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HARVEST LABOR EFFICIENCY ON HOPS IN OREGON ^{/1}

by

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In 1942 there were 19,300 acres of hops harvested in this State. Aside from small acreages in Jackson, Josephine, and Umatilla counties, the hop industry of Oregon is confined to the Willamette Valley. Marion county alone contains approximately one-half of the State's total acreage. ^{/3} Oregon has ranked first in the production of hops since the close of World War I and now raises about one-half of all the hops grown in the United States.

Need for Harvest Labor Data

Hops in Oregon require a large amount of labor for picking during August and September. (See Figure 1) The supply of mature and experienced farm labor formerly available for harvest and other operations on hops has been materially reduced and it therefore becomes necessary to utilize the services of those who were heretofore not regarded as potential help. The recruitment and placement of thousands of such workers has presented a major problem involving estimates of the number needed. To do this properly requires information on the relative efficiency of individual pickers of different ages and sex. This information has been inadequate.

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^{/3} Thomas, M. D.; Breithaupt, L. R.; and Neilsen, N. I.: Miscellaneous Specialty Crops. Oregon State College Extension Bulletin 595, 1942.



Figure 1. Harvesting hops in the Willamette Valley, Oregon. (Upper) Weighing and checking the picked hops. Each sack is filled to weigh approximately 50 pounds and requires two baskets of hops. (Lower) Loading the filled sacks prior to hauling to a hop drier.

The data included in this report provide basic information on the labor efficiency of hop pickers according to age, sex, and experience and should assist materially in meeting harvest labor problems on this crop in 1944 and later.

Description of Study

In the summer of 1943 information on relative picking accomplishment was obtained by field interview from 413 hop pickers on 8 different farms in the Willamette Valley. These 8 growers, together, produced 500 acres of hops and employed approximately 1,500 pickers. Data were obtained only on Early and Late Cluster varieties of hops of bearing age.^{/1} All farms averaged approximately 1,000 pounds of dried hops per acre in 1943.^{/2}

Each picker was asked not only how many pounds he averaged per day in 1943 but also how many pounds he usually had picked per day in previous years.

Hop harvesting conditions under which these data were assembled varied considerably from "usual" conditions and, as a result, the average amount picked per worker per day for all age groups combined was approximately 10 to 15 percent higher in 1943 than the "usual" amount picked as reported by pickers. This is attributed mainly to the permitted carelessness of pickers in including more stems and leaves than usual in the picked product, the influence of downy mildew disease in reducing the amount of "inside" hops thus affording better picking conditions, and the increased incentive to accomplish more per day due to the high unit price paid.^{/3}

Results of Study

Composition of average picking crew. Sixty-one percent of the pickers were men and women 18 years old and over with the women outnumbering the men better than 2 to 1. Thirty-nine percent of the pickers were youth 17 years old and younger with about as many boys as girls. (Table 1.)

^{/1} Hops of bearing age as referred to in this report included all plantings one year old or over. Many growers consider a hop yard to be practically in full production the year after the first or "baby" crop.

^{/2} The average yield in Oregon for the period 1915-38 was 915 pounds of dried hops per acre and the average price for the same period was 22.2 cents. Kuhlman, G. W., and Fore, R. E. Cost and Efficiency in Producing Hops. Oregon Agricultural Experiment Station Bulletin 364, 1939.

^{/3} The 1943 picking rate on hops was 3.5 cents per pound as compared to a rate of one to two cents that was paid during pre-war years.

Table 1. Distribution of Hop Pickers by Age and Sex

Willamette Valley, Oregon, 1943

Age group	Men and boys		Women and girls		All	
	Number	Percent	Number	Percent	Number	Percent
Under 14 years	36	8.7	37	9.0	73	17.7
14 - 17 years	39	9.4	49	11.9	88	21.3
18 - 55 years	52	12.6	136	32.9	188	45.5
56 years & over	24	5.8	40	9.7	64	15.5
ALL	151	36.5	262	63.5	413	100.0

Length of picking day. There was little variation in the number of hours worked by pickers in the various age groups (Table 2). All pickers averaged approximately 8 hours per day and children under 14 years picked slightly more than 7 hours.

Table 2. Average Number of Hours Picked per Day

Willamette Valley, Oregon, 1943

Age group	Men and boys (hours)	Women and girls (hours)	All (hours)
Under 14 years . .	7.1	7.4	7.2
14 - 17 years . .	7.9	8.0	8.0
18 - 55 years . .	7.9	8.4	8.2
56 years & over .	8.3	8.3	8.3
ALL	7.8	8.0	7.9

Picking accomplishments. The average amount of hops picked in 1943 by all 413 interviewed pickers was approximately 167 pounds per day, or 20.7 pounds per hour (Table 3a). As indicated previously the amount of hops picked in 1943 per picker per day was considerably higher than the amount picked under usual or normal conditions. The usual amount of hops picked by all the 178 pickers who gave their exact ages and the "usual" amounts picked was approximately 149 pounds per day, or 18.4 pounds per hour (Table 3b). There was wide variation in the average amounts picked by individuals in one age group compared with another, and there was some variation according to sex (Tables 3a and 3b). Wide differences also occurred between individuals in the same age and sex group (Table 4).

Table 3a. Average Number of Pounds of Hops Picked per Picker

Per Day and per Hour with Pickers Classified According

To Age, Group and Sex

Willamette Valley, Oregon

(246 pickers - 1943)

Age group	Pounds picked					
	Men and boys		Women and girls		All	
	Per day	Per hour	Per day	Per hour	Per day	Per hour
Under 14 years . . .	85	12.0	90	12.0	88	12.0
14 - 17 years . . .	157	19.8	148	18.9	153	19.4
18 - 55 years . . .	201	25.4	222	26.8	216	26.4
56 years & over . .	186	22.2	226	27.3	209	25.1
ALL	157	19.8	171	21.2	167	20.7

Table 3b.

(178 pickers - Usual or normal)

Age group	Pounds picked					
	Men and boys		Women and girls		All	
	Per day	Per hour	Per day	Per hour	Per day	Per hour
Under 14 years . . .	79	11.1	83	11.1	81	11.1
14 - 17 years . . .	132	16.3	124	15.5	128	16.0
18 - 55 years . . .	179	22.6	199	24.0	193	23.5
56 years & over . .	173	20.3	210	25.2	194	23.1
ALL	141	17.6	154	20.0	149	18.4

Table 4. Average Number of Pounds of Hops Picked per PickerPer Day According to Age of Picker

Willamette Valley, Oregon, 1943, and "Usual"

(246 pickers, 1943 1; and 178 pickers, usual 2)

Age group	1943				Usual		
	Number of pickers	Range in amount picked per day (pounds)	Average amount picked per day Adjusted Actual <u>3</u> (pounds)(pounds)		Number of pickers	Average amount picked per day Adjusted Actual <u>3</u> (pounds)(pounds)	
Under 13 years .	15	80-150	81	81	2	80	76
13 years	18	60-150	94	94	4	80	85
14 years	19	75-175	124	120	7	109	102
15 years	16	100-200	153	141	13	128	120
16 years	17	100-200	161	161	13	133	136
17 years	11	125-260	190	180	10	153	154
18-20 years . .	10	100-300	195	195	3	167	170
21-30 years . .	21	115-275	191	210	16	186	186
31-40 years . .	31	100-300	218	220	29	200	200
41-50 years . .	44	100-400	234	225	41	208	208
51-60 years . .	17	140-300	217	217	16	205	205
Over 60 years .	27	125-400	202	202	24	189	189

1 Information on the exact age of individual pickers was available for only 246 of the 413 workers interviewed.

2 Information on exact age and the "usual" amount of hops picked per day was obtained from 178 pickers.

3 The actual figures were adjusted to fit a smoothed curve. These are the figures that are charted in Figure 2.

In some hop yards a much faster average rate of picking existed than in others. In addition to the factors already mentioned such other factors as experience, incentives, parental discipline over children, and yield of hops per acre, apparently influenced the number of pounds picked per person.

It was impossible to determine from the data collected the separate influence of each of the factors that may have affected the rate of picking. However, it appears that the age and experience of the picker were the two most important factors.

Age of pickers. In the younger groups there was a marked increase in the number of pounds of hops picked per day with each year's increase in age (Table 4 and Figure 2). Among the more mature pickers the rates remained fairly even although the highest average rate per day was accomplished by the group from 41 to 50 years old.

At all age levels there was a wide range in the amounts picked per day which would indicate that influences other than age were also present.

Efficiency of pickers. Considering the number of pounds picked per day and per hour by women 18 to 55 years of age as equal to an efficiency index of 100, the relative efficiencies of the various age groups can be noted in Table 5. The striking thing here is that two children under 14 years of age picked almost as much in a day as an adult. Also note that high school youth (14-17 years old) picked about two-thirds as much in a day, per person, as adults.

Experience of pickers. Those pickers having had one year or more of experience usually picked one-third more hops per day than did those with no previous experience (Table 6 and Figure 3).

Table 5. Relative Efficiency of Hop Pickers per Hour and per Day Considering Women 18-55 with an Efficiency Index of 100

Willamette Valley, Oregon, 1943

(Data from Table 3b representing "usual" conditions)

Age group	Sex	Index of picking	Index of picking
		efficiency per hour (24 lbs. = 100) (percent)	efficiency per day (199 lbs. = 100) (percent)
Under 14 years	Boys	46	40
	Girls	46	42
14-17 years	Boys	68	66
	Girls	65	62
18-55 years	Men	94	90
	Women	100	100
56 years & over	Men	85	87
	Women	105	105

Table 6. Average Number of Pounds of Hops Picked per Day by Pickers Classified According to Age and Experience

Willamette Valley, Oregon, 1943

(Data obtained from 239 pickers showing usual or normal conditions)

Age Group	Pickers with no experience (pounds)	Pickers with one year or more experience (pounds)	All pickers (pounds)	Amount of increase due to experience (pounds)(percent)	
Under 14 years	76	104	81	28	37
14 - 17 years	105	138	128	33	31
18 - 55 years	141	197	193	56	40
56 years & over	147	196	194	49	33
ALL	117	159	149	42	35

Number of pickers per acre. All 8 growers studied averaged approximately 3 pickers per bearing acre of hops during 1943. The number of pickers utilized per bearing acre ranged from 1.5 to 5, and in general, growers stated that the number employed in 1943 compared favorably to that of previous years.

The number of pickers that a grower will employ daily during the harvest season will depend primarily upon the capacity of available drying facilities which limit the amount of hops that can be processed daily. Yield is another important factor affecting the number of pickers employed.

Figure 2. Average Number of Hops Picked per Picker per Day According to Age
Willamette Valley, Oregon, 1943 and "Usual"

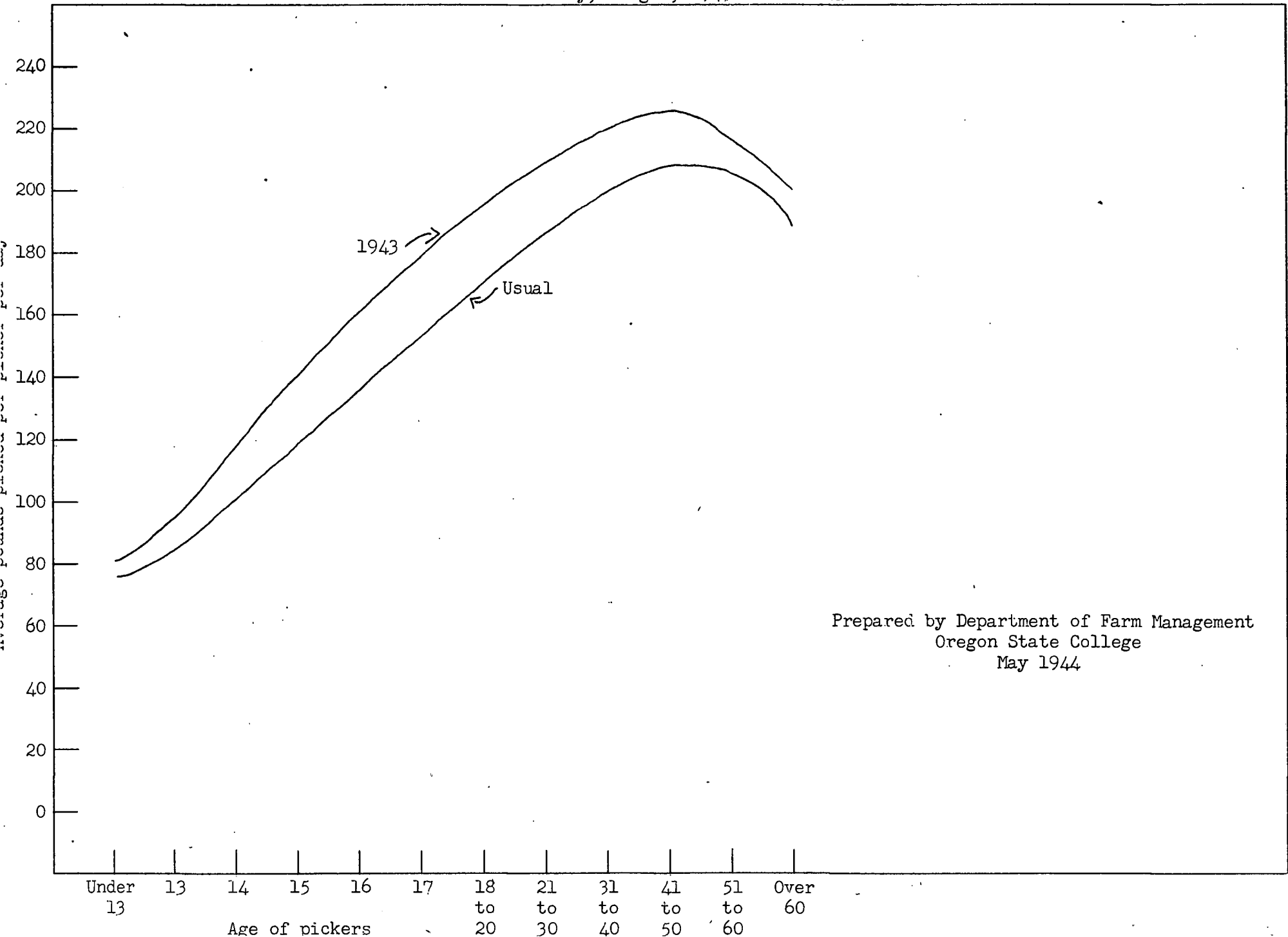


Figure 3. Average Number of Pounds of Hops Picked per Picker per Day According to Age and Amount of Experience
Willamette Valley, Oregon, 1943

