

New Machine for Removing Scale from Avocados

Invented and Installed at Calavo Vista Packing House

Robert F. Haymaker

The spread of *Latania* scale through commercial avocado groves resulted in a reduction in grade of those fruits which bore sufficient scale to injure their marketable appearance. Rather than stand the loss occasioned by this reduction in grade; most growers preferred to remove the scales by hand before delivery to the packing house. This was accomplished in various ways as by washing in water, by rubbing with cloths or bristle brushes or, more recently, by soft rubber bath brushes. All of these methods were laborious and time consuming, to say nothing of a certain amount of injury to the fruit by stiff brushes or careless handling.

After various trial and error experiments, the writer discovered in December, 1934, that the bodies of the scales could be removed by applying jets of water under pressure in varying amounts and intensities. The first experiment was made with the use of an ordinary garden hose and nozzle. Continued experiments within the Calavo organization over a period of four years produced results which justified the construction in 1938 of a descaling machine capable of efficiently handling and removing the scale from five tons of fruit per hour.

The machine was installed in the Vista packing house of Calavo Growers in the fall of 1938 and was soon in successful operation. It proved a great boon to growers who were relieved of the tedious work of removing scale by hand.

After a short period of trial the method of operation of this machine has been standardized to the following procedure. The fruit first passes into a soaking tank where it remains for a short time. It is then elevated to an upper part of the apparatus, where, as it revolves over rollers, it is subjected to a large number of high pressure water jets so constructed and located as to afford a direct contact with every point on the surface of each passing fruit. The action of the water jet is to get under the cover of the scale and flip it off very neatly.

There is, however, another difficulty which for a time proved serious. After the scale was thus removed there remained a white wax-like excretion from the body of each scale. Finally by the development of suitable harmless solvents, and the use of very soft revolving brushes, this residue was removed without injury to the fruit. After all this, the fruit is given a shower rinse with pure water, and then air-dried by the use of blowers. The fruit then passes to the grading table, the sizing machines, and finally reaches the bins from which it is packed.

It has been found that running fruit through the descaling machine cleanses it and improves its appearance thus raising the average grade of the cooperative pack and increasing returns to the members.