

THE BEGINNING ROSARIAN

Rose Replant Disease
By: J. Scott Rankin, MD



The botanical family Rosaceae (roses, apples, cherries, pears, peaches, and plums) contains the genus *Malus* that includes apple trees. It has long been known by apple growers that planting new trees into soil in which apples have grown previously is associated with stunted growth of the new plant and a high attrition rate. The above-ground symptoms of poor growth are, in fact, the result of poor root development. In the apple industry, this phenomenon is called soil sickness or apple replant disease, and it is now evident that replant illness may be characteristic of the entire family of rosaceae. Although replant problems have been thought traditionally to be host-specific (i.e. apples should not be followed by apples, etc.), it is now suspected that the problem may be more general. Even non-related species of fruit may be involved, and it is clear that roses are affected.

For the rose grower, replant illness may cause a particularly difficult and frustrating experience. After planting a new rose, the plant languishes, with few signs of growth, despite no evidence of pests or disease. The rose just sulks, and growth may be stunted and bloom production minimal, even with excellent care and fertilization. This scenario may continue for a season or two, until either the weakened rose is overcome by disease or the grower loses patience and removes it. Replant disease can be a major factor in causing the new rosarian to lose interest in growing roses and to give up rose culture altogether.

The exact cause of rose replant disease is uncertain. While most rose growers have experienced the malady, controversy exists as to whether or not it is a disease at all, and if so, theories range from “allelopathy”, microorganic or mineral deficiencies, fungal buildup in the soil, nematodes, and autotoxicity. Allelochemicals are metabolic by-products of certain plants that, when introduced into the soil, cause growth inhibition. Symptoms of allelopathy include leaf wilting and yellowing, and death of part or all of the plant. If the theory is that roses produce some type of in-

hibiting chemical into the soil, however, it doesn't explain why other plants have no problem growing in the soil. It also would seem that allelopathy might impact adjacent roses, but this does not seem to occur.

Another theory suggests that decaying rose roots give off a by-product of decay that is toxic to new roses. However, this concept doesn't seem plausible if roses normally grow well in soil richly amended with decaying organic material. Other suggested causes include nutrient or mineral deficiency, fungal build-up, or nematodes - small microscopic worms that gradually build up in the soil and consume the roots of the bush. Another possibility is Armillaria, a soil fungus that attacks oak, yellow pine, willow, raspberries, nut trees, grapes, currants, gooseberries, strawberries, roses and other rosaceous plants. Fully mature rose plants may be able to resist such pathogens as they build up, whereas an immature rose replanted into the affected soil can be consumed.

Rose replant disease has been reported to exist in the soil for up to 20 years. Therefore, leaving the soil fallow is not effective, and no definitive treatment is known. Precautionary steps, however, can be taken. The easiest method is to remove all of the soil in which the previous rose was planted and relocate the used soil to another area of the garden. Since the disorder does not affect non-rose family plants, moving the old soil to another location is not a problem. Then the new rose is planted in entirely new soil. The author prefers clean artificial soil, such as Miracle Grow garden soil “for trees and shrubs”, but many options are available. Planting in a slightly raised bed improves drainage and also is useful.

Suggestions also exist that boosting soil fertility, and hence root growth, with slow-release nitrogenous fertilizer can reduce the severity of the problem. Adding products containing mycorrhizae (symbiotic fungi) to the soil recently has been highlighted. This intervention is still controversial, but these products are unlikely to harm the plants if used as directed, and may be beneficial. In summary, rose replant disease is

characterized by growth stunting observed when a new rose is planted into soil where a rose has previously grown. The malady can be prevented by routinely removing all of the old soil, and planting new roses into entirely clean artificial soil products.

About the author: Dr. Scott Rankin is a practicing physician in Nashville who has attempted to grow roses for several decades. With improved understanding of rose culture, his endeavors are gradually becoming more successful, and the educational efforts of the NRS have been very important towards that effort. He and his wife Sue have hybrid tea roses, old roses, and bush roses, with a particular emphasis on David Austin varieties.

The East Tennessee Festival of Roses

May is shaping up to be the month of roses for Knoxville so please join us as we celebrate “America's National Flower”. Starting with the Dogwood Arts Festival Open Rose Gardens, the month holds many opportunities for the public to see and enjoy the best roses grown in East Tennessee. The Dogwood Arts Open Rose Gardens include several gardens of members of the Tennessee Rose Society and will be open from 12:00 to 5:00 daily on May 9-10th and May 16-17th. For more information, visit www.tennesseerosesociety.org.

A new rose garden is being constructed thanks to a generous gift to the University of Tennessee Gardens. Dr. Mark Windham, Plant Pathologist of UT, has spent many years testing a no-spray collection of roses that will be featured in the new rose garden along with hybrid teas, floribundas, grandifloras, miniatures, shrubs, antique selections, and climbers. There will be a UT Rose Sale on Friday, May 8th., from Noon- 6:00 and Saturday, May 9th, from 8:00-6:00.

A rose show finishes up this exciting month of roses with an outstanding exhibition of roses being held in the Plant Bio-Tech Building on the University of Tennessee Campus on Saturday, May 23rd, with the public viewing beginning at noon.

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