Wage Plans in Grape Packing

packer output and its effect on costs and quality studied in relation to wage plan, grape variety, proportion of culls

B. C. French and L. L. Sammet

The following article is one of a series of reports on research projects under the University of California Division of Agricultural Sciences. Under the direction of the University of California Division of Agricultural Sciences, the following article is one of a series of reports on research projects. Under the direction of the University of California Division of Agricultural Sciences, the following article is one of a series of reports on research projects.

The job of packing—trimming and placing fruit in boxes—represents the largest single component of labor cost in California grape packing houses. It is the central operation, and the productivity of the packers has an important influence on costs in other segments of the plant.

The principal job performed by the packer is to take field-run fruit from a picking box, trim out defective fruit and place the trimmed bunches in the packing box. Additional miscellaneous operations usually include getting an empty packing box, putting it on the packing stand, stamping the box with the packer's number, and placing or adjusting pads and liners.

The packing procedure is essentially the same in all plants, although there are minor differences in the performance of the miscellaneous operations, particularly in plants using mechanized packing-line equipment as compared with those using nonmechanized equipment. The differences in packing procedure are noted below.

Under the third variation of the plan, a sliding scale hourly wage, plus a piece rate were paid. This involved payment of an hourly wage beginning at 75¢ per hour at low rates of packer output and increasing in increments of 5¢ per hour to a maximum of 90¢ at high output rates. For output exceeding a prescribed amount per hour, a flat piece rate of 9¢ per box was paid.

With all the incentive wage plans, packers were paid at least the legal minimum wage of 75¢ per hour, regardless of their rate of output. The observed pay scale for plants using the flat hourly wage plan ranged from 90¢ to 95¢ per hour. In some cases, a minimum rate of output was required in order to qualify for the job but no incentive pay was given. Two distinct policies for the rate of packer output were noted. Under one plan—called the normal hourly wage plan—the packers worked at whatever rate they chose, given the requirements as to quality of pack and the absence of direct financial incentive. Under the second plan—called the slow hourly wage plan—the workers were encouraged to pack slowly, with both minimum and maximum amounts to be packed per hour.

Individual production records of about 1,500 different packers were studied to compare the average rates of packer output associated with each of the plans.

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the wage plans. Analysis of these data shows the effect of the wage plan used on the rate of packer output and also indicates the effect of variety of grape and proportion of cull fruit. How these factors affect the rate of packer output is shown in the graph on page 2 which indicates a generally higher level of packer output with Emperor than with Tokay or summer grapes, a substantially lower output rate with incentive than with incentive wage plans, and a marked decrease in output rates with all varieties and wage plans as the proportion of cull fruit increases.

Cost Comparisons
Since wage plan and proportion of cull fruit affect the rate of packer output and the costs of direct packing labor with a given variety of grape, both must be considered in studying the effect of the wage plan on costs. Comparisons of costs with different wage plans also must take into account the effect of variations in the rate of packer output on the costs of supplying fruit to the packers and handling culls. The costs of these operations—for convenience called the packer-supply operations—increase as the rate of packer output decreases; and they also increase as the proportion of cull fruit increases.

The costs of the packer-supply operations also vary with the type of packing-line equipment used. However, these differences are relatively small, so that satisfactory comparisons can be made without considering the effects of the type of equipment used. Since nonmechanized equipment was the type most frequently observed, the following comparisons are based on its use.

The effects of variety of grape, wage plan and per cent of culls on the costs of direct packing labor, plus the costs of the packer-supply operations, are shown in the graph on this page. With mechanized packing-line equipment, the costs would be at a level slightly different than shown, but the relationships indicated with respect to variety, wage plan and per cent of culls would be essentially the same.

The chart shows that the wage plan and the proportion of cull fruit have an important effect on costs. With Emperor grapes and 10% culls, for example, the costs of direct packing labor, plus the costs of the packer-supply operations, are estimated as 9.4¢ per box with the straight piece rate wage plan and 13.6¢ per box with the slow-polic yarn rate plan. With 40% culls, these costs are 11.0¢ and 23.4¢ per box. With summer grapes, the per-box costs with 10% culls are 12.4¢ with the straight piece rate wage plan and 21.6¢ with the slow-policy hourly rate plan. The corresponding costs with 40% culls are 13.3¢ and 32.3¢ per box.

Packer Earnings
Estimates of packer earnings with the different wage plans indicate that with low or moderate amounts of culls, earnings per packer hour are higher with incentive wage plans than with the constant hourly wage plans. With heavy culling, this situation is reversed. In packing summer grapes with 10% culls, for example, packer earnings average $1.20 per hour when the piece rate is 10¢ per box, while hourly rate earnings are 95¢ per hour. With 40% culls, however, average piece rate earnings are only 82¢ per hour in contrast with the constant hourly rate of 95¢ per hour. These relationships, of course, hold only for the wage structure specified and they would change with adjustment in either the piece rate or hourly wage levels.

Effects on Quality
A common assumption with respect to the different wage plans is that the quality of the pack is benefited by the slower pace and greater care of packers working on an hourly rate basis as compared with packers working under an incentive plan. To study this question three different analyses were made. They consisted of comparison of relative prices received in the 10 major auction markets for fruit packed under the different wage plans, similar comparisons of quality scores obtained on Thompson Seedless grapes sold in the New York Auction and comparisons of grades of fruit shipped as reflected in inspections made by the Federal-State Inspection Service. However, the nature of the statistical data and the fact that many of the factors affecting quality ratings or relative prices are beyond the control of the packers made the results of the comparisons inconclusive.

One circumstance that may have offset any tendency toward lower quality of pack with the incentive wage plans was the use of larger amounts of supervision with them as compared to the hourly rate wage plans.

Conclusions
An unqualified conclusion from this study as to the best wage plan is not possible because clear evidence is lacking as to the effects of the various wage plans on the quality of pack and on prices received. However, the important benefits of incentive wage plans, in terms of lower costs to the firm and higher packer earnings per hour, suggest that plants paying constant hourly wages could well afford to consider alternative wage plans involving a wage incentive. Increased supervision and the use of a modified incentive wage plan may provide means of maintaining quality while benefiting both packer and firm as the result of increased packer productivity.

B. C. French was Cooperative Agent of the University of California Agricultural Experiment Station and Agricultural Marketing Service, U.S.D.A., at the time the above study was made.

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