PUBLICATIONS
1992

FIELD DAY REPORT - 1992

Texas A&M University Agricultural Research and Extension Center at Overton

Texas Agricultural Experiment Station
Texas Agricultural Extension Service

Overton, Texas

April 30, 1992

Research Center Technical Report 92-1

POSTPRODUCTION RESPONSE OF TWO MINIATURE POT ROSE CULTIVARS TO PRODUCTION ENVIRONMENT

Titus M. Kyalo and H. Brent Pemberton

Background. Popularity of miniature pot roses bred specifically for greenhouse culture has been increasing since the first varieties were developed in Europe several years ago. This trend is attributed to their indoor and outdoor decorative value and postproduction performance superior to that of garden varieties. Despite these attributes, these plants exhibit flower and leaf abscission after shipment in darkness. Because of these problems, studies concerning shipping temperature and duration tolerances and use of silver thiosulfate to prevent abscission have been in progress. During these studies, a difference in postproduction performance based on the season of production has been found. This study was initiated to investigate postproduction performance of two cultivars of miniature roses produced under winter and summer-like conditions.

Research Findings. Rooted liners of *Rosa cv.* Meijikatar and Meirutral, commonly known as Orange Sunblaze and Red Sunblaze, respectively, were potted in 4.5 inch pots and placed in controlled environment growth chambers. One chamber provided 14 hours of light with 86/70°F (day/night) air temperature (HTLD-high temperature long day) and the other chamber provided 8 hours of light and 70/63°F (day/night) air temperature (LTSD-low temperature short day). Light intensity in the two chambers was 725 μmoles m^{-2} sec^{-1} (4500 foot candles) supplied by both fluorescent and incandescent sources. After two weeks, the plants were pinched and forced to flower. At harvest stage, five replicates in each treatment were foliar sprayed to run-off with 2 mM STS (silver thiosulfate) or 2 mM AOA (Amino oxyacetic acid); after 24 hours, plants were sleeved, boxed, and placed in simulated shipment at 60°F in darkness for four days. Five replicates were used as shipped and non-shipped controls. Plants were then evaluated in an interior environment under constant 30 μmoles m^{-2} sec^{-1} (180 foot candles) light intensity at 70°F.

Plant shelf-life was significantly affected by the STS and AOA treatments depending upon the cultivar and the growing environment. AOA treated Red Sunblaze plants lasted as long as the non-shipped controls, but longer by 7 days than the shipped controls (Table 1). STS treated Red Sunblaze plants exhibited a longer shelf than AOA treated plants by six days. STS treatment produced similar results for Orange Sunblaze plants, but AOA treated plants had the same shelf-life as the shipped controls and a shorter shelf-life than the non-shipped control by 6 days.

When grown under HTLD conditions, STS and AOA treated plants outlasted the shipped controls by 11 and 6 days, respectively (Table 1). Also, AOA or STS treatment resulted in the

same or greater shelf-life as the non-shipped control. In contrast to HTLD grown plants, LTSD grown plants had the same shelf-life as shipped controls when treated with AOA. But, STS treatment resulted in a shelf-life equal to non-shipped controls. LTSD grown plants exhibited shorter shelf-life in each treatment compared to the HTLD plants.

Application. The data presented indicate that STS and AOA treatments were less effective for lengthening shelf-life of plants grown under winter-like conditions than those grown under summer-like conditions. A possible explanation is that winter grown plants produce more ethylene in response to dark shipping than summer grown plants. Whether temperature or photoperiod differences are responsible for these effects is not known.

Table 1. Effect of cultivar, treatment and production environment on plant shelf-life. Mean separation by Tukey at 5% level. Means within cultivar or environment with the same letter are not significantly different

Cultivar	Treatment	Shelf-life Days	Production Environment	Treatment	Shelf-life Days
Meirutral (Red Sunblaze)	Non-shipped	14.8 b	HTLD (Summer)	Non-shipped	16.12 b
	Shipped	7.5 c		Shipped	9.5 c
	2 mM AOA	14.5 b		2 mM AOA	16.3 b
	2 mM STS	20.7 a		2 mM STS	21.4 a
Meijikatar (Orange Sunblaze)	Non-shipped	15.75 a	LTSD (Winter)	Non-shipped	14.41 a
	Shipped	9.1 b		Shipped	7.1 b
	2 mM AOA	9.7 b		2 mM AOA	7.9 b
	2 mM STS	19.2 a		2 mM STS	18.5 a