White Clover

White clover (Trifolium repens), also known as Dutch clover, is a cool-season perennial that is often found growing in patches along roadsides and in pastures and lawns. It is a low-growing plant with creeping stems (stolons) that produce roots and shoots at nodes (joints) along the stem, which helps the plant to spread. It has trifoliate leaves which consist of 3 oval-shaped leaflets. There is usually a characteristic white, crescent-shaped band on each leaflet. White flowers (often tinged with pink) appear in early summer. The flower heads consist of 40 to 80 florets (individual flowers) in a cluster measuring ½ to 1 ½ inches in diameter. It reproduces by seed and by creeping stolons.

White clover is in the legume family (Fabaceae) and is capable of fixing its own nitrogen, which enables it to thrive in unfertilized areas. Because of this, it can be used to indicate inadequate fertility. It has a shallow root system that does not do well in dry soils. It grows best when temperatures range from 50 to 85 °F.

Before starting a weed control program, homeowners should realize that complete eradication of a weed from the landscape is not practical. A more practical approach is to manage (not eradicate) the weed by limiting the infestation to a tolerable level.

Control in Lawns

Cultural Control: Maintaining the health and density of your lawn is the best method for preventing weed problems. Proper mowing height, irrigation and fertilization of the turfgrass are the best defense against weeds. Test the soil for proper lime and fertilizer applications. For more information on these topics, see the following fact sheets: HGIC 1201, Fertilizing Lawns; HGIC 1205.
Mowing Lawns; HGIC 1207, Watering Lawns; and HGIC 1652, Soil Testing.

If white clover does become a problem in a turf area it can be dug up easily before it is well established. Large patches may be too difficult to dig up and an herbicide may be used.

**Chemical Control:** If an herbicide treatment is chosen, it is best to start treatments early in the fall. A three-way herbicide may be used safely on bermudagrass, zoysiagrass, centipedegrass, St. Augustinegrass and tall fescue. The active ingredients of a three-way herbicide often include the following broadleaf weed killers: 2,4-D, dicamba, and mecoprop (MCPP). Examples of three-way herbicides for residential lawns in homeowner sizes are:

- Ferti-lome Weed-Out Lawn Weed Killer - Contains Trimec®
- Southern Ag Lawn Weed Killer with Trimec®
- Bayer Advanced Southern Weed Killer for Lawns
- Spectracide Weed Stop Weed Killer for Lawns
- Bonide Weed Killer – lawn Weed Killer Concentrate
- Ortho Weed B Gon Weed Killer for Lawns

**CAUTION:** Herbicides containing 2,4-D should be applied at a reduced rate on St. Augustinegrass and centipedegrass to prevent damage to these lawns. If a second application is needed, apply the herbicide in spot treatments. Repeated applications of a three-way herbicide should be spaced according to label directions. Three-way herbicides should not be applied during spring transition (green-up of lawn) or when air temperatures exceed 90 °F. A newly seeded lawn should be mowed a minimum of three times before applying a herbicide.

Triclopyr can be used to control white clover in tall fescue lawns. Examples of products containing triclopyr for residential lawns in homeowner size containers are:

- Monterey Turflon Ester
- Hi-Yield Turflon Ester Ultra Herbicide
- Ortho Weed B Gon Chickweed, Clover & Oxalis Killer for Lawns

Other products similar to the three-way herbicides that also contain triclopyr are:

- Monterey Spurge Power Concentrate (also with dicamba & MCPP)
- Ortho Weed-B-Gon MAX Weed Killer for Lawns (also with 2,4-D & dicamba)

These latter two products are also labeled for use on zoysiagrass and bermudagrass. The same precautions apply for triclopyr as with the use of the three-way herbicides for lawn safety.

Atrazine can be applied to St. Augustinegrass and centipedegrass up to two times a year. For maximum effect atrazine should be applied once in the fall and again in late spring (after spring green-up). Atrazine has a pre- and post-emergent effect on weeds, which means it helps to control both emerged weeds and weed seed. It should NOT be applied to newly seeded lawns due to the detrimental effect it has on seed germination. Delay atrazine applications to newly sodded and sprigged lawns until they are well-established and actively growing. Examples of atrazine products for residential lawns in homeowner sizes are:

- Hi-Yield Atrazine Weed Killer
- Southern Ag Atrazine St Augustine Weed Killer
- Image for St. Augustinegrass & Centipedegrass with Atrazine
- Spectracide Weed Stop for Lawns Concentrate for St. Augustine & Centipede Lawns Ready to Spray

**CAUTION:** Atrazine can travel through soil and enter ground water, please read the label for all environmental precautions. Users are advised not to apply atrazine to sand or loamy sand soils where the water table (groundwater) is close to the surface and where these soils are very permeable, i.e., well-drained.

Metsulfuron (such as in Martin’s TopShot Weed Killer for Lawns, and Scott’s Spot Weed Control for Lawns – a pre-mixed spray product) can be used on bermudagrass, St. Augustinegrass, centipedegrass, and zoysiagrass. Manor Selective Herbicide, and Blade Selective Herbicide for Turfgrass also contain metsulfuron, but are products packaged for landscape professionals. For these latter two professional products, a non-ionic surfactant (such as Southern Ag Surfactant for
Herbicides) is required at 2 teaspoons per gallon of spray mix for best control. A non-ionic surfactant will help the herbicide adhere to the leaves for increased penetration.

Do not apply metsulfuron to a lawn if over-seeded with annual ryegrass or over-seed for 8 weeks after application. Do not plant woody ornamentals in treated areas for one year after application of metsulfuron. Do not apply metsulfuron herbicides within two times the width of the drip line of desirable hardwood trees.

The herbicide mix of thiencarbazone, iodosulfuron, and dicamba, as found in Celsius WG Herbicide, is selective to control many broadleaf weeds and several grass weeds in all four of the common warm-season grasses. It cannot be used in fescue lawns, but can be used to remove fescue from warm-season lawns. Apply when white clover is actively growing and again 2 to 4 weeks later. The addition of a non-ionic surfactant, such as Southern Ag Surfactant for Herbicides, will increase control (see Table 1).

Non-selective herbicides such as glyphosate can be used for spot treatments, however, nearby desirable grasses and plants can be severely injured or killed. Examples of glyphosate products in homeowner sizes are:
- Roundup Original Concentrate,
- Roundup Pro Herbicide,
- Martin’s Eraser Systemic Weed & Grass Killer,
- Quick Kill Grass & Weed Killer,
- Bonide Kleenup Weed & Grass Killer 41% Super Concentrate,
- Hi-Yield Super Concentrate,
- Maxide Super Concentrate 41% Weed & Grass Killer,
- Super Concentrate Killzall Weed & Grass Killer,
- Tiger Brand Quick Kill Concentrate,
- Ultra Kill Weed & Grass Killer Concentrate,
- Gordon’s Groundwork Concentrate 50% Super Weed & Grass Killer,
- Zep Enforcer Weed Defeat III,
- Eliminator Weed & Grass Killer Super Concentrate,
- Monterey Remuda Full Strength 41% Glyphosate,
- Knock Out Weed & Grass Killer Super Concentrate,
- Southern States Grass & Weed Killer Concentrate II,
- Total Kill Pro Weed & Grass Killer Herbicide,
- Ace Concentrate Weed & Grass Killer.

If you are unable to prevent glyphosate from getting on desired grasses a selective herbicide should be used. The following information is a guideline for choosing a selective herbicide according to turfgrass type.

Once white clover has been eliminated in areas of the turf, bare spots will be left behind. To prevent the invasion of new weeds in these bare spots fill them with plugs or sprigs of the desired turfgrass.

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Bermudagrass</th>
<th>Centipedegrass</th>
<th>St. Augustinegrass</th>
<th>Tall Fescue</th>
<th>Zoysiagrass</th>
</tr>
</thead>
<tbody>
<tr>
<td>atrazine</td>
<td>D</td>
<td>S</td>
<td>S</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>metsulfuron</td>
<td>S</td>
<td>S</td>
<td>S-I</td>
<td>NR</td>
<td>S</td>
</tr>
<tr>
<td>(3-way) 2,4-D + MCPP + dicamba</td>
<td>S</td>
<td>I</td>
<td>I</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>triclopyr</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>thiencarbazone, iodosulfuron, &amp; dicamba¹</td>
<td>S</td>
<td>S</td>
<td>S²</td>
<td>NR</td>
<td>S</td>
</tr>
</tbody>
</table>

S= Safe at labeled rates.
I= Intermediate safety, use at reduced rates.
NR= Not Registered for use on and/or damages this turfgrass.
D= Fully dormant turf only.

Note: Do not apply postemergence herbicides, except Celsius WG Herbicide, to lawns during the spring green up of turfgrass.

¹ This mix of active ingredients requires the addition of 2 teaspoons of a non-ionic surfactant (that is, a wetter-sticker agent to aid in weed control at 0.25% by volume) per gallon of water, such as Hi-Yield Spreader Sticker.
² Spot treatments to St. Augustinegrass at temperatures above 90 degrees may cause temporary growth regulation.
Control in Vegetable Gardens

Cultural Control: It is best to treat weeds before tilling the soil for a vegetable garden. Tilling can break up and spread weed seed and perennial grass rhizomes throughout the garden plot. Some methods used to remove weeds in the vegetable garden include: hand pulling, mulch, solarization, fall cover crops, and post-emergent herbicides.

Hand pulling white clover is only practical for small garden plots. If hand pulling is chosen, be sure to work when the soil is moist so roots of the white clover can be removed easily from the soil.

Organic mulch (such as pine needles, old hay or grass clippings) can be used in the garden to help suppress white clover development. Before laying the mulch apply a layer of 6 to 8 wet newspaper sheets to act as a weed barrier. The newspaper layer will prevent weed development by blocking light to the weeds underneath, preventing their growth. Best of all, the newspaper should decompose before next spring. To prevent low oxygen levels in the root zone, keep organic mulch levels at a maximum of 3-inches. If triclopyr or 2,4-D containing products are applied to lawns for weed control, do not use the clippings for mulch in vegetable gardens or around ornamentals as plant injury or death may result. For more information on mulching the vegetable garden see HGIC 1253, Controlling Weeds by Cultivating and Mulching. For information on fall cover crops to suppress white clover see HGIC 1252, Cover Crops.

Chemical Control: Lastly, a post-emergent herbicide can be used to treat the garden plot before planting. For best control, wait about a week for the grass and weeds to die in the garden site before tilling. Glyphosate is a non-selective herbicide that can be applied to the garden plot 3 or more days prior to planting. Crop sensitivity may vary, so always read the label before applying the herbicide. Glyphosate is most effective when weeds are actively growing, so do not apply during extreme heat, cold or drought conditions. For examples of products containing glyphosate in homeowner sizes, please see the list under “Chemical Control in Lawns.”

Control in Landscape Beds

Cultural Control: In landscape beds white clover can be hand dug or controlled with an herbicide. As mentioned previously, it is best to prevent the invasion of white clover by maintaining ideal growing conditions and using a 3-inch mulch layer to block weed development. White clover is a perennial weed that can emerge from both seeds and stolons. Once white clover has made its way into the landscape bed an herbicide may be necessary if hand pulling is not practical.

Chemical Control: Glyphosate can be used for spot treatments around ornamental plants. Glyphosate is a non-selective herbicide that should be used with caution. Do not allow glyphosate spray mist to contact ornamental foliage or bark, or severe injury will occur. A cardboard shield may be used to prevent glyphosate spray from drifting to nearby ornamentals. Flower pots may be inverted and placed over small plants for protection from sprays. Glyphosate is more effective when weeds are actively growing and should not be applied under drought conditions. For examples of products containing glyphosate in homeowner sizes, please see the list under “Chemical Control in Lawns.” As with all pesticides, read, understand, and follow all label instructions and precautions.