

EXCERPTS FROM THE ANNUAL, 1984, REPORT

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Chrysanthemum/twospotted spider mite. The development of a test method was continued. On five cultivars leaf damage and female offspring were determined per leaf six weeks after infestation. Besides differences in resistance, differences in tolerance were likely to occur. Observations can probably be limited to sampling only a few leaves.

ORNAMENTALS

Carnation

In a joint research project, the anatomical and biochemical backgrounds of host-parasite interactions are being studied as a basis for improving screening procedures and the choice of breeding parents. Particular attention is given to the regeneration of xylem tissue in resistant genotypes after the effective blocking of xylem vessels invaded by the pathogen *Fusarium oxysporum*. Observations include for the first time the reaction of the vascular system in the roots.

On the basis of our previous experience, a number of carnation genotypes of different origins and resistance levels have been selected for this study.

Trials with *Fusarium* isolates from Italy (Garibaldi) have confirmed the existence of at least three distinct pathotypes. Of these, the pathotype commonly found in the Netherlands and elsewhere in Europe is the most aggressive one.

Interspecific hybridisation is being directed primarily towards the development of genotypes that flower early and respond positively to long day treatments in the winter.

Such genotypes play an important role in current research at IVT, in cooperation with the Research Stations in Aalsmeer and Naaldwijk, on the effects of long day treatments in the winter on yield, yield distribution and quality. Common aim is to arrive at the best combination of genotype and cultural procedure for year-round planned production.

Chrysanthemum

It was demonstrated that some cultivars and selections are capable of flowering at half the December light level.

Resistance to *Puccinia horiana* is controlled by a single dominant gene.

Hybrids and backcrosses to *C. pacificum* are very fertile. The backcrosses may be commercially attractive.

Freesia

In phytotron trials it could be confirmed that *Freesia* cultivars and species that give good results in autumn flowering, can support relatively high temperatures during their growing period. The flowering time of *F. parva* in particular proved independent of the temperature regime.

Gladiolus

Stromatinia gladioli is a serious problem, in particular because of the persistence of the sclerotia in the soil for many years. In a new project, the possible contribution of breeding to the solution of this problem is being investigated. A screening method is being developed by means of trials in

which cultivars, species and progenies are planted or sown in infected soil. *G. byzantinus* (84122) showed a high level of resistance.

Hyacinth

A new hybrid, derived from crosses with *H. orientalis*, was awarded a certificate of merit in the variety trial in Hillegom.

Iris

Attempts to overcome sterility in hybrids between Dutch iris and *I. tingitana* were continued by nitrous oxide treatment during hybridization. This resulted in one fertile tetraploid hybrid. The size of the stomata can be used to identify plants with a doubled chromosome complement.

Lily

The effects of different methods of pollination and of the use of related or unrelated pollen parents on pollen tube growth was studied by means of UV microscopy.

The application of the mentor pollen technique resulted in viable seeds from crosses between *Lilium longiflorum* and *L. candidum* and from some backcrosses.

Seed germination trials supported the suggestion that the vernalisation requirement of the seed is an indication of the cold tolerance of the mature plants.

Twenty clones of Asiatic lilies, selected under low light conditions, were compared in a winter flowering trial with a number of cultivars and species. Acceptable flower quality was obtained in a few of the IVT selections, only.

Some other tetraploid genotypes were obtained from many crosses between tetraploids and diploids.

Nerine

Selection continued in more than 100 clones of *N. bowdenii* remaining from a programme of diallel crosses in 1978, a series of 175 clones will be tested next year for *Fusarium* resistance and suitability for year-round cutflower production.

New cut flower crops

Vernalisation trials with *Dianthus barbatus* (Sweet William) have shown a wide genotypic variation in vernalisation re-

quirement. For some genotypes 4 week vernalisation at 2°C proved sufficient.

Continuous long day treatment (17 hrs) proved ineffective as a method to delay flower initiation in cuttings of *Aster novi-belgii* (Michaelmas Daisy). In most cases, however, actual flowering was considerably retarded and branching of the inflorescence was excessive. Interspecific hybrids of *Kalanchoë*, produced with a view to selection of cut flower types, flowered for the first time. Introductions of *Leucocoryne* species, collected in Chile, have been propagated by bulbs and seeds in order to obtain material for a study of their cultural value.

Potplants

Breeding of this group of plants will concentrate on widening the range of flowering potplants: in *Hibiscus* with the aim of year-round production, in *Primula obconica* to obtain new cultivars free of primine, in *Kalanchoë*, to obtain new cultivars in addition to the popular blossfeldiana hybrids, and in *Primula* and *Campanula* to obtain new cultivars flowering between September and May (or year-round).

Rose

Clonal vigour of cut roses on *R. canina* 'Inermis' is determined by vigour of scion variety, as expressed in both aerial and subterranean parts.

In crosses between Hybrid Tea cvs. and old Moss roses, perpetual flowering is determined by one recessive gene (*r*), the moss habit by a dominant gene (*M*).

Tulip

Cultivars and species were tested for suitability for forcing. Genotypes with a low cold requirement and a short forcing period were crossed with two tulip cultivars with good forcing qualities. In total 36 cultivars and selections were tested for resistance to *Fusarium*, of which 17 showed a high level resistance. To investigate differences in resistance to Tulip Breaking Virus, attention will be paid to both the source and the transmission of the virus and the course of the infection.

A number of selections, mostly interspecific hybrids, with good forcing qualities, a high level of *Fusarium* resistance and good keeping quality, were released to the bulb industry. A first release was made of an artificially produced early forcing tetraploid with good keeping quality.