

Rhizomania

Background and Management

Rhizomania Defined

Rhizomania is one of the most serious diseases encountered by sugar beet growers around the world. Also known as 'crazy root', this disease is now present in most sugar beet production zones across the United States. The disease is so infectious that even a few grams of infected soil can eventually spread to infect entire fields.

What is Rhizomania?

*Rhizomania is actually a virus transmitted by a soil borne fungus called *Polymyxa betae*. Both the virus and the fungus that transmits it are obligate parasites. This means they both need a living host to survive. The disease will survive indefinitely in the soil as cysts or groups of cysts. These cysts germinate in the presence of water and release a zoospore that infects sugar beet root tissue carrying the virus with it into the plant.*

Symptoms and Visual Identification



Often Rhizomania will develop undetected as it can be easily confused with nitrogen deficiency or localized water damage. Research indicates that two to three sugar beet crops are often required on infected soil before symptoms become visible.

Visually, the first symptom is the appearance of yellow patches in a field. Within the patch, infected plants will uniformly turn yellow and appear to have a more erect growth habit. Infected beets are smaller in size producing a proliferation of lateral secondary roots (root beard) around the main taproot. The taproot may look constricted with excessive crown growth giving it the appearance of a wineglass shape. Cutting into the tap, vascular tissue will appear discolored and rotted.





Managing Rhizomania

Managing Rhizomania starts with an understanding of how the disease survives and spreads. The disease favors high soil moisture, warm temperatures, short crop rotations and neutral to alkaline soils.

It can be spread in a number of ways starting with soil particles that are carried by wind and water (wind erosion and surface run-off as an example) from field to field. Equipment, tare loads, foot traffic, animals and birds can also carry infected soil to spread the disease as can seed potatoes or other crops that are grown on infected fields in rotation.

The following are management practices that should be followed with vigilance once the disease is identified.

Crop Rotation

Use a minimum 4 year crop rotation.

Plant Resistant Varieties - Plant resistant varieties as soon as the disease is identified whether the disease is in your own or neighboring fields.

- Ask your Holly Hybrids dealer which Vanderhave or Holly Hybrids varieties are the best fit for your operation and Rhizomania infection level.

Manage Soil Moisture - Avoid excessive irrigation and ensure sugar beets are planted to fields that are well drained.

Site Selection - Investigate the field history before planting to ensure appropriate measures are taken.

Plant Early - Early planting helps to establish the crop before conditions are conducive for infection and disease spread.

Plant to Stand - Good plant populations can help reduce disease severity and ensure a vigorous start to the growing season.

Resistance to Rhizomania

The resistance to Rhizomania is conferred by the Rz gene that was discovered in by Holly Hybrids in 1983.

Virtually all Rhizomania resistant varieties now available are based on Rz gene. The level of the resistance of a variety depends on the frequency of the Rz gene in that particular variety .

Holly Hybrids and Vanderhave are leaders in the development of Rhizomania resistant varieties. Our goal, as demonstrated by several hybrids currently under development, is to combine the Rhizomania resistance with the resistance to other diseases and with the ability to produce top yields and top quality, in the presence as well as in the absence of the disease - a breakthrough for the sugarbeet producers into the future.



Call your Holly Hybrids dealer for more information on Rhizomania and the best hybrids to plant in your operation.

Holly Hybrids Sugar Beet Seed 1-888-331-8997 www.beetseed.com
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