

Where Does The Greenhouse Labor Go

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This work was started about five years ago under the auspices of the New York State Flower Growers and a group of cooperating rose growers. Each of the rose growers kept a record of the number of hours spent each day at the various jobs (these jobs are listed in Table I). The records were kept for periods of one to two and a half years. They were summarized and are shown in Table I.

Four of the growers records were selected and they shall be designated as Grower A, B, C, and D. Grower A tabulated the records for one pair of houses (1 and 2) and six other houses separately. Growers B and D tabulated their houses separately and Grower C tabulated his houses by sections.

The number of rose plants is given for each house or section and it was assumed that a rose plant was growing on a square foot basis. Therefore, the number of rose plants represents the number of square feet of bench area.

The number of days of records and the variety of rose

the greatest amount of re-evaluation. Many of these growers were cutting three times a day. This appears (at certain times of the year) to be rather excessive and could be reduced. There also would appear to be methods of employing some labor saving devices to eliminate the hours spent on this operation.

Ventilating: The "Variation" column shows a variation for ventilating of 13.7 per cent to 3.2 per cent. This variation can be explained. The houses with the lowest percentages were automatically controlled; whereas the high percentages were hand ventilated. It is obvious to see that a great deal of time and labor is spent adjusting the vents. The overall average was 8 per cent which again shows that most of these growers were not using automatic ventilation. It would appear that automatic ventilation would very quickly pay for itself by the savings in labor. Also the automatic controls that are now on the market are doing a job that is as good or better than that done by hand ventilation.

Table 1. Summary of greenhouse labor in four rose growing ranges.

Grower House No.	A 1 & 2	A 3	A 4	A 5	A 6	A 7										
No. of Rose plants	8891	6690	7034	6358	6320	6320										
No. of Days of Records	741	728	728	728	373	373										
Variety	Better Times		Better Times		Better Times		Better Times		Peter's Briarcliff		Golden Rapture					
Replanted during record time																
JOBS	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.
Cutting	41.3	2551	34.9	1617	42.9	2169	33.4	1739	24.3	491	41.8	932	56		56	
Ventilating	13.7	844	9.4	436	9.0	455	8.8	458	11.6	235	7.9	175	9		9	
Watering	3.9	241	3.2	143	5.2	265	11.6	603	5.2	105	4.0	90	4		4	
Tying	21.5	1330	29.6	1372	21.2	1073	27.2	1414	29.1	588	22.7	506	2		2	
Pinching	3.5	219	6.4	294	3.8	190	5.6	292	12.1	244	8.1	180	7		7	
Fertilizing	3.3	203	2.5	117	3.0	150	4.7	245	2.3	47	1.8	40	3		3	
Spraying	5.0	311	3.4	158	3.9	199	3.0	158	2.2	44	2.6	58	4		4	
Sulfur appl.	0.6	44	0.5	24	0.8	45	0.7	38	0.6	13	0.7	16	1		1	
Aerosol appl.	0.1	2	0.1	1	0.6	6	0.1	2	0.1	2	0.2	4	0		0	
Mulching					0.9	44										
House keeping	7.1	438	10.0	464	9.2	463	4.9	254	12.6	255	10.2	227	11		11	
Total Hours	6183		4631		5059		5023		2024		2228					

grown are also shown in Table I. Since a majority of the varieties were hybrid teas not too much can be drawn from the data in regards to variety.

Jobs: Although many of these jobs are specific to rose growing, the principles and generalities drawn should be applicable to any crop.

Cutting: In table 1, the column marked "Variation," the percentages of labor used to cut the flowers were 64.6 per cent to 24.3 per cent and the average percentage was 41.5 per cent. Part of the variation can be explained. The lowest figure was obtained from a house that was replanted while the records were taken. The highest percentage was recorded in a house that was in continuous production. The cutting of roses consumes the greatest amount of labor; therefore, it would appear that this operation needs

Watering: The variation in the watering operation is again rather large; 19.1 per cent to 3.2 per cent. The explanation is that the houses with the lower percentages were using automatic watering and the houses with the high percentages were hand watered. It would appear that some method of automatic watering should be used to save labor.

Tying: This operation, for the rose grower, is a rather large one, with approximately 20 per cent of his labor. The variation was very large in this operation 29.6 per cent to 2.8 per cent. This very large variation, however, can be explained. The houses with the high percentages were using the staking method of growing, which requires constant attention and tying. The houses with the

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lower percentages were using cross wiring, similar to that used by the carnation and chrysanthemum growers. It would appear that this method of support would be well worth looking into and trying (we use this method in our own rose houses and find it very satisfactory, we do not feel that we are getting any more crooked stems with this method than we do with the staking method).

Pinching: There was some variation (15.6 per cent to 3.5 per cent) in this operation. However, this is an area in which the individual grower is the best judge. The amount of pinching is normally dependent on holidays, variety, quality, and a number of other factors. It does, however, show that this operation takes labor and the end results should more than pay for the operation.

Fertilizing: A ten-fold variation (6.0 per cent to 0.6 per cent) was recorded with an average of 2.7 per cent of the labor required to keep the rose plants fertilized. The variation is undoubtedly due to the method of application: Applying fertilizer in a dry form is much slower than a system which applies it in a liquid form through the existing waterlines. This operation can be included in the watering operation and almost be completely eliminated as a labor cost.

Spraying, Sulphur application, Aerosol application and

Mulching: These operations consume approximately 4 per cent of the time. This is another area where conclusions cannot be drawn too closely because so much depends on the individual grower and the amount of disease and insect problems.

Housekeeping: This miscellaneous category used on the average 6.9 per cent of the labor's time. Housekeeping is a necessary operation and one which should be continued. Cleaning up dead leaves, weeds, etc. all help to reduce disease and insect harbors. General maintenance of benches, water and steam pipes, woodwork, etc., are all items that pay dividends.

Summary: We were able to conclude from the averages of all of the jobs recorded in these rose houses that man should be able to take care of 1,000 rose plants per hour—or in a nine hour day—9,000 rose plants. As we suggested in the discussion of each of the jobs, automatic controls or other methods could be used in the growing operation. This would mean that one man would be able to take care of more rose plants per day.

One of the growers who kept these records came to the same conclusion. He followed through on this idea and put more automatic controls in his houses. He reduced his labor force and was able to pay more per hour which he felt enabled him to compete for better skilled labor.

A 8 6047 377	B 1 8400 698		C 1, 2, 3 17,260 931		C 4, 5, 6 12,000 945		D 1 5064 363		D 2 6750 363	
Light-Peter's Briarcliff	Better Times		Better Times Golden Rapture		Better Times Yellow Gloria Talisman		Better Times Golden Rapture		Better Times Garnett	
			Yes		Yes				Yes	
	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%
	1054	39.3	1916	38.7	5209	35.0	3713	64.6	607	44.9
	172	3.2	155	9.4	1259	8.8	929	3.6	34	11.2
	74	5.6	275	17.6	2393	19.1	2031	8.9	37	12.1
	52	26.9	1313	21.6	2909	19.4	2056	5.9	55	5.6
	132	9.7	474	6.7	897	7.6	802	8.4	78	15.6
	65	0.9	46	0.6	86	1.1	118	6.0	56	2.8
	75	4.4	217	1.2	167	2.7	281	5.0	47	3.5
	19	0.8	39	0.2	23	0.5	53	0.7	7	0.5
	5	0.1	1	0.1	13	0.1	12	0.4	4	0.1
		1.7	84	1.0	132	1.5	157			2.0
	222	7.4	359	2.7	370	4.4	464	1.5	14	1.6
	1870		4879		13,458		10,616		939	
										1157

Average Percentage	Variation Min. and Max. Percentages
41.5	64.6—24.3
8.8	13.7— 3.2
8.0	19.1— 3.2
19.5	29.6— 2.8
7.9	15.6— 3.5
2.7	6.0— 0.6
3.0	5.0— 1.2
0.6	1.0— 0.2
0.2	0.4— 0.1
0.5	2.0— —
6.9	12.6— 1.5