>
<tr>
<td>Peak 57WG</td>
<td>small grains (esp. spring oats)</td>
<td>0.5 oz</td>
<td>7+</td>
<td>Use as a burcucumber “rescue” treatment in spring oats. Apply to spring oats from three-leaf to before visible second node stage. Include a crop oil or nonionic surfactant. May be tank-mixed with Buctril or Banvel. Be cautious of crop rotation restrictions (10 months for soybeans and 15 months for alfalfa).</td>
</tr>
<tr>
<td><strong>Postemergence</strong></td>
<td></td>
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<tr>
<td>Roundup Ultra 4S</td>
<td>Roundup Ready soybeans and corn; harvest aid; or spot treatment</td>
<td>1 qt or 1% solution</td>
<td>8+</td>
<td>For over-the-top applications on Roundup Ready soybean and corn varieties only. Apply 1 qt/A Roundup Ultra to soybeans 1 month after planting. In corn, apply 1 qt/A as an early post application. Tank-mix with other herbicides to provide more consistent burcucumber control. Split applications may be necessary. Roundup is labeled as a harvest aid treatment in soybeans and corn at up to 3 qt/A and in wheat at no more than 1 qt/A. Apply after physiological maturity and 7 days before harvest. Roundup Ultra also can be used as a spot treatment (1 qt/A or 1% solution). Roundup is a nonselective herbicide and will injure or kill any plant it comes into contact with.</td>
</tr>
<tr>
<td>Synchrony STS SP 42DF</td>
<td>STS soybeans</td>
<td>0.5 oz (1 pack/4 A)</td>
<td>8+</td>
<td>Synchrony STS is a 3:1 mixture of chlorimuron (Classic) and thifensulfuron (Pinnacle) designed for use on STS soybean varieties only. Apply after first trifoliate has fully expanded and before burcucumber is &gt;6 inches long. Include the necessary adjuvants in the spray solution. A split application 2 to 3 weeks after the first may be necessary to control later emerging burcucumber flushes. Do not apply later than 60 days before harvest.</td>
</tr>
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</table>

*10 = 95 to 100%, 9 = 85 to 95%, 8 = 75 to 85%, 7 = 65 to 75%, 6 = 55 to 65%. Ratings based on optimal application timing.*
Prepared by David Messersmith, agricultural extension educator; William S. Curran, associate professor of weed science; and Dwight D. Lingenfelter, assistant extension agronomist. Illustrations by Rae D. Chambers.

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