



Growing Sweetpotatoes in Western Washington

Pests and Diseases

Laura Schulz, Laurel Moulton, Samantha Grieger,
Jordan White, Srijana Shrestha and Carol Miles



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Growing Sweetpotatoes in Western Washington: Pests and Diseases

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Authors: Laura Schulz¹, Laurel Moulton², Samantha Grieger², Jordan White¹, Srijana Shrestha³, Carol Miles¹

¹Washington State University Northwestern Washington Research and Extension Center, ²Washington State University Extension, ³Oregon State University Extension

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Insect Pests

Wireworms

Wireworms (*Agriotes lineatus*, *A. obscurus*, and *Limonius canus*) are the primary insect pest impacting sweetpotato root quality in western Washington. Wireworms are the immature (larval) stage of several native and introduced click beetles (family Elateridae). Feeding holes are often superficial and can heal during the curing process but the cosmetic damage makes roots unmarketable (Figure 1). Additionally, dirt can get stuck in the holes created by wireworms, requiring additional scrubbing before cooking.

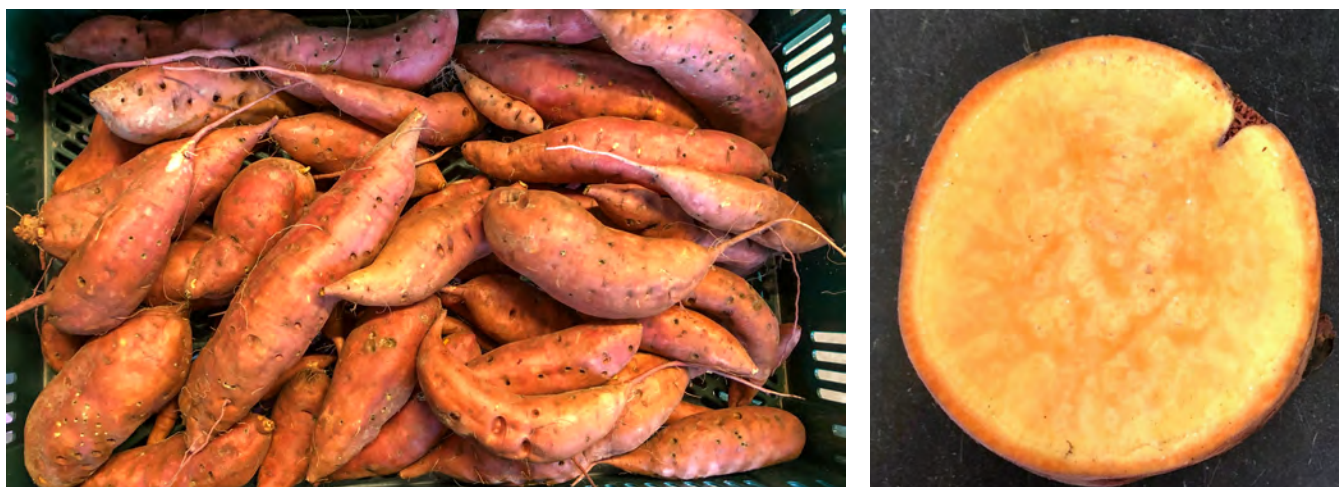
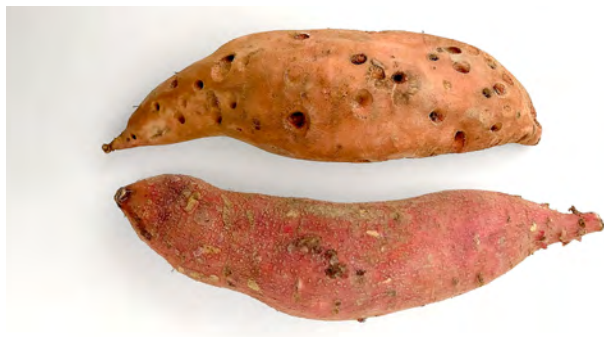


Figure 1. Wireworm damaged sweetpotatoes (left) and cross section of root showing typical shallow damage (right).

Wireworm Resistant Varieties

On farms that have high wireworm pressure, sweetpotato varieties with wireworm resistance (Figure 2) are an important pest management tool as there are no chemical or biological control options for organic farmers, and even conventional pesticides have limited efficacy. In a variety trial conducted in Mount Vernon, WA in 2023 and 2024, total root yields were higher for wireworm susceptible varieties than for wireworm resistant varieties (unpublished data). However, most of the roots of the wireworm susceptible varieties had so many wireworm scars that they were unmarketable to consumers such that there was little or no marketable yield. In situations where wireworm pressure is low, wireworm susceptible varieties produce the highest yields. When wireworm pressure is high, wireworm resistant varieties are necessary to produce marketable sweetpotato roots.



Learn more!

More information about wireworm-resistance of sweetpotato varieties commonly grown in western Washington is available in Table 1 of [Growing Sweetpotatoes in Western Washington: Variety Selection \(pdf\)](#).

<https://vegetables.wsu.edu/sweetpotato/>

More information on wireworm management can be found in [FS364E: Biology and Management of Wireworms in Western Washington](#).

<https://pubs.extension.wsu.edu/product/biology-and-management-of-wireworms-in-western-washington/>

Figure 2. Wireworm susceptible variety Covington (top) and resistant breeding line USDA-04-791 (bottom) grown in the same field in Mount Vernon, WA in 2023.

Field Selection to Avoid for Wireworms

Wireworm populations generally increase in fields with continuous pasture or grass crops and decrease in fields with annual vegetable production (Poggi et al. 2021). To reduce the likelihood of wireworm damage, plant sweetpotatoes in a field that has been in annual vegetable production (Figure 3). Do not grow sweetpotatoes in a field that has recently had a grass or grain crop or that was recently planted in pasture. Avoid planting on field edges that are weedy or have grassy margins. Additionally, avoid fields that have a history of significant wireworm damage.



Figure 3. Sweetpotato variety Covington grown in Mount Vernon, WA in 2023 in two fields with different cropping history: in a field where the previous crop was annual vegetables (left) and in a field that had a continuous cover crop mixture, including grasses, for several years without cultivation (right).

Spotted cucumber beetle

Spotted cucumber beetle (*Diabrotica undecimpunctata*) larvae feed on sweetpotato roots, causing damage that is similar to wireworms while adult beetles cause superficial damage to leaves. Wireworm-resistant varieties are also resistant to spotted cucumber beetles.

Foliar insect pests

Most sweetpotato pests of significance are larvae and grubs that attack roots. Sweetpotatoes can tolerate minor defoliation without yield loss, so caterpillars and chewing insects that feed on leaves and vines are rarely a problem. However, though most foliar pests are not cause for concern, aphids, whiteflies and other sucking insects can be vectors for viruses.

Vertebrate pests

Deer and rabbits are attracted to sweetpotato greens. Without exclusion, they will graze plants down to the soil throughout the growing season, leading to crop failure. Cover plants with floating row cover or plastic slitted tunnels to exclude both deer and rabbits. If using fencing, it must be at least 8 feet high to exclude deer. For rabbits, a 2 to 3 foot fence made of 1-inch mesh with the bottom buried 6 inches deep is sufficient.

Voles (*Mycrotis sp.*) and Norway rats (*Ratus norvegicus*) have both caused damage to sweetpotato crops in western Washington. Voles and rats may consume whole or portions of sweetpotato roots (Figure 4). Plastic mulch and weed barriers protect voles and rats from predators, and the rodents may even build their nests and burrows under the mulch. It is important to differentiate between damage caused by voles vs. rats because management tactics are different. Voles create runways along the top of sweetpotato beds under the plastic mulch, with their tunnels and burrows around sweetpotato roots. Norway rats also tunnel in the ground, but their burrows are lined with fibrous material such as leaves or shredded weed cloth or plastic mulch (Figure 5).



Figure 4. Sweetpotato roots damaged by voles and rats.



Figure 5. Rat nest and burrow in sweetpotato plots.

Vole populations are irregularly cyclic depending on predator populations, weather, and quality of food and habitat. Minor population peaks occur about every 4 to 6 years and larger peaks every 10 to 12 years. Voles have the capacity to eat their body weight in food each day (Gunn et al. 2022). Rat populations are often more influenced by the availability of food and shelter and nearby human activity (Quinn 2024).

Reduce ground cover to deter rats and voles from entering a field. Remove vegetation taller than six inches, do not pile brush next to field edges, do not plant next to hedgerows, and mow and till field margins to minimize cover.

Encourage predators such as raptors, including hawks and owls, by providing raptor poles and other perching spots. Other natural enemies include garter snakes (for voles), coyotes, foxes, weasels and domestic cats. However, encouraging predators alone is not sufficient for managing voles or rats, since predators cannot keep up with the breeding rate of rodents (Pehling 2013)

Common mouse traps (un-baited, or baited with apple or peanut butter) are legal in Washington State for trapping voles, while larger rat traps are needed for rats. Set traps for voles perpendicular inside vole runways, with at least one trap per 100 square feet. Keep all traps covered to protect birds and other off-target wildlife (Pehling 2013).

While there is limited research on their efficacy in sweetpotatoes, some farmers have experimented with blood meal-based animal repellants to deter voles and rats. Common granular formulations include 100% bloodmeal (which is also sold as a nitrogen fertilizer and typically contains between 13 and 14% nitrogen) or a wettable powder with 15% other “sticker” ingredients that makes the product stay in place for longer. To be most effective, the product needs to be placed at the crown of the plant and/or under the plastic mulch. Since sweetpotatoes respond to nitrogen fertilization by favoring leaf production over root production, care should be taken when experimenting with using bloodmeal as a rodent deterrent.

Diseases

Scurf

Sweetpotato scurf is a superficial disease caused by the soilborne fungus *Monilochaetes infusans*. Scurf infection causes purplish-brown stain-like lesions on sweetpotato skin (Figure 6). The disease progresses under high humidity, usually during storage or after heavy rainfall in the field. Scurf usually does not affect the eating quality of sweetpotatoes, but can reduce marketability. Infected sweetpotatoes lose moisture quicker in storage which can lead to the roots becoming spongy, dry and shrunken when they’re heavily infested. However, infection does not cause more rot in storage (Parada and Quesada-Ocampo 2023).



Figure 6. Beaugard sweetpotatoes showing scurf infection at harvest.

Prevention and sanitation are the best tools for avoiding crop infection. Scurf can be spread through the use of infected sweetpotato roots for slip production. Only order slips from companies that can guarantee disease-free materials and do not save roots that are visibly infected with scurf for slip production.

Infected roots should be cured and stored separately from ones that are not infected because the humid conditions needed for curing can cause the fungus to produce spores and spread. Crates and other farm tools that come into contact with scurf-infested roots should be sanitized. Sanitize curing chambers and storage areas to help keep inoculum to a minimum. Rotate sweetpotatoes out of infected fields for 2 to 4 years. The fungus persists longer in soils that are higher in organic matter. Field bindweed (*Convolvulus arvensis*) and morning glory (*Calystegia × lucana*) are common weeds that are in the same plant family as sweetpotato, and are alternative hosts of scurf.

Soft Rot

Soft rot caused by *Rhizopus stolonifer* is the most common and significant disease of sweetpotatoes in storage. The pathogen enters sweetpotato tissue through any type of wound, but particularly through bruises from rough handling during harvest and transport. Moist and cold soil conditions at harvest can cause sweetpotatoes to be more vulnerable to infection.

Soft rot causes watery, soft decay with a distinct fermented sweet smell that may attract fruit flies. Rot advances rapidly and roots become completely inedible within a few days. Masses of gray to white fungal mycelium and black spore structures can be seen growing on the skin and out of any injuries on decaying roots.

Minimizing injuries and curing roots in a timely manner is essential to reducing post-harvest disease. Curing seals wounds, providing resistance against fungus colonization. Large, ‘crushing’ wounds provide more surface area for infection than clean cuts using sharp tools. Maintaining proper temperature (55-60 °F), humidity (80-90%) and ventilation in storage areas will limit disease development. Minimize disease inoculum by sanitizing packing sorting and storage equipment that may have come in contact with infected roots and using clean water if washing sweetpotatoes after harvest. Some sweetpotato varieties, like Beauregard, have high resistance to soft rot (Benedict et al. 2009).

Viruses

More than 30 viruses are known to infect sweetpotatoes, though only a few are important economically. Sweetpotato Virus Disease, a co-infection by two viruses, including sweetpotato feathery mottle virus (SPFMV) and sweetpotato chlorotic stunt virus (SPCSV) is the most important disease of sweetpotatoes worldwide. SPFMV is not harmful on its own, but when combined with SPCSV to cause Sweetpotato Virus Disease, symptoms include stunting, dwarfing, chlorosis, discoloration, and puckering.

Viruses can be spread by insects such as aphids and white flies, and by contact between plants. Removal of infected plants can be an effective method to prevent virus spread and plants with symptoms should be removed immediately from the growing area. After SPVD-infected plants are removed, remaining plants should be monitored closely for symptoms. Control of virus vectors such as aphids during slip production can help reduce virus spread.

Viruses, especially SPVD may be latent in storage roots, and even asymptomatic plants infected with SPVD can still produce slips that have severe symptoms. When producing slips, sterilize cutting tools in between roots to reduce the spread of infection, even if plants are asymptomatic. Purchasing certified disease-free slips or propagating slips on-farm with disease-free roots can help minimize virus occurrence. New propagation stock should be purchased when loss of vigor occurs within the crop or viral symptoms appear.

To date, there is no evidence of significant presence of sweetpotato viruses in Washington State. It is essential that only certified virus-free plant material is brought into the state to avoid issues in the future.

Physiological Disorders

Corky Root

Corky root (also known as oedema or water blisters) occur when lenticels (or pores) in the root's skin swell resulting in small, raised corky lumps (Figure 7). Corky root is seen on roots grown in overly wet soil. Some sweetpotato varieties, like Monaco, are particularly susceptible to this disorder, while others, like Covington, are more resistant (North Carolina State University n.d.). Enlarged lenticels do not impact edible quality but may reduce market value if severe (Eckman et al. 2015).



Figure 7. Enlarged lenticels or corky root on a sweetpotato root grown in wet, clay soil in Mount Vernon, WA in 2024.

Fasciation

Fasciated sweetpotato vines are flat, wide and strap-like, and may look like multiple vines fused together (Figure 8). Fasciation in sweetpotatoes is not “contagious” and does not spread through plant populations. Causes of fasciation can be hormonal imbalances, a genetic mutation, environmental factors, bacterial infection or physical damage to the growing point (Pscheidt and Putnam 2023). In sweetpotatoes the specific cause is unknown and plant production appears to be unaffected (Eckman et al. 2015).



Figure 8. Left: Normal and fasciated sweetpotato stem. Right: Extreme fasciation on a sweetpotato stem.

Root splitting

Sweetpotatoes may split along the length of the root in response to water stress or other conditions. Growth cracks form when roots experience dry periods in the soil followed by heavy rain or irrigation events. Other causes of root splitting may be from low doses of herbicides or viral infections. Splits that have formed during early growth will heal over.

Cold Damage

Chilling injury occurs in sweetpotatoes exposed to temperatures below 50 °F, but symptoms may not manifest for weeks or months after damage occurs. The most common symptoms of chilling injury are surface pitting (large round sunken patches), reduced storage life and increased susceptibility to rot. Chilling also accelerates dry matter loss which may lead to internal tissue breakdown and impact the taste, texture and color of the flesh.

The severity of injury depends on the temperature and the length of direct exposure. Unharvested sweetpotatoes will not be injured by low air temperatures, or even mild frost, as long as the soil temperature remains above damaging levels. Chilling injury is also cumulative, and severe damage may occur after repeating short exposures to damaging temperatures (Edmunds, et al. 2008). For this reason, care must be taken to provide supplemental heat when curing sweetpotatoes in a high tunnel or greenhouse when night temperatures fall below 50 °F.

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