Colt Rootstock May be Answer for Cherry Replant Disease

Replacing an unproductive block of cherries with new cherry trees or interplanting an established block may not always lead to the high yields growers hope for. Too often, a malady referred to as "replant disease" can make a disaster out of an already expensive investment.

In replant situations where cherries follow cherries, it is not uncommon for new trees to be stunted. Symptoms of "replant disease" include slow growth, low vigor, and low yields. In most cases, trees will struggle with these symptoms their entire life, leaving the grower with an expensive investment and no remedy.

The cause of "replant disease" is not totally understood. Most likely, a number of factors adversely affect tree growth. In the Mid-Columbia area of the Pacific Northwest, we believe one potential cause of these problems is root lesion nematodes, Pratylenchus penetrans. This potential relationship is currently being researched by Oregon State University (OSU) scientists.

Soil Fumigation
In a study I conducted between 1989 and 1992, it was shown that soil fumigation, prior to planting, helps to improve tree growth and increase early yields (see Figure 1). Depending on the fumigant, trees growing in treated soil were 53 to 69 percent larger than the control after four years. In addition, trees growing in soils treated with metam-sodium yielded 143 percent more fruit in the fourth leaf.

Herbicide Strip Factor
Dr. Tim Facteau of the OSU Mid-Columbia Research and Extension Center in Hood River also found that it is important to avoid planting into former herbicide strip areas whenever possible.

In a study conducted by Facteau, cherries followed by cherries grew better when planted in former grass alley-ways rather than old tree rows when the entire area was fumigated with methyl bromide. After four years, trees planted in the former grass strips had trunk cross-sectional areas 7.5 cm² larger, and yielded four pounds more, than trees planted in the former herbicide strip (which was also the former tree row).

There are obviously no easy answers to these replant problems. Avoiding sites where former herbicide strips were located is not always possible. In addition, methyl bromide is expensive, dangerous, and targeted to be removed from the market in the year 2000. Metam sodium, also used in my replant study, is expensive and difficult to apply due to the large volumes of water needed to incorporate it into the soil.

Colt Rootstock
Another potential answer to "replant disease" is to use a resistant rootstock. Last fall, a grower asked me to look at a side that he had interplanted. The mature trees in the block were growing on Mazzard rootstock. Interplants were planted in the spring of 1993 and were, therefore, in their second leaf. One block was interplanted with Bing cherries on Mazzard rootstock, with Lapins and Rainier serving as pollenizers. The pollenizers were growing on Colt rootstock. An adjacent block, interplanted at the same time, was planted with Bing on Colt and Van on Mazzard.
In all cases, the interplants growing on Mazzard rootstocks were small and stunted. In fact, they had grown so poorly the first year that the grower pruned them back hard during the first dormant season, hoping to stimulate more vigorous growth. The trees did not respond to this technique and remained small.

Neighboring trees growing on Colt rootstocks, however, regardless of the variety, were vigorous and strong. In fact, in both blocks, the cross-sectional area of the trees on Colt was over twice as large as those on Mazzard. (see Figure 2)

Soil and roots in this block were sampled for root lesion nematodes to see if they might be a factor in the poor growth and development of the trees growing on Mazzard. Nematodes were found in the soil at the rate of 470 per quart and in the Mazzard roots at 192 per gram of fresh roots. It is suspected that these nematode populations are affecting tree growth, but this relationship is not yet established.

The Colt rootstock has been around for a number of years but has never gained wide acceptance in the Pacific Northwest. It is, however, popular in California and is used extensively in Italy in replant situations.

At one time, it was thought that Colt would grow a tree somewhat smaller than Mazzard; however, that has not proven true.

Fruit produced from Bing growing on Colt rootstock was comparable in size to Bing growing on Mazzard, averaging 7.7 grams compared to 7.65 grams.

With the current and future limitations associated with the use of soil fumigants, alternative solutions to this "replant disease" need to be found. Using Colt rootstocks in replant and interplant situations may be one potential answer to this problem.