

TESTIMONIALS

"At J.C. Bakker and Sons we have been successfully using Dygall for many years. We are one of Canada's largest producers of roses. Applying Dygall to our rose seedlings prior to planting has greatly reduced occurrences of crown gall in our production. I highly recommend this product for use on susceptible host plants."

John Bakker, St.Catharines, ON

"At Corn Hill Nursery Ltd we were having an increased incidence of crown gall in our apples. We decided to try Dygall as a dip before planting. The crops treated with Dygall were virtually free of crown gall. We now use Dygall as a regular part of our planting procedure and would not consider planting without it."

Bob Osborne, Corn Hill, NB

"At Pépinière Ancestrale, we are aware of the risk of contamination of certain bacteria that may have serious consequences on fruit trees and shrubs that we produce. For biocontrol we use Dygall to prevent gall and avoid the spread of this bacterium on our fruit and our soil. Dygall has proven to be additional insurance for our customers!"

Marianne Baril, St. Julien, QC



QUALITY CONTROL

Dygall® is produced under stringent quality control procedures and supplied in 160g packs each containing approximately 5000 million viable bacteria per gram. Unopened packs can be cool stored if required until the expiry date shown.

Dygall® is highly effective - one pack is sufficient to inoculate up to 7500 rose cuttings, 2500-7500 rooted cuttings of plum, euonymus, raspberry, etc. (depending on size of root systems) and up to 10,000 peach seeds.

MORE INFORMATION CONTACT

921 Concession 2 Rd
Niagara on the lake, ON L0S 1J0
Tel: (905) 327 - 9139
Randy@uppercanadagrowers.ca



DYGALL®

BIOLOGICAL CONTROL OF CROWN GALL

WHAT IS CROWN GALL?

Crown Gall, a global bacterial disease, is a significant concern in nurseries cultivating susceptible plants.

Crown Gall is caused by *Agrobacterium tumefaciens*, it forms tough woody galls on plant roots and stems with a rough surface, sometimes exceeding 60 cm in size. Mainly a nursery issue, it disrupts vascular tissues, stunting growth in young plants and weakening older trees through secondary wood rots.



CROWN GALL ON CHRYSANTHEMUM ROOT



GALL ON ROSE STEM

INCIDENCE

Crown Gall was discovered in Canada in the nineteen hundreds and is a bacterial disease of major importance to the Canadian Agricultural and Horticultural Industries. Crown gall has been recorded on a variety of plants including apricots, cherries, nectarines, peaches, plums, pears, raspberries, grapes, chrysanthemums, clematis, euonymus, flowering stone fruits, roses, willow, juniper, cydonia, poplars and many other perennial plants in all parts of Canada. No resistant varieties are know for any susceptible crop.

LIFE HISTORY

The bacterium *A tumefaciens* is a microscopic organism which can multiply rapidly by division. It lives in soil, in galls and on the surface of infected plants both above and below ground. It can live as a free-living organism for several years without the need of a host plant.

The incidence and severity of the disease is greatest where crown gall has already been present, or where galls or infected plants are left in the ground. However, on encountering a susceptible host plant it stimulates the cells of the plant to produce abnormal growths culminating in the formation of a gall. The gall when it has aged, can slough off the plant, liberating many bacteria into surrounding soil. The bacterium enters susceptible plants through fresh wounds made in preparing plants and cuttings at planting time, by cultivating and wrenching implements, and by soil pests.



CROWN GALL ON MALUS SP
(PHOTO OF PEST DIAGNOSTIC CLINIC UNIVERSITY OF GUELPH)

CONTROL

Soil treatment with steam or methyl bromide-chloropicrin mixture can be effective but only if all the crown gall bacteria are destroyed. A small residue of these pathogenic organisms can multiply rapidly and expensive soil treatment does not always provide the degree of control required. However, it is now possible for nurserymen and horticulturists to control crown gall by simply inoculating seedlings, cuttings, peach stones etc., with Dygall® prior to planting.

THE BIOLOGICAL ANSWER

When Dygall® directions on the label are followed, this material should provide a safe, natural and inexpensive but efficient, method of preventing a troublesome disease on many susceptible plants by simply immersing plants in a suspension of Dygall® and nature takes its course. It is important to remember that Dygall® is a preventative for crown gall and should be applied to susceptible plants before exposure to the disease or final field placements as it will not control existing infections. Dygall® is a pure culture of non-pathogenic *Agrobacterium radiobacter* strain 84 produced by Agtech Developments (NZ) Ltd. in New Zealand and now registered for use in Canada under the Pest Control Products Act

