

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

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The following article is one of a series of reports on studies of Efficiency in Fruit Marketing made cooperatively by the University of California and the Department of Agriculture, under the authority of the Research and Marketing Act. Detailed reports are available by addressing the Giannini Foundation of Agricultural Economics, 207 Giannini Hall, University of California, Berkeley 4.

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

not great enough, however, to have a significant effect on rates of packer output.

Five different wage payment plans for house-packed fruit were observed in use among the 24 plants studied. These plans fall into two categories: those involving some form of incentive payment per box packed; and those consisting of a straight hourly wage.

In those plants using a flat piece rate method of payment, the workers received a fixed sum for each box packed. During the 1953 season, the rate for house-packed fruit ranged from 7¢ to 10¢ per lug for summer grapes, 7¢ to 8¢ for Emperor grapes, and 9¢ to 10¢ for Tokay grapes.

Three variations of the flat piece rate incentive plan were observed.

Under one plan a sliding scale hourly rate, plus a piece rate were paid. The base hourly wage—varying with the packer's output—ranged from 60¢ per hour for workers packing four boxes per hour to \$1.00 per hour for workers packing 15 to 17 boxes per hour. In addition, the packer was paid a flat piece rate of 5¢ per box.

Under a second variation of the piece rate plan, a flat hourly wage of 85¢ was paid, with an additional payment of 2¢ for each box packed.

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.

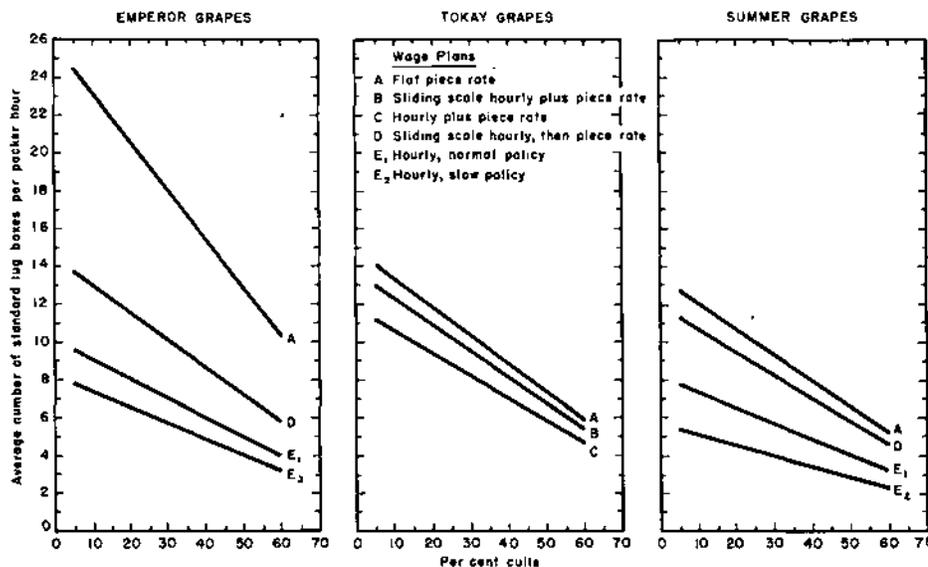
With all the incentive wage plans, packers were paid at least the legal minimum wage of 75¢ per hour, regardless of their rate of output.

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 as to 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 rate 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

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The effect of wage plan and per cent of culls on average rates of packing California grapes.



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WAGE

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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 nonincentive 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 non-mechanized 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 with nonmechanized equipment, 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 used 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 15.6¢ per box with the slow-policy hourly 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 13.8¢ 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.

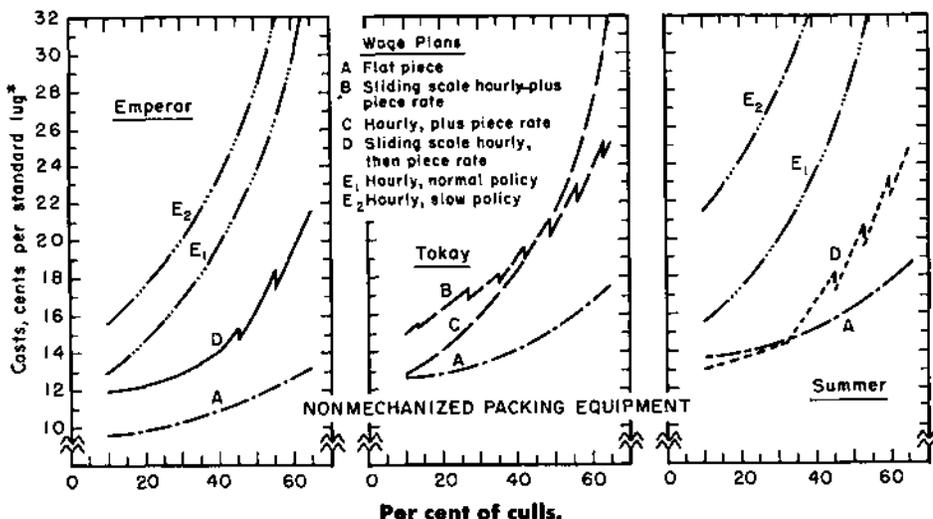
Conclusions

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.

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The effect of type of equipment, variety of grape, per cent of cull fruit and wage plan on the total costs of direct packing labor and packer-supply operations in a plant operating 500 hours per season.



*Costs of direct packing labor and packer-supply operations.