

NCPN Hops Clean Plant Centers



The Clean Plant Center Northwest (CPCNW) at Washington State University

NCPN Hops works with various University Extension faculty, scientists, and Hop Commissions to conduct extension and outreach programs designed to inform nurseries and producers about the benefits of using certified clean plant stock and to ensure successful dissemination and use of NCPN Hop products and services. Services include:

- » Virus testing and elimination of hop selections
- » State-of-the-art therapeutic processes to eliminate targeted pathogens
- » Research to improve diagnostic tools and disease management practices
- » Sales of clean hop propagative material for expansion by nurseries and growers
- » Fee-based testing to help growers assess the virus status of their hop yards
- » Outreach programs and materials to educate the industry on the importance of using pathogen tested hop propagative material

About Hops

Throughout history hops have been used for many purposes. Hops were first recognized for their medicinal use as early as 3,000 B.C. and first used as a flavoring, preserving and clarifying agent in beer sometime during the fourth to seventh centuries A.D. The hop plant is a vigorous, climbing, herbaceous perennial, usually trained to grow up strings in a field called a hop yard when grown commercially.

Hop stunt is a serious disease of cultivated hop plants, first identified in the 1940s in Japan. By the late 1980s, the disease had spread throughout Japan and to South Korea. The viroid was found in North America in 2004 and has been documented in other hop-growing regions around the world. While the degree of symptom expression is cultivar and climate dependent; typical symptoms include stunting, leaf curling and small cones. The height and average cone weight of severely infected plants are approximately 33% less than healthy plants.

Hop stunt is caused by the *Hop stunt viroid* (HpSVd). HpSVd has a large host range including almonds, apricots, citrus, cucumber, grapevine, peach, plum and pomegranate.



Healthy (left) vs. HpSVd infected (right) on Hop cultivar Glacier in Washington State. Photo by Ken Eastwell.



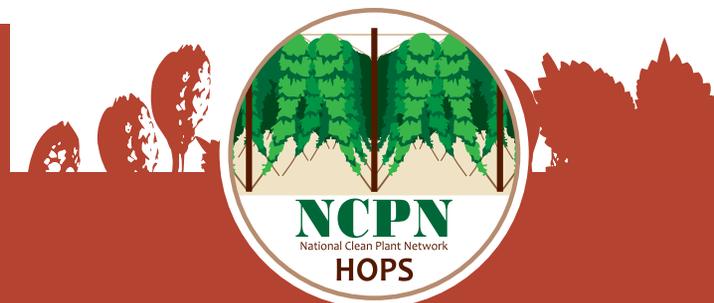
NCPN HOPS

National Clean Plant Network Hops

About the National Clean Plant Network (NCPN)

Established in 2008 and supported by the U.S. Department of Agriculture, the NCPN is a national network of clean plant centers, scientists, educators, regulators and industry representatives who are concerned with the health of vegetatively propagated specialty crops.

nationalcleanplantnetwork.org



Start clean, stay clean.

HOPS

National Clean Plant Network

What is the NCPN Hops?

The National Clean Plant Network for Hops is a collaborative effort led by the Clean Plant Center Northwest located at Washington State University's Irrigated Agriculture Research and Extension Center in Prosser, WA, and includes scientists, state and federal regulators, nurseries and growers to ensure that clean, virus tested hop propagation material is available to the U.S. hop industry.



Diagnostics. Scientists supporting NCPN Hops are developing and implementing new diagnostic assays for the virus diagnostic and elimination process.



Foundation. The resulting foundation collection is maintained in insect-resistant screen houses and tested annually to ensure the mother plants remain free of targeted pathogens.

Clean planting material ensures the U.S. hop industry is competitive in the global marketplace.



Therapy. Meristem tissue culture and microshoot tip grafting are among the tools employed to isolate pathogens and develop virus-indexed clean planting material.



Distribution. Clean, virus tested propagative material from the foundation collection is available to nurseries, propagators and growers throughout the U.S.