

# Hybrid Geranium Shatter



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Production techniques for hybrid geraniums have been successfully worked out, popularity of the hybrid geranium has increased rapidly, and it is now firmly entrenched as a bedding plant. One of the problems that continues to plague this crop, however, is that of petal drop. The flower petals fall off not only during shipping but may also fall off on the bench if the crop can not be moved out of the greenhouse before full flowering is reached. Recent research at Michigan State University has shown that petal shatter is associated with warm temperatures and ethylene concentrations. Figure 1 shows that as temperatures rise, the amount of petal drop increases and petal drop can be held to almost zero with temperatures of 35-40°F. Some growers have already started to move their crops from the greenhouse to coolers during the spring period when flowers start developing. No problems with the plants resulted when they were kept in coolers for up to 4 days.

Ethylene is a natural by-product of fruit and flowers, and as ethylene increases, so does petal shatter. Geraniums appear to be very sensitive to ethylene and petal shatter will occur when concentrations of ethylene are as low as 1 ppm. The longer the duration that the flowers are subjected to ethylene, the greater the shatter. Good ventilation and air movement will help to reduce any ethylene buildup. The grower must also be certain that no extra ethylene is introduced by faulty heaters, or exhaust from trucks.

Thirty-five cultivars of hybrid geranium were tested for tendency to shatter (Table 1). The results were taken over a two year period and a shaker was used to give an objective measurement of shatter. Not all cultivars were tested for both years and there was considerable differences between cultivars. The differences between cultivars may be taken advantage of by the grower by using proper cultivar selection to reduce the problem of petal shatter.

Recent work in developing sprays for application to inflorescences in order to prevent shatter may prove very effective, yet much work remains to be done in this field. It is also likely that breeders will be introducing more double flowered or semi-double cultivars which will not shatter. However, other problems may result such as botrytis on the flowers in the garden.

However, there are things which the grower may do right now. (1) If the plants cannot be shipped at the bud stage, cool the plants by moving them into a cooler or by dropping greenhouse temperatures as low as possible. (2) Keep the greenhouse as ethylene free as possible by maintaining good air circulation and ventilation through the greenhouse or cooler. Check heater discharges and do not back trucks into the greenhouse for loading. (3) Select cultivars which are less prone to shattering.

Table 1. Influence of mechanical shaking on petal abscission of seed propagated geranium cultivars (1978-79).

Cultivar	Year	
	Abscission <sup>z</sup> (%)	
	1979	1978
Bright Eye	13	16
Cherie	22	--
Cherry Glow	33	--
Encounter Red	12	--
Encounter Salmon	21	--
Firecracker	--	30
Fireflash	34	40
Friendship	16	--
Heidi	22	19
Ice Queen	30	31
Innocence	--	22
Jackpot	28	23
Knockout	12	--
Lovesong	--	14
Mustang	15	18
Red Champion	--	36
Red Express	26	--
Red Standard	18	--
Ringo Brick Red	--	23
Ringo Rose	10	--
Ringo Rouge	14	--
Ringo Salmon	25	28
Ringo Scarlet	14	20
Rosita	37	--
Salmon Flash	27	33
Scarlet Flash	--	29
SG 186	15	--
Showgirl	19	--
Sincerity	--	32
Showdon	16	23
Sooner Dp. Salmon	12	18
Sooner Red	39	37
Sprinter White	28	--
Sprinter Salmon	25	--
Sprinter Scarlet	16	16
HSD 5%	13	12

<sup>z</sup>% abscission - (No. of abscised flowers/No. of intact + No. of abscised flowers) x 100.

Fig. 1. The effect of storage temperature on petal shatter of hybrid geraniums.

