Carnations Are Tolerant to a Wide Range of Soil Moistures

by W. D. Holley

Carnations can be grown drier without detriment to production or quality. Considerable saving in labor may be accomplished by less frequent irrigation.

The plants should be adapted to drier soils by watering them each time at approximately the same moisture tension. Carnation plants adapted to moist soils may be severely checked by sudden drought.

Work done at Colorado A & M from 1949 to 1951 established the fact that carnations are not sensitive to soil moistures in the higher range, i.e., when watered at moisture tensions from 3 to 9 inches of mercury. No differences in total production resulted from the different moisture levels, however watering when the soil moisture tension reached 9 inches improved the quality of carnations over those from soils kept more moist. This work was published in detail in Colo. Flw. Gro. Buls. 26 and 27.

To explore the possibilities of growing carnations in still drier soils, 3 levels of soil moisture were tested during the 1952-53 season. The 3 moisture levels used were 9, 15 and 21 inches of mercury, the plots being watered thoroughly when moisture tensions reached these levels. The treatments were randomized within a bench and repeated 3 times. There were 21 White Sim plants in each plot spaced 6 x 8 inches. All plants were pinched, handled and fed in exactly the same manner. The production from September 1, 1952 to May 9, 1953 was graded by taking into consideration weight plus length. Providing the stems met Colorado length standards, they were graded into the following weight categories:

Short--10 to 14 grams
Standard--15 to 24 grams
Fancy--25 grams and up.

The average total production and production within each grade for each soil moisture is shown in Table 1. Variation of the separate plots in each moisture level was small. Although 15 inches of tension produced slightly more flowers the difference is not significant. In fact, through statistical analysis, none of the differences are significant.

Table 1. Average[a] production and quality of White Sim carnations produced by 3 soil moisture levels.

Moisture tension inches of mercury	Grade				Total production
	Split	Short	Standard	Fancy	
9	1.3	16.6	108.3	80.3	206.6
15	4.3	25.6	103.6	81.0	214.6
21	1.6	21.6	104.6	72.3	200.3

a/ Average for 3 plots of 21 plants each.

It should be emphasized that the different moistures were maintained from the beginning of the experiment. In this way plants became adapted to the drier soils. The total salt content of the soil was low. The specific conductance of the soil, as measured by a Solubridge at a 1 to 5 dilution, never exceeded 80.

The plants growing at a moisture tension of 21 inches occasionally showed visible signs of wilting just prior to watering. This moisture level also produced visibly shorter plants and harder foliage. The production or development of the flowers was not retarded, however, and the overall quality was approximately the same.

Table 2 shows the average number of waterings required to maintain each moisture level from Aug. 1 to April 30. These figures point out a real potential for saving labor.

Table 2. Average number of waterings per month required to maintain 3 levels of soil moisture.

Moisture tension inches of Mercury	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	Total
9	6.6	8.3	5.3	3.3	3.6	5.0	4.0	5.3	5.3	47
15	5.6	6.3	5.0	3.3	3.0	3.3	3.0	4.3	4.0	38
21	4.0	5.0	3.0	2.0	2.0	1.6	2.0	3.3	2.6	25.6