

Shoot Removal from 'Sabrina' Roses Improves Stem Quality

Nick F. Gaone¹

Removal of blind and weak growth from 'Sabrina' roses improved stem quality. It was not possible to determine whether improved growth of pruned plants was due to blind shoot removal or improved light. Removal of witches' brooms caused a reduction in the number of very short stems.

By removing parts of plants, it is possible to redirect the movement of carbohydrates within the plant (2,3,4). A

¹*Graduate Research Assistant*

study was conducted at CSU to determine whether greenhouse rose yield could be improved by blind shoot removal. If blind shoots were contributing little food to the plant, or were drawing food from other plant parts, then their remov-

al would enhance plant growth. On the one hand, the plant canopy would be more open, permitting more radiation to penetrate the canopy. On the other hand, a parasitic shoot might be removed from the plant.

The rose variety 'Sabrina', an orange sweetheart, was planted in late July 1982. Temperatures and fertilization schedule were the same as for other rose varieties in the greenhouse, yet the growth of 'Sabrina' was poor. Many of the shoots were blind or extremely short due to an overabundance of witches' brooms.

Methods and Materials

'Sabrina' plants were planted in gravel in a raised bench. The bench was oriented east-west and located at the north end of a fiberglass greenhouse. Plants were watered automatically three to four times daily (depending on the weather) with a fertilizer solution described by Hanan (1). The greenhouse was heated to 62° at night and 72° during the day throughout the time of this experiment. Carbon dioxide levels sometimes reached 1000 ppm during the day when the fans were not running.

Forty-eight plants at one per sq.ft. were divided into four plots of twelve plants each. Shoots in all plots having a visible flower bud were pruned to two five-leaflet leaves about the stem origin on 19 November 1982. The average height of all plants after this pruning was 3 ft. On 22 November, all blind and weak shoots were completely removed from two of the plots, with the other two plots receiving no such treatment. Thereafter, blind and weak shoots were removed once per week from the treatment plots until the end of the experiment in the first week of March 1983.

Flowers were cut to two five-leaflet leaves once a day beginning the week of 2 January 1983 until 6 March 1983. Records included the number of stems cut and the number of stems less than 9 in. in length. Radiation was measured in the greenhouse and in the plant canopy at heights of 5 in. (approx. level of the graft union) and 3 ft. All plants were checked weekly for basal shoot initiation.

Results and Discussion

Rose plants in untreated plots produced slightly more flowers than those in pruned plots (Table 1). However, the number of very short (less than 9 in.) stems accounted for 12.1% of the total production of unpruned plants. The high percentage of short stems was partly from witches' brooms which were left untouched until flowering. Stems from the treated plots were long and vigorous. Only 0.4% of the total production was of stems less than 9 in. long. Production

Table 1. Flowers per sq.ft. and percentage of short stems produced by 'Sabrina' rose plants in the greenhouse from 2 January to 6 March 1983.

	Pruned ¹	Unpruned ²
Flowers/ft ²	14.7	16.8
% of stems less than 9 in. long	0.4%	12.1%

¹All blind and weak shoots, and witches' brooms removed weekly.

²No shoots removed, except for daily cutting of flowers.

from the two treatments was very close except during the weeks from 16 January to 6 February (Fig. 1). It was during this period that the witches' brooms flowered in untreated plots. Flowering during those four weeks was responsible for the slightly higher production in the untreated plots.

None of the plants in either treatment developed new basal stems, although penetration of solar radiation to the graft union was about twice as great in the pruned versus

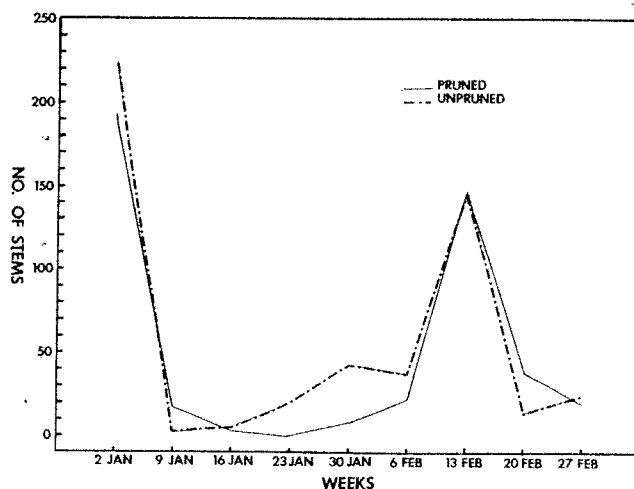


Figure 1. Weekly production from 2 January through 5 March 1983 of 'Sabrina' roses with all blind and weak shoots, and witches' brooms removed ('Pruned') or with no such shoots removed ('Unpruned').

unpruned plots. This absence of renewal canes could be due to the time of year, or to the fact that 'Sabrina' produces few such canes to begin with. As of 29 May 1983, none of the 'Sabrina' plants had new bottom shoots even though this was one month after a cut-back to 18 in. in height.

Literature Cited

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