Hort 510 Seminar Title and Abstract
Emma Steele

TITLE
Performance of 'Bartlett' and 'd'Anjou' Pear Trees Grafted on Cold Resistant Quince Accessions

KEYWORDS: *Pyrus communis*, *Cydonia oblonga*, dwarfing, vigor control, high-density

ABSTRACT

Fruit production worldwide is becoming more intensive with the adoption of high-density planting (HDP) systems obtained with dwarfing rootstocks. These orchards maximize yield and reduce tree vigor and labor costs, improving overall orchard efficiency and fruit quality. Traditional low-density pear orchards are still common in the US due to a lack of available dwarfing rootstocks for pear. Therefore a dwarfing rootstock is needed for the pear industry. Quince rootstocks (*Cydonia oblonga*) have been shown to provide higher precocity, fruit production, and fruit quality by reducing vigor and labor costs associated with larger tree canopies.

For this reason, we are assessing the possibility of adopting cold-resistant quince rootstock in the Pacific North-West Pear industry. A trial with nine quince rootstocks accessions tolerant to cold was planted in 2017 at a commercial pear orchard in Entiat, WA. The experiment was conducted utilizing 'Bartlett' and 'd’Anjou' pears, Washington's most important pear cultivar. Vegetative growth, leaf gas exchange, and yield and fruit quality were assessed for each graft combination over two growing seasons (2020-2021). The most vigorous rootstock was 65.001, and the least vigorous were 68.002 and 118.001 for both 'Bartlett' and 'd’Anjou’. In 2020, ‘Bartlett’ and ‘d’Anjou’ grafted on 57.001 and 118.001 were the highest yielding rootstocks, and 70.001 was the lowest. However, the most productive rootstocks for 2021 were 57.001 and 68.002 for ‘Bartlett’ and 67.001 and 68.002 for ‘d’Anjou’. Fruit weight across all combinations ranged from
213 to 250g/fruit. Out of the 9 CYD accessions, four rootstocks consistently showed positive results in controlling vigor, increasing precocity and productivity, and overall fruit quality. This research provides significant information about quince's advantages as a dwarfing rootstock for US pear production.