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**Suggestions and Precautions
for Owners and Operators of**

SWEET CHERRY MECHANICAL HARVESTERS IN OREGON

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Unless the mechanical harvester is operated with the objectives of: (1) maintaining the integrity of the trees, (2) securing cherries with stems attached, (3) obtaining cherries free of dirt, (4) minimizing bruising of the cherries, and (5) immediate brining, the cherries obtained will definitely be off grade and not suitable for manufacture into cocktail cherries.

Preliminary studies of mechanical harvesting of sweet cherries for manufacture into cocktail cherries were made during the 1966 and 1967 seasons, and two harvesters were used during the 1968 season to harvest a commercial quantity of cherries. Although many problems exist which have not yet been solved, at least 17 new harvesters employing the "shake and catch" method have been purchased for use during the 1969 season.

The purpose of this report is to summarize procedures known to maximize yield and grade of mechanically harvested cherries without causing undue damage to the trees. Unlike other cherry-growing areas where sour cherries have already been mechanically harvested for canning, the qual-

ity of the harvested cherries in Oregon will be primarily determined by the grade of the brined cherries obtainable.

Brined cherries from Oregon have received premium prices for those manufactured into cocktail cherries. The premium prices have resulted from high-quality cherries *with stems attached*.

When cherries are bruised, the grade and price are lowered as it is difficult to obtain a cocktail cherry with a uniform red color. Even with the most careful handling of mechanically harvested cherries, they must be brined immediately after harvest or they become so discolored after bleaching that they rate only a low grade or require additional processing costs.

Losses in quality and in the value of mechanically harvested cherries for brining can be substantial. Mechanically harvested cherries with stems attached have averaged 50% less after brining than hand-picked cherries. Bruising may be so severe that the cherries are fit only for glace fruit, which sells at a much lower price than cocktail cherries.

Recommendations for the mechanical harvesting of sweet cherries are given on the opposite side of this sheet.



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Experience with two machines in the Willamette Valley last year as well as with machines in other cherry-growing areas dictates the following recommendations for maintaining brined cherry quality and tree integrity:

- **Harvest Early in the Season**

Cherries that are to be brined should be harvested before they reach full maturity for two reasons: (1) more than twice as many cherries are obtained with stems attached; and (2) only a third as many culls have to be downgraded in the brined cherries.

As the fruit matures, it becomes softer and bruises more easily in mechanical harvesting, ending up with more defects in the brined cherries, which results in a lower grade. Experience last year demonstrated that defects more than offset gains in fruit weight and thus lowered net return. Hence, briners may request that cherries be harvested when they reach 13 to 15% soluble solids.

- **Harvest Early in the Day**

Cherries that are to be brined should be harvested before noon. On the average, the firmer fruit obtained in the morning has 12% more stems attached.

- **Attach Shakers Correctly to Trees**

Where limb shakers are used, the claw must be attached at a right angle to the limb. With truck shakers, the two slip slings must be well lubricated. All tendency to slip is thus accommodated between the two slings instead of occurring between the rubber and the tree.

- **Closely Supervise Shaker Operators**

If all of the fruit is not removed within a 3- to 5-second shake time, additional shaking may result in permanent damage to the tree. Generally, the cost of removing the last 5% of fruit exceeds the price received for this fruit.*

- **Keep Harvester Free of Dirt**

Dirt from the orchard plus cherry juice equals mud. Mud finds its way into the stem end of stemless cherries. Cherry contact surfaces must be kept free of dirt. Thus far, no way has been devised for removing this dirt from the cherries, and they must therefore be hand sorted and dumped as trash.

- **Remove Trash with Blowers AND Hand Sort**

The first year a tree is mechanically harvested, an excess amount of debris is removed along with the cherries. Therefore, in addition to a blower, someone must be stationed by the conveyor of the harvester to hand sort the large pieces of trash enroute to the blower.

- **Brine Immediately**

Mechanical harvesting inevitably bruises fruit much more than hand picking. Bruised areas result in discoloration and other defects unless the cherries are brined immediately. Growers should see their briners for brining instructions.

After the cherries have been brined, they should not be rehandled until they have hardened sufficiently to resist mechanical damage.

- **Keep Dirt Out of Bins**

After bins are filled with brine and cherries, skin off floating trash, then cover to keep dirt out, especially if the bins are to be stacked. Otherwise dirt adhering to the bottom of the bin rails will end up in the cherries. Bin covers are essential to maintaining the quality of the harvested cherries.

*USDA agricultural engineers at Michigan State University say that to secure maximum yield of cherries with stems (1) the stroke of a limb-shaker machine must be longer than the average length of the stems, and (2) the frequency of the stroke should be 400 to 800 cycles per minute.