

DEVELOPMENT OF NEW CUTFLOWER CROPS

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Abstract

Although there are more than 150 different cutflower crops in Holland, 80 percent of the total turnover of cutflowers comes from only 9 of those. Therefore most crops appear economically unimportant, but in reality are necessary to improve sales of the major crops. At the moment there is a strong interest for new crops. There are several pathways to obtain new crops such as introduction, breeding and selection and changes in production methods.

Various methods can be used to develop new crops. A study was made of the taxonomy and geography of cultivated flower crops. It was found that no plant group or center of origin yielded a dominant portion of the commercial flowering plants. A better way is to describe what kind of crop with what characteristics one desires. The product life cycle describes the different phases from obtaining the original material to market saturation. The profile method can be helpful to decide if a new crop must be introduced or what crop is most promising at a certain time.

1. Introduction

Production and export of flowers and plant has increased very rapidly in the Netherlands during the last twenty years. First cutflower production but later potplants too (table 1). A good information system between consumers and producers is very important to stabilize and enlarge the market for floricultural products. I mention this especially in relation to the development of new flowers and plants, because when we introduce new crops or cultivars we must be well informed about the reaction, feelings and experience of the consumers with these new items.

Also changes in the demand for flowers must be reported very quickly. At the moment, mixed bouquets are very popular in most countries, which means a high demand for *Gypsophila*, *Chrysanthemum parthenium* (matricaria) and other multiflora cutflowers. But what will be the trend within a few years?

On the other hand when we introduce a good new crop it creates its own market. People always wish to buy something new and to look for something else. When we speak about development of new cutflowers, we mostly mean new cultivars of cultivated crops, or small crops which become more popular. Also crops cultivated in other countries can be introduced and produced in larger quantities and other seasons, which means renewing of that crop. Real new crops are very rare. There are several ways to develop a new crop and you can not say which is the best one. Some possibilities are described. We must always be carefully with the success stories of new crops, as we have to realize that at least as many crops have failed.

2. Why new floricultural crops?

There is a large diversity in cutflowers and potplants on the market. During one year more as 150 different cutflower crops are supplied and more as 250 potplant species (Anonymous, 1985). Moreover for many crops there is a large variation in cultivars e.g. 100 rose cultivars. For the main cutflower crops every year new cultivars are introduced and others disappear. There are seasonal crops e.g. tulips, lilacs and yearround crops e.g. roses, carnations. But there is always a big choice.

Although there is a big variation in cultivars, the two main cutflower crops: rose and chrysanthemum form 40 percent of the total turnover of cutflowers and 80 percent of the turnover includes only 9 crops (table 2). This means a few crops are important but by far most crops are very unimportant from an economical point of view. When we speak about a new crop, we usually mean a crop which has been grown for a long time, but suddenly it has received more attention. The demand for new crops is stimulated by the saturation of the market by the main, traditional crops. The strong increase in flower production in the past was mainly caused by a similar increase in sales of the main crops.

Besides market saturation, the need to buy something else, new, and also the fashion stimulates the demand for other "new" crops. The increasing demand for new crops increases the prices which stimulates the growers to grow other crops and to look out for new crops. The expectation to realize a higher profitability by growing new crops promotes the willingness to invest in these crops too.

3. Developing new crops

Is *Alstroemeria* a new crop? No, it isn't. Hybrids of *A. aurantiaca* and *A. ligtu* have been produced in spring and summer for many years. But when you look at the present cultivars, production time and cultivation method, *Alstroemeria* is a new crop, quite different from the past. "New" in this context means different from what we knew about a certain crop until now.

3.1. Possibilities

The main ways to come to new crops are:

- a. Introduction;
- b. Breeding and selection;
- c. Cultivation and other technology.

Introduction

Plant species and crops grown in other countries for flower production or gardening can be introduced and developed for cutflower production. This introduction usually will be accompanied by selection and cultivation research. Some crops introduced recently are *Anigozanthos* (Kangaroo paw) and *Chamaeleucium* (waxflower) from Australia; *Eustoma* from Japan. Sometimes crops are developed in the country where the plant is native e.g. Kangaroo paw in Australia, but *Eustoma* native in Texas, was introduced in Germany and further developed in Japan and

from there it was re-introduced in Europe (Persoon, 1985). Each crop has its own history, but most of them are developed outside their native countries. One of the reasons for this is that the floricultural industry is well developed in the major flower consuming countries and people are always attracted by something new (exotic) and not attracted by what they can see everywhere.

Relatively few plant species are suitable for flower production and always selection is necessary to obtain adapted types. Collecting of plants in the wild, to introduce them as new flower crops, after selection and breeding, can result in new crops, but we have to realize, that important crops in general have a long history in which breeders have added and combined characters which were valuable for a good cut-flower.

Breeding and selection

Most breeding work is devoted to traditional crops. Yearly many new varieties of roses, carnations, chrysanthemums are introduced. This way of renewing is the most important one in floriculture. Besides higher production and improved quality also other flower types and forms can be realised. Miniature carnations, micro-chrysanthemums and spray-roses for example. Breeding new varieties with desired colours and forms can renew the face of existing crops and stimulate the demand. Breeding can enlarge the possibilities for small, unimportant or nearly forgotten crops by improving quality and production, and make them more adapted to modern cultivation techniques. All important crops have a long history of breeding and selection, which have given them their important status. It's not realistic to suggest that we can collect plants in the wild and grow them directly as cutflowers. There are still many wild species which can become good cutflower crops, but they need breeding and selection work. Growers must be willing to invest in these plants to make them to commercial crops. Crops as *Alstroemeria*, *Eustoma*, *Anigozanthos* have shown that there are possibilities.

Cultivation and other technology

A combination of research and cultivation technique has promoted the development of several crops. For instance *Bouvardia* can be produced year-round by daylength control, *Dianthus barbatus* by vernalisation of the unrooted cuttings and *Aconitum* by freezing the corms. Many "summer" or "garden" flowers are produced in spring and autumn. Lengthening of the production period is important for the market, as consumers recognize a product and when the image is positive they will ask for it again.

Also the vegetative propagation method by meristem and tissue culture have promoted some crops e.g. *Cymbidium*, *Anthurium*, *Gerbera*, and with this technique the cultivation of some new crops can be realised. The pretreatment of flowers with compounds containing silverthiosulphate to extend vase life, is another important factor which has favoured some crops.

3.2. Methods

The method of trial and error is used many times in this

research, but it is not a rational way of working. We have tried to find a more systematic way to look for new crops. First we have given attention to the cultivated assortment of cut-flowers and potplants and their taxonomic and geographic classification and other common characteristics (Good, 1974). The crops grown as cutflowers belong to over thirty families, only a small part of the whole plant kingdom, of about 500 families. Thirty families include at least 2000 species each and account for more than half of all the plant species. Six of these large families provide no potplants or cutflowers and six families provide only a few. Two fifths of the large families are not important for floriculture. No wellknown cutflower belongs to the large family of Papilionaceae (10 750 species), and stock (*Matthiola*) is the only cutflower which belongs to the Cruciferae, a well known, large family of the temperate zone. On the other hand some families are very important for cutflower production such as Liliaceae and Amaryllidaceae and Gesneriaceae for potplants. Within these families there are still more possibilities and more attention must be given to other representatives of these families. Some families have certain characters which make them more or less suitable for cutflower production. For example most of the Ranunculaceae, to which belong anemone, *Aconitum* and peony, have the characteristic to drop all the flowerparts at the end of the usually short vase life.

Also the geographic origin of the cutflowers doesn't show main lines as they originate from different climatic zones. The most important thing we have learned from this study is that, in looking for new flower crops some families offer more prospects than do others.

A better way is to describe first the type of flower desired. When there is no desire for a special type, but only a general interest for new crops, then some main characteristics may serve as goals for the search such as vase life and improved production possibilities. People who know the market and cultivation of flowers can collect plants which show possibilities for flower production. When there is enough plant material they can be planted for first tests. Flowering time, production and other visible characters can be described and vase life tested. After collecting and the first tests, some promising crops can move to the developing phase. In this phase breeding and selection can be important to improve some characters and cultivation methods must be learned. Afterwards the new crop can be observed at some nurseries to collect more practical information, to improve further the cultivation methods and to test the reaction of the market. To decide what crops will be introduced, the profile method can be helpful (Kleijn, 1980). With this method new crops or varieties are compared with another or existing competitive crops on basis of added qualitative values. As more knowledge about a crop becomes available more units can be judged. On basis of the score one can decide to introduce a crop or not. During the introduction information between producers, consumers and developing research must be good. When introduction succeeds one can distinguish from product life cycle data the growth phase followed by the adult phase (Opriel, 1985). In the adult phase new impulses are needed by new cultivars with other colours or forms, otherwise the crop will reach the saturation phase (Fig. 2).

With life cycle data the status of consumer reaction can be known for each species or group of flowers. In other words is a new crop desired or are there additional possibilities for the cultivated crop.

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Fig. 1. EXAMPLE OF THE PROFILE METHODE

CRITERIA	value			
	-2	-1	1	2
Marketing aspects				
-competition				
-production period				
-vase life				
Production aspects				
-propagation				
-production capacity				
-need for labor				
-mechanization				
Research aspects				
-breeding				
-cultivation				
Financial and Economical aspects				
-extra investments				
-level of production costs				

Fig. 2. DIFFERENT PHASES IN A PRODUCT LIFE CYCLE

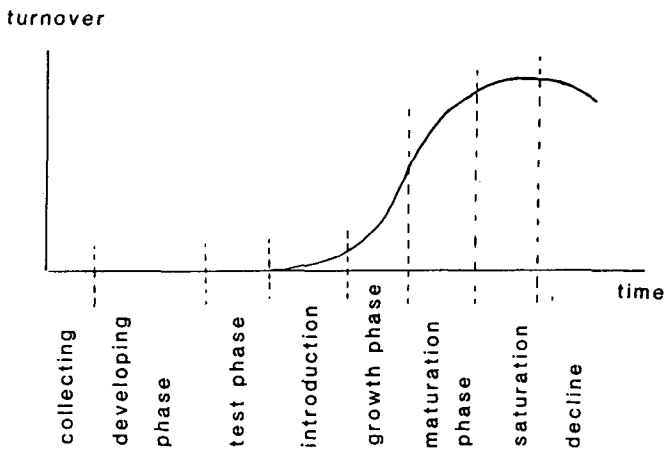


Table 1

PRODUCTION VALUE OF CUTFLOWERS AND
PLANTS IN MILLION DUTCH GUILDERS

	CUTFLOWERS	PLANTS	TOTAL
1965	186	25	211
1970	399	47	446
1975	962	151	1113
1980	1648	411	2059
1985	2501	855	3356

source: PVS.

Table 2

PERCENTAGE OF THE TURNOVER OF THE MOST IMPORTANT
CUTFLOWER CROPS PRODUCED IN 1985 IN HOLLAND

ROSE	22.4	} 40.8%	} 81.3%
CHRYSANTHEMUM	18.4		
TULIP	8.4		
FREESIA	6.9		
GERBERA	6.6		
LILY	6.1		
CARNATION (miniture)	5.5		
CYMBIDIUM	4.4		
CARNATION (standard)	2.6		

Source: PBN