

# Breeding for Better Carnations

by W. D. Holley

There is no question of the value of new models in most industries. Carnation production is probably no exception. Our present varieties, almost exclusively of the Sim strain, offer a wide range of colors, but the color range has been extended almost as far as possible.

Absorption dyes have given us colors not possible in carnations and have served our need for new models for several years. The exploitation of dyed flowers may have limitations also.

From a good business standpoint it should be well to have at least one good new and different variety each year. The retailer likes to have something new in flowers if it's good. He certainly has all kinds of new ribbon, pottery and accessories. It's up to producers of carnations to supply him new models otherwise he may use more of the flowers which do supply something different.

Carnation breeding is the surest way to go broke unless it is kept on a small scale and its principal purpose is the breeder's enjoyment. Plant breeding is an excellent hobby for a carnation grower. It makes him alert to the new and desirable, and it occasionally pays off. There is always the added chance that the entire industry will benefit from the new varieties produced.

Our present stage of carnation varietal development is on a high plateau. The Sim varieties, when grown well, set a very high standard of excellence; one that is almost impossible to surpass unless other bloodlines than Sim are used. The entire carnation industry should be constantly on the alert for new breeding parents--parents that may contribute to our future carnation varieties more desirable characteristics than those presently contained in the Sim varieties.

The mechanics of carnation crossing are easy. When a flower is about half open, pull most of the middle petals out and remove the stamens at this time. The outer several rows of petals are left on to protect the pistil and ovary until it is pollinated and starts to grow. As the stigmas grow out and become fuzzy they are ready for pollination. Dissecting tweezers may be used for grasping an anther of pollen and rubbing it along the stigma. A small bottle of alcohol should be kept handy to dip the tweezers before changing to another kind of pollen. Allow the alcohol to evaporate before handling the next pollen.

We have had best results at Colorado State University when no covering is placed over the flowers. Bees do not work carnations to any extent, especially after cool weather in the fall. Bagging

the flowers often causes the developing seed pods to rot.

October and November have been the best months for seed production in Colorado. Although more seed per pod are produced at this time, carnation seed can be produced any time the temperature is not excess or the light too limited. The seed pods ripen in about two months and the seed germinate readily as soon as they are mature (black in color). Seed may be held for years in a cool, dry storage.

The most important job in carnation breeding is to pick parents which are fertile, that produce pollen, and that transmit desirable characteristics to the seedlings. Each breeder has to discover most of this for himself. Of the past varieties -- Olivette, Peter Fisher, and Northland were very fertile. Sim (any sport) has been a good parent. Most of Yoder's varieties have been fertile. Miller's Yellow is fairly sterile but produces pollen in fall and spring. Orchid Beauty produces a few seed but some pollen. Virginia (all sports) has been sterile both ways.

Dr. Gus Mehlquist has published in "Carnation Craft" and other publications excellent papers on the inheritance of flower color in carnations. In addition to flower color, there are many other characteristics which are of extreme importance in commercial carnation varieties. The major ones with brief observations are:

1. Tall plants with long internodes seem to be dominant to short.
2. The size of flower is complex. Use breeding parents with large flowers to avoid too many medium sized seedlings.
3. Petalage is also complex. Cross a hollow centered parent with a full flowered parent to get best chances of desirable petalage in the offspring. There will be some bull-heads, semidoubles, and possibly singles even with this precaution.
4. The type of growth, whether reproductive, intermediate or vegetative is also a complicating factor. The intermediate type of growth (Sim) seems most desirable at present.

Seedlings from Venus and Miller's Yellow are predominantly the vegetative type, while reproductive seedlings are superior producers of inferior flowers.

5. Cut flower keeping - Use parents that have long cut flower life with better chances of getting seedlings that will keep.
6. Scent is pretty dominant. Scent from either parent can cause a majority of scented seedlings.

A means of evaluating the seedlings quickly is one of the final essentials to success with carnation breeding. The best possible environment and culture will enable you to discard the inferior seedlings and select the best in a minimum of time. It's a lot of fun for you always have something to look forward to -- the next generation.

Your editor

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