



## Certified Clean Soft Fruit Plants

### ISFC Den Bosch

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## Introduction Naktuinbouw

- Independent inspection service for horticulture in the Netherlands
- Official functions: inspection, certification, variety examination and testing
- Non governmental foundation: not for profit, cost price tariffs
- Companies in the Netherlands are registered and fulfilling standards (EU/NL)
- Laboratories in Roelofarendsveen  
Test center in Horst
- Facilities for PEQ, testing candidate material, international certification



## Introduction CFP

- Foundation Clean Fruit Plants
- Function: independent service organization for healthy plant material
- Maintenance and propagation of certified pre basic material
- Service desk for support / assistance in PBR, testing, PEQ procedures



## Naktuinbouw locations



### Roelofarendsveen:

- Head office
- Laboratories
- Trial fields



### Horst:

- Naktuinbouw test center
- CFP facilities

## Naktuinbouw activities in soft fruit crops

- Inspection and certification in the Netherlands conform requirements 2008/90EG: CAC and EU certified fruit plants
- Phytosanitary import and export inspections and certification
- Inspections and plant passport inspections on the basis of 2016/2031/EU (PHR)
- Post entry quarantine (PEQ) services for international companies (2019/829/EU)
- Creation of pre basic material (PBM), candidate plants, on request / order
- Laboratory testing services (pathogens / identity) for all interested companies
- Voluntary Elite certification (added value / quality-plus system)



## CFP activities in (soft) fruit crops

- Service desk for information, guidance and support in programs for Import material into EU, submission of healthy material for DUS testing, advice on certification
- Maintenance of pathogen free Pre basic mother plants in aphid proof closed systems with regular retesting
- Propagation of Pre basic material and shipment of this material (to licensees) all over the world

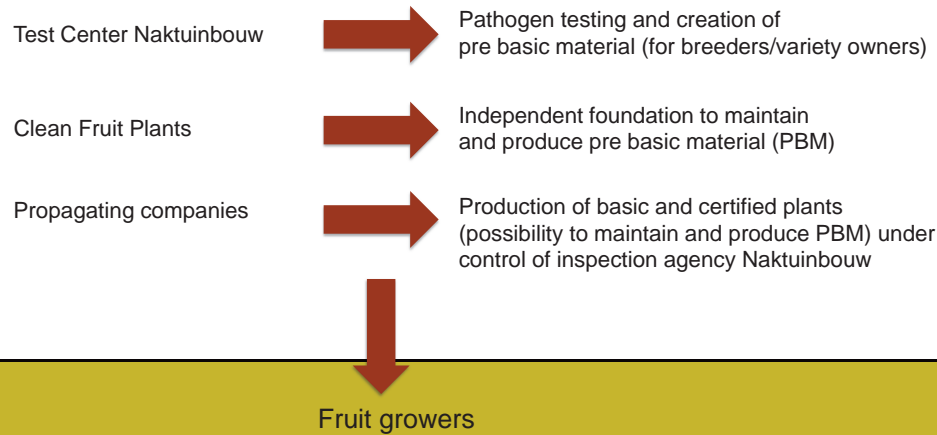


## Why all these activities?

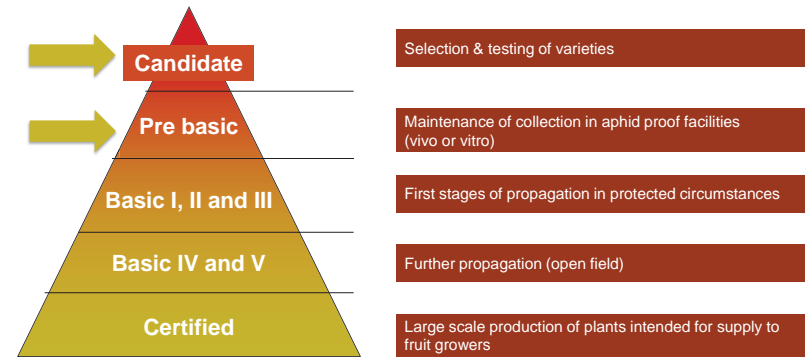
- Growers start with the best planting material. Material is free from harmful diseases
- Export of plants only possible if plants originate from trustful, authorized certified production systems
- Variety owners want to be sure of good varietal identity and disease free material to release their varieties in many countries
- Tracking and tracing of propagating material from beginning to end
- Further development of the certification system (ELITE)



## Structure in the Netherlands (actors in program)



## Fundament system: EU/EPPO Certification pyramid



## Philosophy: Start clean, stay clean

- **Full testing candidate plants**  
Test Center Naktuinbouw
- **Test scheme** (next slide)
- **If free of all tested pathogens**
  - PBM (EU)
  - PBM (EU + Elite)
- **Maintenance and production transferred to Clean Fruit Plants**  
Annual check of pre basic mother plants on relevant pathogens
- **Production basic material**  
Test soil and random testing / checking plants
- **Production certified plants**
  - Test soil
  - Testing plants on suspicion



## EU Test scheme

- |   |  |                |
|---|--|----------------|
| • Strawberry crinkle virus  | SCV  | PCR & enting   |
| • Strawberry mottle virus   | SMoV   | PCR & enting   |
| • Strawberry vein banding virus   | SVBV   | PCR & enting   |
| • Strawberry mild yellow-edge virus                                     | SMYEV  | PCR & enting   |
| • Nepovirus:  | ArMV   | } TPO          |
| - Raspberry ringspot virus  | RpRSV  |                |
| - Strawberry latent ringspot virus                                      | SLRSV  |                |
| - Tomato black ring virus   | TBRV   |                |
| - Tomato ringspot virus   | ToRSV (Q)                                    |                |
| • Fytoplasma  | - Candidatus Phytoplasma asteris             | } Visual / PCR |
|   | - Candidatus Phytoplasma australiense        |                |
|   | - Candidatus Phytoplasma fragariae           |                |
|   | - Candidatus Phytoplasma pruni               |                |
|   | - Candidatus Phytoplasma Solani (Stolbur)    |                |
|   | - Clover Phyllody Phytoplasma                |                |
|   | - Strawberry multiplier disease Phytoplasma  | } Visual       |
|   | - Strawberry witches ' broom Phytoplasma (Q) |                |
| • Bacteria  | - Rickettsia yellows                         |                |
|   | - <i>Xanthomonas fragariae</i> ,             | } Visual       |
|   | - <i>Candidatus Phlomobacter fragariae</i>   |                |
| • <i>Phytophthora fragariae</i>   |  | } Combi PCR    |
| • <i>Phytophthora cactorum</i>  |  |                |
| • <i>Collectotrichum acutatum</i>                                       |  |                |
| • <i>Verticillium</i> spp. ( <i>V. dahliae</i> , <i>V. albo-atrum</i> ) |  | → Plating      |
| • <i>Chaetosiphon fragaefoliae</i>                                      |  | → Visual       |
| • <i>Phytonemus pallidus</i>  |  | → Visual       |

## Strawberry plants: PBM creation and production

- **Test Center Naktuinbouw**
  - 20-25 new varieties annually from around 15 companies
  - Costs per variety: see price list Naktuinbouw
- **Clean Fruit Plants**
  - Maintaining about 100 varieties pre basic material
  - Supply of pre basic material plants to owners / licensees
  - Costs pre basic material per certified plant : see price list CFP



## Inspection system strawberry plants (I)

- **On all companies**
  - annual audit
  - field / propagating plan in April
- **CAC and certified material**
  - same company, separated fields: isolation distance
- **Pre basic material (PBM)**
  - in isolated / aphid proof tunnels or glass houses / tunnels in pots / tablets
- **5 generations of basic material**
  - BM 1,2,3 in aphid proof tunnels or glass houses
  - BM 4 and 5 open field production
  - One (last) generation production certified plants



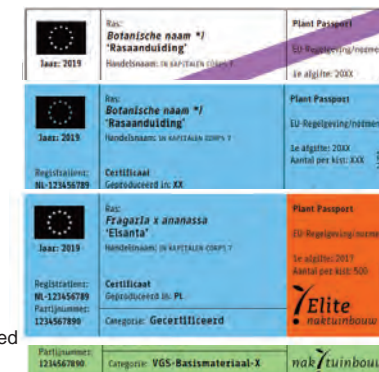
## Inspection system strawberry plants (II)

- Certified production on fields tested for virus vector nematodes (free)
- **8 inspectors carry out regular inspection**
  - 2-3 visual inspections/field/year
- **Tendency: increased production of**
  - cuttings in greenhouses
  - seeds and seedlings
- **Additional voluntary system**
  - participation in Naktuinbouw Elite (trademark)



## Documents and labeling

- **PBM EU**
  - White label with purple stripe
- **BM EU**
  - White label, mentioning generation obligatory
- **CM EU**
  - Blue label
- **CAC**
  - Yellow label
- **Labeling**
  - Plants in boxes / crates
- **Elite**
  - Orange tag on label in all certification categories
- **For breeding / testing material**
  - Green label
- A certificate together with the marketed material is always used
- **VGS: Preliminary Health Status**



## Thank you for your attention

### More information?

[www.naktuinbouw.com](http://www.naktuinbouw.com) and  
[www.cleanfruitplants.com](http://www.cleanfruitplants.com)

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