

# THE INSTITUTE OF HORTICULTURAL PLANT BREEDING

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## INTRODUCTION

As long as man has cultivated the earth he has retained the good plants and discarded the bad ones. The varieties we use in agriculture and horticulture are the results of centuries-old selection dating back to the remotest ages. This work has made extremely slow progress. In fact one could but wait and see what Nature happened to create, for hardly anything was known yet about the processes affecting plant life. Not until comparatively recent times, when biology was fully developed, did this, in principle, change. It is true that our knowledge is still far from complete, but we know in what direction we should try to extend that knowledge in order to be able to guide the natural processes in plants in such a way that our ends may be achieved. In this respect we are still on the threshold of a new era full of hopeful possibilities.

The modern science of plant breeding is in the first place based on genetics and cytology, but other scientific fields, too, will more and more supply indispensable links in plant breeding techniques. Certain branches of mathematics, physics, chemistry and physiology will be useful in giving plant breeding, which genetics has already helped forward so much, new and undreamed-of prospects.

## GENERAL PLANNING

All this has also been the guiding principle in designing the new laboratories of the Institute of Horticultural Plant Breeding at Wageningen, in the Netherlands, officially inaugurated on October 29, 1954.

Two contradictory objectives had to be combined. The first question was how to be continually in touch with practical experience and how to enlist the active co-operation of the possessors of this experience, the various kinds of professional men.

The second question was how to make the fullest use of modern science.

With a view to solving this problem the research workers have been drawn up in two battle arrays as it were. A number of crop specialists are lined up on the first front. On the second front we find the specialists in mathematical, chemical, cytological, physiological, and taxonomic research.

The crop specialists are horticulturists especially trained in variety research and plant breeding. Each of them is in charge of a group of crops of which he has to know all the theoretical and practical particulars and perspectives. He keeps in touch with the professional men. He organizes so-called "commercial trials", which are variety trials carried out in different growing centres and judged by juries of professional people (growers, seed producers or nurserymen, merchants, processors, etc.) and scientifically trained experts. He has to find out what problems are of vital impor-

sance. For their solution he conducts field trials and breeding work, or when necessary or useful, he calls in the help of the second front research workers.

In this way team-work develops between crop specialist and mathematician, between crop specialist, chemist and mathematician, between physiologist and mathematician, or any other combination of two or more research workers.

The mathematician has a "computing section" at his disposal with a number of capable computers, who make use of modern calculating machines.

The chemist has a chemical laboratory employing a number of analysts.

The physiologists have a phytotron at their disposal in which plants can be grown under controlled conditions of light intensity and day length, of night and day temperature, and of humidity. Specialists in sexual and asexual propagation work in the same building. The specialist in asexual propagation also has nursery apparatus and trial grounds. The cytologist is a more discreet individual. All he needs is a table, some chemicals and a few microscopes.

It is unnecessary to mention every detail. It may suffice to say that it has been endeavoured to give every specialist the tools he needs most. By making use of the two factors: practical experience and modern science, it is possible both to aim research in a practical direction and to imbue it with a strongly penetrative power.

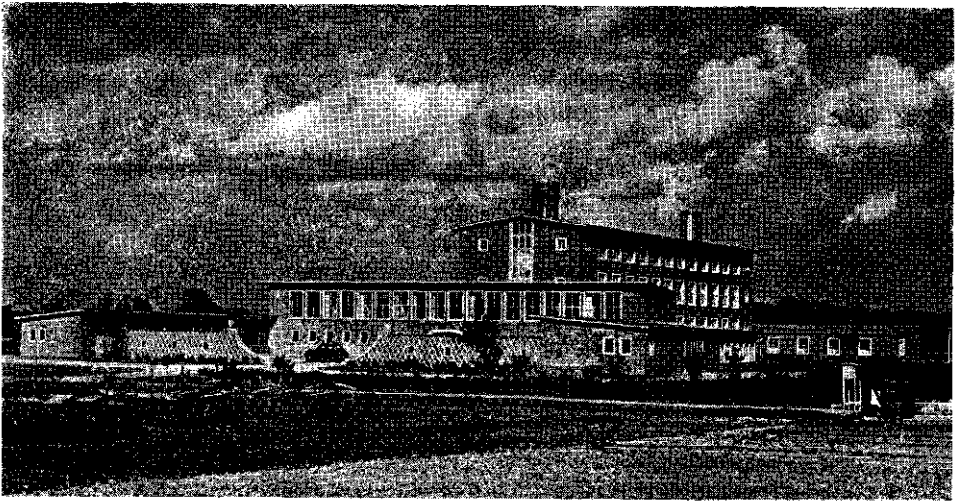


FIG. 1. MAIN BUILDING OF THE INSTITUTE OF HORTICULTURAL PLANT BREEDING

All this work is being done at an experimental garden covering 15 ha at the S. L. Mansholtlaan, Wageningen, and at a breeding establishment covering 40 ha at Elst (O.B.). The main building with laboratories, phytotron and isolation cages have been set up among the trial fields at Wageningen. The breeding establishment at Elst houses an experimental farm and a number of aphidproof isolation cages. Here a *small field laboratory is still under construction*. The staff of the Institute consists of 16 scientific officers, some dozens of technicians, furthermore of garden and clerical staff, totalling about 150 people.

VARIETY TRIALS

Since 1936 the Institute has been acquiring experience with variety trials of horticultural plants. At first the main object in the trial design was to work out statistically and to test mathematically any differences that could be detected. As the years went by, however, it became evident that this was insufficient. In the value of horticultural produce several irrational viewpoints (certain preferences for colours, shapes or tastes which are in themselves immaterial) interact with concrete properties which can be directly expressed in figures.

Also thanks to the nature of horticulture, growers can exert a much greater and more diversified influence on environment than is possible in agriculture. The consequence of this situation is that the evaluation of varieties of horticultural crops is made more difficult by the necessity to ask oneself how a given variety should be treated in order to obtain the best results. Those horticultural varieties which, *under a wide range of growing conditions*, have averaged e.g. the highest yield, the earliest harvests, are mostly too coarse or of too poor a quality, or in some other respect unfit for definite horticultural purposes.

The methodology of varietal research has, therefore, developed into the following three phases:

a. Judgment by eye of simply designed commercial trials in different growing centres by juries of various professional and scientific experts. The varieties and selections to be inspected are indicated by number only.

b. Physiological investigations of interactions between varieties and growing conditions. A distinction can be made between simple field-physiological and sharply aimed laboratory-physiological research, but both kinds of investigations are based on the same principles.

c. Statistical analysis of trial results. This method is no longer the principal one, but as we now aim at analysing only the more sharply defined characters of the plant, the method is becoming more effective. So it remains indispensable.

As it is impossible to investigate all the vegetable crops every year, commercial trials with the most important crops of this section are carried out every six years. With fruit crops the procedure is as follows. During the first two years the varieties are grown in the nursery beds of the Institute. At this stage special attention is paid to healthy growth and disease resistance. Those varieties which pass the preliminary examination are transferred to selection field A, where they are kept for 10 years at most. Worthless material is discarded. Promising varieties are propagated and distributed for further trial among a number of fruit growers throughout the country, and on selection field B. For strawberries about the same procedure as with vegetables is followed.

Physiological and statistical research on varieties partly coincides with the commercial trials (in as far as specific tests have already been developed); partly it is of a more incidental nature.

### MATHEMATICAL SECTION

This department is consulted on the design of all kinds of experiments and on the formulation of conclusions. It carries out all computations. In addition much work is done to improve methods or to adopt them to special purposes. Thus, after intensive studies Mr M. KEULS, mathematician, came to the conclusion that the frequent use of the t-test in connection with an analysis of variance is inadequate. He proposed a more suitable test ('range test') at the 3rd International Biometric Congress. This test is now being more widely used.



FIG. 2. COMPUTING SECTION AT WORK

### PHYTOCHEMICAL SECTION

This section carries out many determinations on medicinal and aromatic herbs, as well as carotene determinations on carrots, anthocyan determinations on strawberries, red cabbage and garden beets, vitamin C determinations on apples etc. Mr J. W. DE BRUYN, phytochemist, specializes in the development of rapid methods for testing large quantities of plants for breeding purposes.

### PHYSIOLOGICAL SECTION

The activities of this section cover the following fields:

- a. Interaction of plant development, temperature, light, and humidity of the air (L. SMEETS).
- b. Sexual propagation of plants (J. P. BRAAK and A. E. ZEILINGA).
- c. Asexual propagation of plants (J. FLOOR).

However, these three fields frequently overlap.

So far Mr SMEETS has studied the influence of temperature, day length and light intensity on cherry seedlings and strawberry plants. Together with Mr J. W. DE BRUYN and the present writer he started an investigation of the influence of temperature on the development of carotene content in carrots.

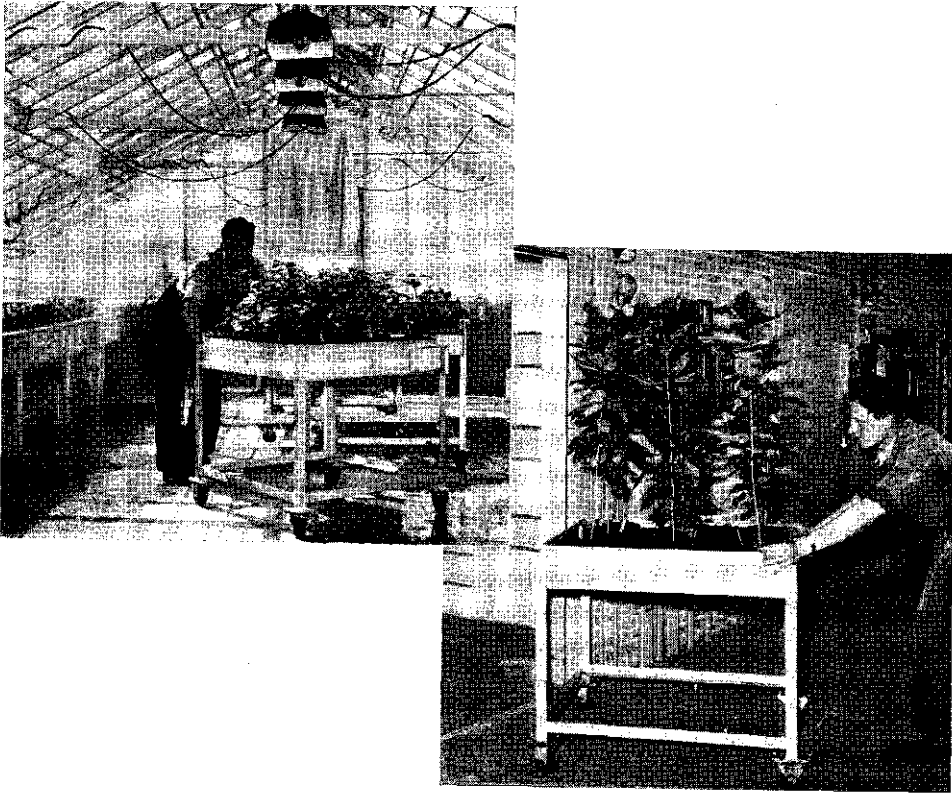


FIG. 3. TRANSFERRING PLANTS ON TROLLEYS FROM GLASSHOUSES TO AIR-CONDITIONED ROOMS IN DAY-LENGTH EXPERIMENTS IN THE PHYSIOLOGICAL LABORATORY OF THE INSTITUTE

Mr J. P. BRAAK and Mr KHO YAM OH are studying the possibility of rendering plants self-compatible by means of temperature control. In co-operation with Mr A. E. ZEILINGA, Mr BRAAK is examining the possibilities of improving species crosses by the use of colchicine, growth-promoting substances and embryo culture. Mr BRAAK also developed an improved method for breeding and wintering flies used in the selfing or crossing of plants. In addition to flies, bees and bumble-bees are used for pollination purposes. Mr A. KRAAI evolved some very practical methods for using bees and bumble-bees not only in large isolation cages but, which proved more difficult, in small ones too.

Since 1950 Mr A. E. ZEILINGA has devoted himself to colchicine research. He developed a very rapid colouring method for squash preparations with a view to obtaining a rapid cytological control of large numbers of colchicine-treated plants.

Mr J. FLOOR is studying the factors which govern the rooting of cuttings and layers, and the union of scion and rootstock. Much of this work is done in field trials but some of these problems can only be solved in his glasshouse or in frames. As regards general methodology, he now pays much attention to the factor moisture (use of plastics and of artificial mists). Together with Mr SMEETS he will also study the influence of the factor light.

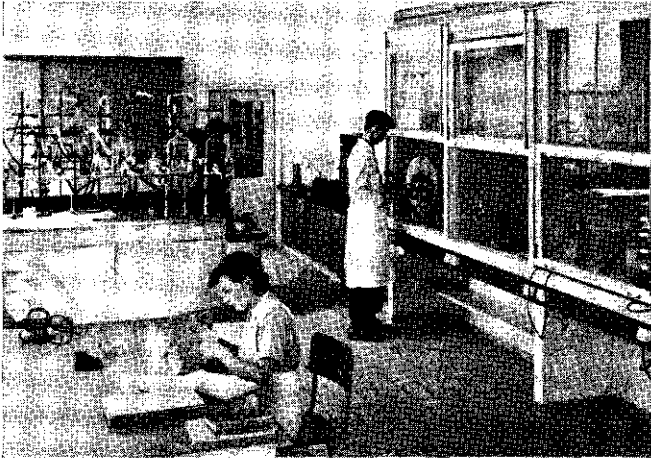


FIG. 4  
CHEMICAL LABORATORY OF  
THE INSTITUTE

#### TAXONOMIC SECTION

Dr B. K. BOOM studies taxonomic and nomenclature problems, mainly of ornamentals. He writes books and articles, cooperates with nurserymen, makes collections and tries to find new plants fit for cultivation. He also assists in collecting material for species crosses of vegetables and fruits.

Mr E. T. NANNENGA and Mr J. A. LEEMANS study the characters of fruit varieties for identification purposes. This is especially necessary for stone fruits and berry-fruits, as otherwise one would not know what varieties one is experimenting with. Experience has shown that in the past many mistakes were made in this respect.

Mr W. E. G. DE BRUIN is in charge of plant introduction. He also checks all reports on new varieties before they are sent to the Board for the Plant Breeder's Right in The Hague.

The workers of this section carry out the investigations on the identity of new varieties, frequently in cooperation with crop specialists, sometimes with committees of nurserymen, as in the case of roses and other ornamentals.

#### PHYTOPATHOLOGICAL SECTION

Originally a department was being developed for research in this field. But since the Institute of Phytopathological Research installed a special division for research on plant disease resistance, we preferred to transfer most of this work to this Institute. We only kept one technician to assist the crop specialists in practising inoculation work as part of their selection schemes.

#### BREEDING WORK

Where private plant breeding companies can and are willing to do the actual breeding work we restrict ourselves as much as possible to the investigation of breeding problems. Where they can not or will not do so, it is our task to do the breeding work. But in order to be able to advise the private plant breeders in their practical difficulties,

we sometimes have to go the whole way of breeding a new variety as this is the only way of learning all the problems involved. As there is a good cooperation with the businessmen in this field, we may expect that any difficulty that might arise here, will find a reasonable solution.

The testing of plants of newly bred populations in general comprises the same elements as the testing of varieties mentioned above.

Difficulties in the field of selfing, crossing, propagation and periodicity control of the plants can be studied in the physiologic section.

It is impossible to describe all the breeding projects under way. Therefore I will only mention the name of each of the crop specialists in alphabetical order and say a few words on some of their projects.

Mr J. M. ANDEWEG bred some new scab-resistant cucumbers, which will be tested further, before releasing any of them. He also raised a new bean variety ("Widusa"), which will be introduced in 1955. Furthermore he works on tomatoes and peas.

Dr O. BANGA tries to breed a red *Delphinium*, radishes with better thrashable siliques, better transportable onions, carrots with a higher carotene content and monogerm red beets of improved quality.

Mr J. BEKENDAM is studying the breeding situation of ornamentals in Holland; he also has a few projects of tobacco-improvement.

Mr A. S. DE BRUYNE is breeding for higher disease resistance in apple, pear and plum varieties, and tries to improve their commercial value.

Mr G. ELZENGA has a large programme of investigating and improving the culture of medicinal and flavouring herbs. He carries out breeding work in *Angelica*, *Artemisia*, *Atropa*, *Digitalis*, *Lobelia*, *Rheum* and *Valeriana*.

Mr C. J. GERRITSEN aims at obtaining large-fruited cherries that are resistant to diseases and to cracking of the fruits. Together with many others, he organized the selection of the best walnuts from the seedlings which are to be found all over the country. The result is that a good variety, the so-called Bel-nut, is now being propagated by nurserymen. In a few years the young trees can be planted.

Mr J. HUYSKES succeeded Mr SNEEP in 1954 and took over his work. Important items on his working programme are the breeding of homozygous male asparagus plants, and of new lettuce varieties adopted to summer use or to short days in winter, with resistance to tip-burn and (or) to mosaic virus.

Mr SNEEP did a lot of work in spinach, which will be published in the near future.

Mr J. R. JENSMA specialises in cauliflower problems. He tries to breed cauliflower varieties with more resistance to drought and others that can be grown in rather cold, dark weather. He is also breeding for resistance to clubroot in cabbage.

Miss H. G. KRONENBERG makes a lot of strawberry crosses, in order to get a new strawberry variety that is better suited for processing, deep freezing, and fresh use. In addition it has to be resistant to *Verticillium*. Some of her new seedlings are now on trial all over the country. She is also breeding new raspberry varieties resistant to *Amphorophora rubi*.

Mr L. F. J. M. VAN DER VEN, our guest-associate, just started his new project of improving the whole culture and the variety material available of *Mentha*.

O. BANGA

SAMENVATTING

*Het Instituut voor de Veredeling van Tuinbouwgewassen*

Een overzicht wordt gegeven over de algemene opzet, de taakverdeling en de taakbezetting van het I.V.T. Bij de organisatie van het werk wordt er naar gestreefd enerzijds de vinger op de pols van de praktijk te houden en anderzijds zoveel mogelijk gebruik te maken van de moderne wetenschap. Vandaar enerzijds de praktijkproeven en anderzijds scherp gespecialiseerde laboratoria en onderzoekapparatuur.

Tenslotte wordt een overzicht gegeven van een serie kweekprojecten, welke juist voltooid of onderweg zijn.



MEDEDELINGEN 1)

VAN HET INSTITUUT VOOR DE VEREDILING VAN TUINBOUWGEWASSEN

4. Algemene Veredelingsdagen 1946. Verslag van voordrachten en discussies. Maart 1947 . . . . . f 0,50
5. **Banga, O.** Rassenkeuze en rassenveredeling bij groentegewassen in Oostenrijk. November 1947 . . . . . Uitverkocht
6. **Banga, O.** Krotenstudies, Nov./Dec. 1947 . . . . . f 0,25
  - I. Invloed van de zaaitijd op de productiviteit van de krotten.
  - II. Invloed van de zaaitijd op de loofontwikkeling van krotten.
7. **Banga, O.** De veredeling van de aardbei in de V.S. van Amerika. December 1947 . . . . . f 0,60
8. Algemene Veredelingsdagen 1947. Verslag van voordrachten en discussies. Juli 1948 . . . . . f 1,15
9. **Banga, O.** De veredeling van tuinbouwgewassen in de V.S. van Amerika. Juli 1948 . . . . . Uitverkocht
10. **Banga, O.** Krotenstudies. November 1948 . . . . . f 0,25
  - III. Vernalisatie en deveralisatie van bieten.
  - IV. Verschillen in schiet-neiging bij verschillende rassen en selecties van platte of ronde krotten.
11. Algemene Veredelingsdagen 1948. Verslag van voordrachten en discussies. December 1948 . . . . . f 1,05
12. **Banga, O.** Het kweken van nieuwe vruchtboomonderstammen in Engeland. Maart 1949 . . . . . f 0,20
13. **Banga, O.** en **Hester G. Kronenberg.** Teelt en veredeling van aardbeien in België. Juni 1949 . . . . . f 0,20
14. **Banga, O.** Krotenstudies. Juli 1949 . . . . . f 0,50
  - Y. De inwendige vleskleur van krotten. Haar beoordeling bij rassenvergelijking en selectiewerk.
15. **Andeweg, J. M.** Veredelingsdoeleinden en -resultaten bij de tomaat. September 1949 . . . . . f 0,20
16. **Hubbelling, M.** Veredelingsdoeleinden bij slabonen. September 1949 . . . . . f 0,20
17. Algemene Veredelingsdagen 1949. Verslag van voordrachten en discussies. Mei 1950 . . . . . f 1,40
18. Zeventien korte artikelen voor boomkwekers. Juni 1950. Uitverkocht
19. **Banga, O.** Krotenstudies. September 1950 . . . . . f 1,50
  - VI. De invloed van het loof op de groeisnelheid van de knol.
  - VII. Classificatie van platte en ronde krotten naar knolindex, niveau van loofprestatie en groeisnelheid.
20. **Andeweg, J. M.** en **M. Keuls.** Practijkproeven tomaten 1948-1949. October 1950 . . . . . f 0,75
21. **Banga, O.** Krotenstudies. November 1950. VIII. Veredelingsmethodiek bij de rode biet . . . . . f 0,25
22. **Kronenberg, H. G.** Teelt en veredeling van fruitgewassen in Zwitserland. December 1950 . . . . . f 0,25
23. **Banga, O.** en **J. Sneep.** Veredeling van tuinbouwgewassen in Denemarken. December 1950 . . . . . f 0,25
24. **Floor, J.** Het enten van noten. Januari 1951 . . . . . f 0,35
25. **Floor, J.** De vermeerdering van onderstammen voor fruitgewassen. Augustus 1951 . . . . . f 0,75
26. **Banga, O.** Bescherming van de kwekerseigendom. September 1951 . . . . . f 0,40
27. **Sneep, J.** Selectie op het juiste tijdstip. Sept. 1951 f 0,35
28. **Floor, J.** Onderstammenonderzoek. Sept. 1951 f 0,40
29. **Gerritsen, C. J.** Walnotenteelt. September 1951 f 0,35
30. **Kronenberg, H. G.** (I.V.T.) en **H. J. de Fluiter** (I.P.O.). Resistentie van frambozen tegen de grote frambozenluis *Amphorophora rubi* Kalt. October 1951 . . . . . f 0,40
31. **Sneep, J.** De betekenis van de andromonoecische planten voor de veredeling van *Asparagus officinalis* L. November 1951 . . . . . f 0,35
32. Algemene Veredelingsdagen 1951. Verslag van voordrachten en discussies. Maart 1952 . . . . . f 2,50
33. **Banga, O.** Protection of the breeder's work. April 1952. Uitverkocht
34. **Sonnville, P. de.** De mirabelleteelt. April 1952. f 0,40
35. **Kronenberg, Hester G.** Nieuwe aardbeirassen in West-Europa. Juni 1952 . . . . . Uitverkocht
36. **Hofstra, R.** en **M. Keuls.** Onderzoek naar de opbrengst van nicotine van *Nicotiana rustica* (L.) over de jaren 1949-1950. Juli 1952 . . . . . Uitverkocht
37. **Banga, O.** en **M. Keuls.** Practijkproeven wortelen Amsterdamse Bak 1949-1950. Juli 1952 . . . . . Uitverkocht
38. **Banga, O.** en **M. Keuls.** Practijkproeven zomerwortelen 1949-1950. Juli 1952 . . . . . Uitverkocht
39. **Kronenberg, H. G.** Veredelingswerk met de aardbei op het I.V.T. October 1952 . . . . . Uitverkocht
40. **Floor, J.** Proeven met vermeerdering door entstekken. October 1952 . . . . . f 1,25
41. **Banga, O.** Some factors in the growth rate of red garden beets. November 1952 . . . . . f 0,45
42. **Sneep, J.** Practijkproeven met Westlandse Boerenkool 1949-1950 en 1950-1951. December 1952 f 1,—
43. Een bos enthoutjes. Januari 1953 . . . . . f 1,35
44. **Banga, O.** Practijkproeven met Ronde Rode Radijs 1951-1952. Februari 1953 . . . . . f 0,65
45. **Gerritsen, C. J.** De rassenkeuze bij de Walnoot. Maart 1953 . . . . . f 1,15
46. **Kronenberg, H. G.** De veredeling van Klein-Fruit in de Ver. Staten van Amerika . . . . . f 0,65
47. **Banga, O.** en **M. Keuls.** Practijkproeven met Berlikumer Wortel 1949. April 1953 . . . . . f 0,65
48. **Gerritsen, C. J.** Welke kersen moeten we planten. April 1953 . . . . . f 0,45
49. **Banga, O., M. Keuls** en **M. Wattel.** Practijkproeven met Flakkeese Winterwortel 1950-1951. Mei 1953 . . . . . f 0,90
50. Algemene Veredelingsdagen 1952. Verslag van voordrachten en discussies. Juni 1953 . . . . . f 1,50
51. **Sneep, J.** Practijkproeven met Spitskool 1949-1950 en 1950-1951. Juli 1953 . . . . . f 0,65
52. **Boorn, B. K.** Internationaal reglement voor de naamgeving van gekweekte planten . . . . . f 0,75
53. **Kronenberg, H. G.** en **F. Garretsen.** Opbrengstproeven met aardbeiklonen. November 1953 . . . . . f 0,35
54. Veredelingsdag Groentegewassen 1953. Verslag van voordrachten en discussies. December 1953 . . . . . f 1,—
55. **Floor, J.** Planten in plastic. Januari 1954 . . . . . Uitverkocht
56. **Banga, O.** Taproot-problems in the breeding of root vegetables . . . . . f 0,25
57. **Jensma, J. R.** en **A. Kraai.** Practijkproeven met Rode Kool 1950-1951. Juni 1954 . . . . . f 1,10
58. **Jensma, J. R.** en **A. Kraai.** Practijkproeven met Spruitkool 1950-1951. Juli 1954 . . . . . f 0,85
59. Veredelingsdag Fruitgewassen 1954. Verslag van voordrachten en discussies. Augustus 1954 . . . . . f 0,95
60. **Kraai, A.** The use of Honey-bees and Bumble-bees in breeding work. September 1954 . . . . . f 0,45
61. **Jensma, J. R.** en **A. Kraai.** Practijkproeven met Witte Kool 1952-1953. Februari 1955 . . . . . f 1,35
62. **Banga, O.** en **J. W. de Bruyn.** Selection of Carrots for Carotene Content. Februari 1955 . . . . . f 0,25
63. **Kronenberg, Hester G.** en **L. M. Wassenaar.** Practijkproeven met aardbeirassen 1952-1954. April 1955 . . . . . f 0,90
64. **Keuls, M.** en **J. W. Sieben.** Two statistical problems in plant selection. April 1955 . . . . . f 0,35
65. **Banga, O.** The Institute of Horticultural Plant Breeding. April 1955 . . . . . f 0,25

PERSBERICHTEN UITSLAGEN PRACTIJKPROEVEN

- 18- 1-'50. Uitslag Practijkproeven Tomaten 1948-1949.
- 10- 3-'50. Uitslag Practijkproeven Wortel Berlikumer 1949.
- 4-10-'50. Uitslag Practijkproeven Tuinbonen 1949-1950.
- 29-11-'50. Uitslag Practijkproeven Bak- en Zomerwortelen 1949-1950.
- 29-11-'50. Uitslag Practijkproeven Platronde en Ronde Krotten 1949-1950.
- 12-12-'50. Uitslag Practijkproeven Pronkbonen 1950.
- 21- 3-'51. Uitslag Practijkproeven Westlandse Boerenkool 1949-1950.
- 3- 9-'51. Uitslag Practijkproeven Spitskool 1950-1951.
- 7-12-'51. Uitslag Practijkproeven Flakkeese Winterwortel 1950-1951.
- 23- 1-'52. Uitslag Practijkproeven Vroege en Herfst Rodekool 1950-1951.
- 31- 3-'52. Uitslag Practijkproeven Spruitkool 1950-1951.
- 4-11-'52. Uitslag Practijkproeven Ronde Rode Radijs 1951-1952.
- 4-11-'52. Uitslag Practijkproeven Vroege Rijspeulen 1951-1952.
- 25-11-'52. Uitslag Practijkproeven Lange Krotten 1951-1952.
- 23- 1-'53. Uitslag Practijkproeven Radijs Ronde Scharlakenrode Extra Kortloof 1951-1952.
- 13- 5-'53. Uitslag Practijkproeven Bewaar Rode Kool 1951-1952.
- 10- 9-'53. Uitslag Practijkproeven Vroege Witte Kool 1952-1953.
- 18-12-'53. Uitslag Practijkproeven Herfst Witte Kool 1952-1953.
- 3- 6-'54. Uitslag Practijkproeven Bewaar Witte Kool 1952-1953.
- 17-11-'54. Uitslag Practijkproeven Stoksnijbonen 1953-1954.
- 2-12-'54. Uitslag Practijkproeven Ronde Rode Witpunt Radijs 1953-1954.
- 12- 2-'55. Uitslag Practijkproeven Knolselderij 1953-1954.

Zijn geplaatst in diverse tuinbouwbladen.

**RASSENLIJSTEN<sup>1)</sup>**  
**UITGEGEVEN DOOR HET INSTITUUT VOOR DE VEREDLING**  
**VAN TUINBOUWGEWASSEN**

Eerste Beschrijvende Rassenlijst voor Griendhout, 1940. Redacteur Ir W. D. J. Tuinzing. (Uitgegeven door de N.A.K. maar verkrijgbaar bij het I.V.T.) . . . . . f 0,17  
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Iepen, 1947. Redacteur Prof. Dr G. Houtzagers . . . f 0,50  
 Zevende Beschrijvende Rassenlijst voor Groentegewassen. 1955. Redacteur Dr O. Banga . . . . . f 1,75

**JAARVERSLAGEN<sup>1)</sup>**

**VAN HET INSTITUUT VOOR DE VEREDLING VAN TUINBOUWGEWASSEN**

Jaarverslag 1950. 1 (1951) . . . . . Uitverkocht  
 Jaarverslag 1951-1952. 2 (1954) . . . . . f 3.50

**PUBLICATIES VAN HET INSTITUUT VOOR DE VEREDLING VAN**  
**TUINBOUWGEWASSEN IN ANDERE ORGANEN OF IN BOEKVORM**  
**EVENTUEEL IN SAMENWERKING MET ANDERE INSTELLINGEN<sup>2)</sup>**

De publicaties, waarvan prijs en uitgever worden vermeld zijn verkrijgbaar in de boekhandel. Overigens wende men zich tot de opgegeven bronnen of tot de Bibliotheek van het I.V.T.

**Boom, B. K.** Coneaster waardij en Coneaster franchetti. De Boomkwekerij 9, 1954: 55.  
**Sneep, J.** Selection and breeding of some brassica plants. Rep. 13th Int. Hort. Congress London 1952, p. 422-426.  
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**Schaap, A. A.** De opkweek en de selectie van appelzaailingen bij het I.V.T. Groenten en Fruit 9, 1954: 739.  
**Wassenaar, L. M.** Doordragende of remonterende aardbeien. Groenten en Fruit 9, 1954: 766-767.  
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**Bruyn, J. W. de.** Jaaroverzicht exportcontrôle. V.N.K.-Nieuws, Januari 1954: 3-4.  
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<sup>1)</sup> Zolang de voorraad strekt kunnen deze publicaties franco worden toegezonden, na ontvangst van het vermelde bedrag op giro no. 425340 van het Instituut voor de Veredeling van Tuinbouwgewassen, S. L. Mansholtlaan 15 te Wageningen onder vermelding van wat verlangd wordt; ook bestaat de mogelijkheid deze publicaties uit de bibliotheek van het I.V.T. te lenen.

<sup>2)</sup> Eerder verschenen publicaties zijn vermeld achterin in de Mededelingen nos 1 t/m 65 en in de jaarverslagen van het I.V.T.