

Weed Biology & Management

Biology and Management of Poison Ivy (*Toxicodendron radicans*) in Christmas Tree Production



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Poison ivy (Toxicodendron radicans L.) is a prominently allergic plant in the Toxicodendron genus which is the most found weed in Christmas tree production. Contrary to popular belief, poison ivy is not an actual member of the Hedera family of ivy plants, instead it is a member of the Anacardiaceae family, which also includes cashews and pistachios. Poison ivy is known by several distinct names, including three-leaved ivy, poison creeper, climbing sumac, and poison oak.

Poison ivy is notorious for creating urushiol-induced contact dermatitis, a painful and itchy rash that most people who come into touch with it experience. Urushiol, a liquid component in the sap of the plant that is clear in color, is what causes the rash. Although some animals gobble it up and birds seek it out for its seeds, poison ivy is primarily viewed as an unwelcome weed.

Biology of poison ivy:

Poison ivy is a natural woody species that is commonly found in humid regions. This plant is native to North America and Asia and is distinctive in that aspect. Furthermore, it should be noted that poison ivy grows profusely in a range of settings, with only deserts and high altitudes as exceptions. Despite its versatility, poison ivy does not survive well in a complete shadow. However, it grows more along the edges of forested regions where it receives adequate sunshine.

Poison ivy typically develops or grows in the form of a vine, and when the vine gets into contact with soil or any supportive object, it forms several aerial roots along its stem. These aerial roots of the vines firmly adhere to the surface of the trees when they encounter them and eventually these vines on the trees grow abundantly, like a fuzzy rope as the aerial roots expand. When anchored to trees by these roots, mature vines can expand to a diameter of more than 2 inches and reach incredible heights of up



Figure 1. Compound leaves of poison ivy.

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to 75 feet. Moreover, such vines may even grow lateral branches that reach up to 8 feet in length.

The stems may develop a woody appearance and grow up to 72 inches tall, or they may develop a vine-like growth habit and grow up to 150 feet long, climbing trees, walls, and other buildings. These stems have smooth surfaces, and they range in color from light brown to gray. Poison ivy has three-leafed compound leaves (Fig 1), and its leaflets range in length from 2 to 5 inches (5 to 12 cm). While the plant is actively growing, these leaflets are green or yellowish green in color, followed by turning into red during the occurrence of fall. The leaves are alternately arranged on the stem and feature a terminal (end) leaflet with a longer stalk than the lateral (side) leaflets.

Flower buds of poison ivy appear in clusters near the vine during the spring right after the emergence of the first leaves, which are tiny and green or greenish yellow in color. Succeeded by emergence of flowers which are small and have off-white to orangish centers, that bloom in clusters throughout the same season as the buds do.

The little, white pumpkin-shaped seeds of Poison Ivy are known as “berries”. In the spring and summer seasons, these berries possess a green outer skin that becomes pale yellow in the fall. They typically develop on the Poison Ivy plant’s stems in clusters that resemble grapes and are situated just beneath or close to the leaflets.

Propagation is mainly by seed, because of the rate at which those seeds are disseminated by birds and other fruit eating animals. Poison ivy can swiftly take hold in the environment and become a major concern. Furthermore, poison ivy by its nature grows very rapidly and spreads even via underground rhizomes.

Similar Species:

During growth phase, Boxelder tree seedlings (*Acer negundo*) might exhibit compound “leaves of three” resembling the poison ivy in appearance. Even at this early stage, boxelder seedlings can be distinguished from poison ivy by their opposite leaf arrangement, in which two leaves or branches arise from each node, as opposed to poison ivy’s alternate leaf pattern. As these boxelder tree seedlings mature, their leaves may eventually grow not just five leaflets but perhaps seven.

Management of poison ivy:

Non-chemical control: Cultural methods of poison ivy control in Christmas tree production should only be operated if the individual involved has tolerance to poison ivy. As, individuals’ susceptibility to poison ivy varies greatly. Initially, all individuals will have innate immunity to tolerate the effects of poison ivy, but it wanes after they have been exposed to the oil for the first time. Poison ivy seedlings that are small can be cautiously extracted using gloves and protective clothes, such as long sleeves and slacks. But, if the root system of poison ivy is well-established in soil after its maturity, pulling them out would be beyond the realm of possibility. Because, from the remaining pieces in the soil, poison ivy can grow back again. However, if it’s a little plant, thorough removal of the roots and stems can be an ideal strategy. In addition, the plant will eventually die if it’s trimmed continuously to the ground because the root system will be deprived of nutrition. But it poses an increased risk of contact with oil. Furthermore, regular mowing is an effective mechanical control approach that can be employed in Christmas tree production as control can be gradually achieved by periodically chopping vines in the soil over a period of years.

Chemical control: Chemical control includes the application of preemergence and postemergence herbicides. Preemergence herbicides need to be applied either before germination of the weed seeds or just after the germination, when the seedlings are very small. The following are some of the preemergence herbicides that are labeled for use in Christmas tree production and have shown fair control of poison ivy: indaziflam (Marengo) and hexazinone (Velpar) (Zandstra and O’Donnell, 2018). Postemergence herbicides are applied at later stages, and they are most effective when applied to young actively growing weeds that have not reached their reproductive stages. Glyphosate (Roundup ultra) has shown good control of poison ivy (Zandstra and O’Donnell, 2018). Other postemergence herbicides that can provide good control are triclopyr (Garlon) and 2,4-D (Defy Amine 4). It is highly recommended to read the manufacturer’s label of the herbicides before application and make sure the application timing is right and the herbicide is safe for the Christmas tree varieties.

REFERENCES:

Zandstra, B. and J. O’Donnell. 2018. Weed control in Christmas trees. Michigan State University Extension bulletin E3237.