COLORADO FLOWER GROWERS ASSOCIATION, INC.

IN COOPERATION WITH COLORADO STATE UNIVERSITY
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Breeding Pixie Carnations

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The miniature carnations first made their appearance as a fresh flower crop in the 1950's. They were difficult to sell at first but, primarily through the efforts of Pomeroy Thomson in New England, the crop has grown in popularity each year. Pixies are not a new idea, however. William Sim of North Berwick, Maine, developed varieties that he tried to popularize around 1940. One very beautiful variety was deep coral with lighter pink edging called Baby Love. Others of his breeding are probably the progenitors of the Elegance and Royalette varieties.

K. Stormly Hansen grew his first pixie (Elegance) in the summer of 1960 near Copenhagen. None of the Danish florists would buy them so he gave a van load of flowers to the major department store in Copenhagen as a promotion venture to popularize spray carnations. Stormly continued these promotions in Copenhagen and Stockholm for several years and no doubt helped start the popularity of this new crop. Lennard Hakansson has taken up where Stormly left off and today miniatures make up at least 35 percent of carnations grown in the Scandinavian countries. Their popularity is on the increase in most of Europe.

The varieties we have today are due primarily to Pomeroy Thomson and his long-time breeder, Sam Carabetta. Sal Greco of Middletown, Connecticut, bred a few varieties and Yoder Bros. have developed varieties recently. Any genetic information on this class of carnations has been private up to this time.

Felix Munoz, a graduate student from Lima, Peru, was learning how to produce seed on carnation at CSU in 1971. Since little had been done with pixies except for the above, we decided to plant a group of pixies for intercrossing. Most of the varieties were fertile, some both ways, so ample seed were produced from the majority of crosses.

Sample sowings were made in March, 1972 of all successful crosses. The seedlings were flowered in small blocks during that summer and the best selections were allowed to flower during the winter and spring of 1973. Some 85 selections including most of the colors were retained for propagation and test flowering during the 1973-74 season.

As was expected, some of the commercial varieties were better parents than others. One pink flowered pixie (Minipink) from Les White's breeding work at CSU in 1967 also proved an outstanding parent. The number of times a parent appeared as either male or female parent in the 85 selections follows:

Parent	Number of times a parent out of 85
Minipink	49
Red Baron	41
Orange Elf	26
Elegance or White Elegance	16
Silvery Pink	11
White Feathers	13
Lemon Drop	6
Yellow 77	5

Three other unnamed seedling parents contributed one time each to selections. This accounting does not mean that the parents are in this order for their value in producing good new varieties, but it is an indication of outstanding potency.

Selections were made on the basis of productivity, uniformity in development of lateral flower buds, color, petalage, size, strength and length of pedicels, and overall show from individual sprays. Figure 1 illustrates one type of uneven flowering that occurrs frequently in seedling populations of pixies. The reverse, where top flowers bloom first and are old before the lower flowers open, is also common. A maximum number of flowers open or buds showing good color at one time is desirable.

Two classes of pixies will probably come from this breeding work as the selections are evaluated further. One class will be the regular miniature with small flowers freely produced. The other class has larger flowers with strong pedicels resembling the large flowered pompon chrysanthemums. We propose to designate this later class "Bouquet" type since the sprays are so easily arranged and so decorative in bouquets.

Notes on each parent that may be helpful to breeders of pixie carnations follow:

Elegance and White Elegance breed the same. Selfed populations contain extreme dwarfs and some late flowering plants. Segregates for all the colors of Elegance sports. Poor seed parent but the pollen interfertile with most other parents. Carries singleness as recessive.

Lemon Drop is fairly fertile as a seed parent. Either it was not tried or was not fertile as pollen parent. Contributed to only 6 of 85 selections. When combined with some parents, produces extreme vigor as well as weak plants. Carries single flower gene as recessive. A good parent for producing the recessive colors such as cream, white, and pencilled patterns.

Red Baron is very fertile both as seed and pollen parent. Produces the desirable small, well formed flowers when crossed with other small flowered parents. Was a parent in 41 out of 85 selections, many of which were red or scarlet. Produces fine yellow or orange pencilled colors when combined with Orange Elf.

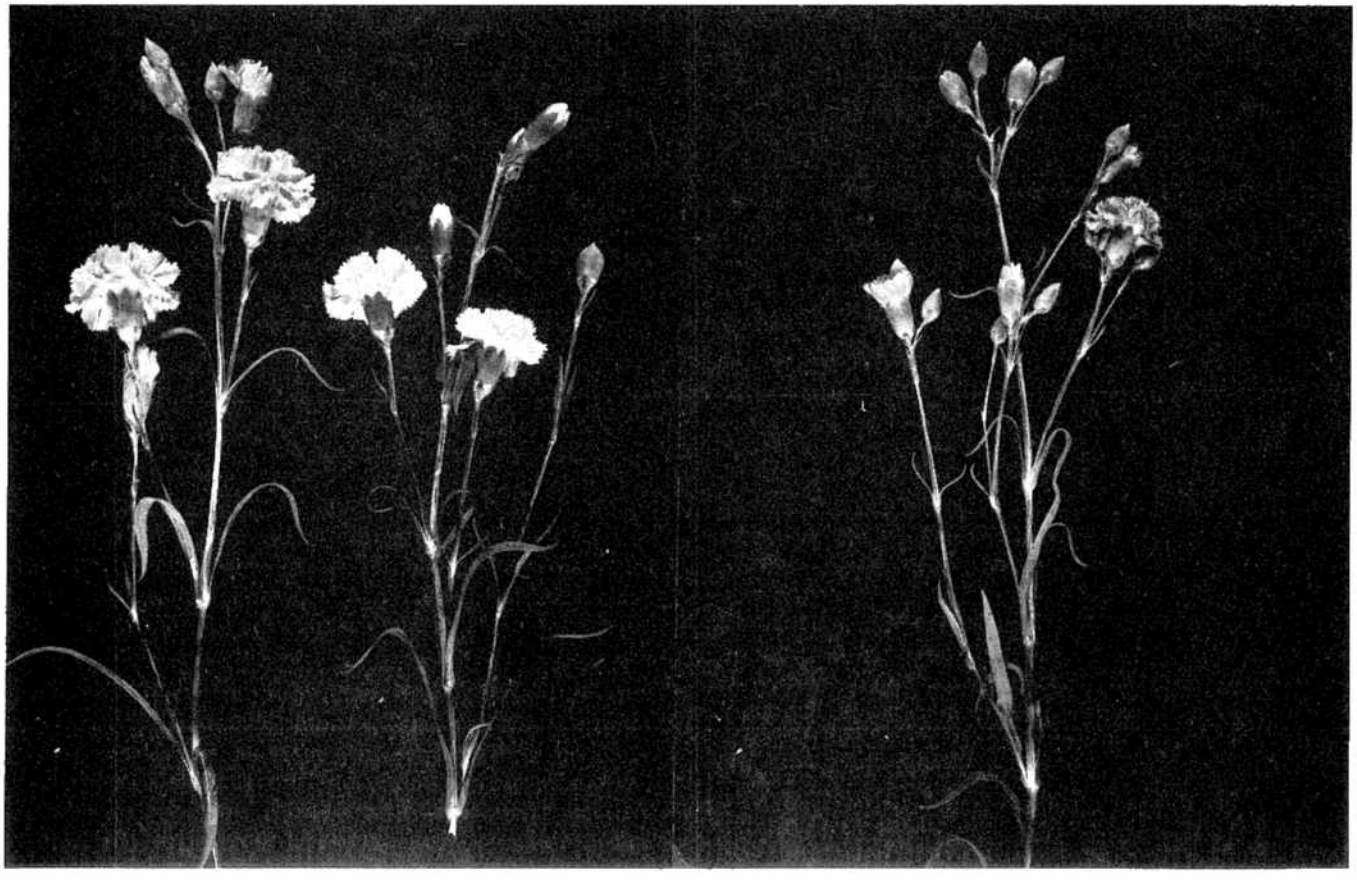

Fig. 1. Uneven flowering causes the discarding of many otherwise desirable pixie carnation seedlings.

Orange Elf is also fertile both ways. As a parent produces many seedlings with improved colors and habits. Orange Elf contributed to 26 out of 85 selections. Many of these selections were scarlet, medium pink, or a brilliant lipstick pink. Most selections from this parent were small flowered.

Silvery Pink is fairly fertile both as pollen or seed parent, especially with select parents. It contributed to 16 of the selections with colors through the salmon shades and medium pink. Silvery pink also carries both frosted and pencilled patterns as recessives.

White Feathers is an outstanding parent in that its progeny is tall, vigorous, and apparently very productive. It is fertile as a pollen parent on fertile seed parents. It is less fertile as a seed parent with the same combinations. White Feathers is not very compatible with Elegance or Lemon Drop. Being a recessive color, all of the more dominant colors carried by the other parent appear in progenies. White Feathers also carries the recessives for pencilling and frosted colors. It carries yellow and buff yellow as recessives.

Minipink is an undisseminated seedling variety selected from the CSU breeding program in 1967. It is too vigorous and brittle for commercial acceptance but it is a desirable light pink color. Until these crosses were made it had not been used as a breeding parent. Minipink contributed to 49 of the 85 selections made. As they are tested further it may prove the best breeding parent tried. Vigor, uniformity in flowering, light pink, light salmon, and buff yellow colors were supplied to progenies by Minipink. It also carries a different type of dwarf gene that appears at about 1 in 16 in the selfed progeny.

Yellow 77 is another undisseminated seedling variety produced in our breeding program in 1967 by crossing Brigadoon with an unnamed yellow seedling. It is the most brilliant yellow I have seen. This variety is pure yellow with no white or pink stripes common in other yellow varieties. The flowers are a bit small when the variety is disbudded as a standard flower. Yellow 77 was not very fertile as a seed parent but produced fair amounts of seed when pollenated with Orange Elf or Minipink. It produced no pollen under our conditions.

Starfire produced no selections in this study but previous crosses with this variety indicate that it breeds as a large flower.