

Scanning report Boonen Miet, pcfruit

- *Project title (native language): EUFRUIT: Europees Fruit Network
- *Project title (English): EUFRUIT: European Fruit Network
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Section A. Summary for EIP dissemination

- *Keywords: Variety testing, soft fruits, strawberry, raspberry, blackberry, blue berry, currants, berries
- *Main geographical location: BE221 (arr. Hasselt)
- Other geographical locations: BE211 (Arrondissement. Antwerpen), BE212 (Mechelen), BE213 (Turnhout), BE222 (Arr. Maaseik), BE223 (Tongeren), BE231 (Aalst), BE232 (Dendermonde), BE233 (Eeklo), BE234 (Gent), BE235 (Oudenaarde), BE236 (Sint-Niklaas), BE241 (Halle-Vilvoorde), BE242 (Leuven), BE251 (Brugge), BE253 (Ieper), BE254 (Kortrijk), BE255 (Arr. Oostende), BE256 (Arr. Roeselare), BE257 (Tielt), BE258 (Veurne)

*Summary (native language):

De belangrijkste onderzoeksthema's voor **zachtfruit** in pcfruit vzw pah zijn: **rassenonderzoek** (productie en vruchtkwaliteit), gewasbescherming, teelttechniek (beschermd en openlucht), bemesting, bodem- en waterbeheer en rendabiliteit.

Aangezien een juiste rassenkeuze in grote mate bepalend is voor het bekomen teeltresultaat en dus ook voor de inkomsten van een teler, worden de meeste veelbelovende nieuwe rassen uitgetest in de proeftuin. Het is belangrijk de rassen uit te testen in teeltomstandigheden die vergelijkbaar zijn met die van de telers. De resultaten worden gebundeld en kenbaar gemaakt aan de telers, zodat zij op basis hiervan eigen proeven kunnen aanleggen en gerichte beslissingen kunnen nemen.

Rassenproeven vormden ook in 2017 een belangrijk onderdeel van het aardbei onderzoek. Het screenen van nieuwe rassen en selecties in volle grond open lucht naar opbrengst, oogstverloop, vruchtsortering en vruchtkwaliteit had hierin het grootste aandeel. Voor de junidragers werden er twintig rassen in fase 1 gescreend en zes rassen in fase 2 (Deluxe, 10-50-01, Sonsation en Destiny; daarnaast werden ook Malling Centenary en Magnum hierin meegenomen). Zes vroege rassen werden ook in een tunnelproductie opgevolgd. Daarnaast waren er ook 7 objecten in een substraatteelt op stelling. In 2017 werden er optimalisatie proeven (fase 3) uitgevoerd voor Malling Centenary en Magnum. Voor de doordragers waren er 14 objecten in volle grond in fase 1 en 5 objecten (08-06-10, Florentin en EMR 639; daarnaast werden ook Verity en Harmony meegenomen) in fase 2. Optimalisatieproeven (fase 3) werden uitgevoerd voor Verity en Harmony. Zeven objecten werden opgevolgd in een substraatteelt op stelling.

In de rassenproef zomerframboos werden, naast Tulameen, 21 rassen getest in een warenhuis. In 2018 zullen vijf van deze rassen (T110L6, SO.LU.08.1.5, Cascade Bell, Cascade Gem en 06.15.11) doorschuiven naar fase 2 van het rassenonderzoek. Voor de herfstframbozenrassen werden er 22 variëteiten opgevolgd (fase 1 + fase 2). Verder werden er ook nog rassenproeven uitgevoerd voor stekelbessen (5 rassen), rode en witte bessen (8 rassen rode en 2 rassen witte bes) en bramen (2 rassen; Loch Ness en Loch Tay).

Summary (english):

The main topics for all soft fruits are: **variety testing** and optimisation (production & fruit quality), crop protection, cropping systems (as well protected as in open field conditions), fertilisation, soil & water management and rendability.

Since a correct variety choice is to a large extent decisive for the achieved result and as a consequence also for the income of a grower, most new soft fruit varieties are tested at the department field research berryfruits of pcfuit. It is important to evaluate new varieties in growing conditions comparable with these of the growers. Results are summarized, published and are available for the Belgian soft fruit growers.

Variety screening is an important part of the research for strawberries. The biggest share of this research is spend on the screening of new varieties/selections in open field conditions, with production, fruit classification, harvest period and fruit quality as main research characteristics. In 2017, twenty new short-day varieties were evaluated in phase 1 and six in phase 2 (Deluxe, 10-50-01, Sonsation and Destiny; Malling Centenary and Magnum). Six early varieties were evaluated in a tunnel production. Besides the open field production, seven varieties were tested as a table top crop. Optimisation tests (phase 3) were performed for Malling Centenary and Magnum. There were 14 new day-neutral varieties evaluated in phase 1 in open field conditions and five in phase 2 (08-06-10, Florentin and EMR 639; Verity and Harmony). Optimisation tests (phase 3) were performed for Verity and Harmony. Besides the open field production, seven varieties were tested as a table top crop.

In 2017, 22 varieties of florican raspberry were evaluated as a container crop in an unheated tunnel production with Tulameen as reference variety. In 2018, five of these varieties will move to phase 2 of the variety screening (T110L6, SO.LU.08.1.5, Cascade Bell, Cascade Gem and 06.15.11). In 2017 there were also 22 primocane raspberry varieties evaluated (Phase 1 and phase 2) as a container crop. Other variety trials were performed for goose berries (five varieties), red and white currants (8/2 varieties) and blackberries (two varieties) – container crops.

Section B. Project information

***Project coordinator:** Michelle H. Williams; Aarhus University, Department of Food, Kirstinebjergvej 10, 5792 Aarslev, Denmark; mw@food.au.dk; +45 25170049

***Project period:** 2016 - 2019

***Project status:** Ongoing

***Funded by:** Horizon 2020

***Total budget:** €1.8m

***Geographical regions:** DK011 Copenhagen, DK012 Copenhagen and its environs, DK013 North Zealand, DK014 Bornholm, DK021 East Zealand, DK022 West- and South Zealand, DK031 Funen, DK032 South Jutland, DK041 West Jutland, DK042 East Jutland, DK050 North Jutland, BE211 (Arrondissement. Antwerpen), BE212 (Mechelen), BE213 (Turnhout), BE221 (Hasselt), BE222 (Arr. Maaseik), BE223 (Tongeren), BE231 (Aalst), BE232 (Dendermonde), BE233 (Eeklo), BE234 (Gent), BE235 (Oudenaarde), BE236 (Sint-Niklaas), BE241 (Halle-Vilvoorde), BE242 (Leuven), BE251 (Brugge), BE253 (Ieper), BE254 (Kortrijk), BE255 (Arr. Oostende), BE256 (Arr. Roeselare), BE257 (Tielt), BE258 (Veurne), BE310 (Nivelles-Nijvel), BE331 (Huy-Hoei), BE332 (Liège- Luik), BE334 (Waremmе-Borgworm), BE335 (Verviers), FR8 Méditerranée; FR81 Languedoc-Roussillon, FR6 SUD-OUEST, FR512 Maine et Loire, FR611 Dordogne, FR812 Gard, DE6 (Hamburg), DE8 (Mecklenburg-Vorpommern), DE9 (Niedersachsen), DEF0 (Schleswig-Holstein), DEE0 (Sachsen-Anhalt), DEA (Nordrhein-Westfalen), DE111, DE112, DE113, DE114, DE115, DE116, DE117, DE118, DE119, E11A, DE11B, DE11C, DE11D, DE121, DE122, DE123, DE124, DE125, DE126, DE127, DE 128, DE129, DE12A, DE12B, DE12C, DE131, DE132, DE133, DE134, DE135, DE136, DE137, DE138, DE139, DE13A, DE141, DE142, DE143, DE144, DE145, DE146, DE147, DE148, DE149, DE600 Hamburg, DE932 Cuxhaven, DE933 Harburg, DE939 Stade, DEF09 Pinneberg, NL1-NL4 + NLZ Holland; NL 224 zuidwest Gelderland, NL 226 Arnhem/Nijmegen, NL230 Flevoland, NL310 Utrecht, NL321 Kop van Noord-Holland, NI322 Alkmaar en omgeving, NL338 oost Zuid-Holland, NL33A zuidoost Zuid-Holland, NL341 Zeeuws-Vlaanderen, NL342 overig Zeeland, NI411 west Noord-Brabant, NL413 noordoost Noord-Brabant, NL414 zuidoost Noord-Brabant, NL421 noord Limburg, NL422 Midden-Limburg, NL423 zuid Limburg, ES620 Murcia, UKG11 Herefordshire, UKG12, Worcestershire, UKH12 Cambridgeshire, UKH16 North and West Norfolk, UKH17 Breckland and South Norfolk, UKJ22 East Sussex, UKJ35 South Hampshire, UKJ36 Central Hampshire, UKJ37 North Hampshire, UKJ41 Medway, UKJ42 Kent, UKJ43 Kent Thames Gateway, UKJ44 East Kent, UKJ45 Mid Kent,

UKJ46 West Kent, ES618 Sevilla, ES511 Barcelona, ES512 Gerona, ES513 Lérida, ES514 Tarragona, CH0 Schweiz/Suisse/Svizzera, ITH51-59 Emilia Romagna region, ITH10 Bolzano-Bozen, HU101 Budapest, HU102 Pest, RO111, RO112, RO113, RO114, RO115, RO121, RO122, RO123, RO124, RO125, RO126, RO211, RO212, RO213, RO214, RO215, RO216, RO221, RO222, RO223, RO224, RO225, RO226, RO311, RO312, RO313, RO314, RO315, RO316, RO317, RO321, RO322, RO411, RO412, RO413, RO414, RO415, RO421, RO422, RO423, RO424. HU101, HU102, LT001 Alytaus apskritis, LT002 Kauno apskritis, LT003 Klaipėdos apskritis, LT004 Marijampolės apskritis, LT005 Panevėžio apskritis, LT006 Šiaulių apskritis, LT007 Tauragės apskritis, LT008 Telšių apskritis, LT009 Utenos apskritis, LT00A Vilniaus apskritis.

Project web page: <http://www.eufrin.org/index.php?id=55>

***Project Objectives (native language):**

1. Oprichting van een Europees netwerk voor de fruitteelt
2. Ontwikkelen en implementeren van een systematische aanpak voor het scannen en synthetiseren van bestaande wetenschappelijke en praktische kennis.
3. Opstarten van een permanente dialoog met Europese (EU), nationale en regionale beleidsmakers.
4. Identificeren en ondersteunen van nieuwe prioritaire gebieden voor onderzoek door voortdurend te monitoren en door bestaande en toekomstige onderzoeks- en innovatieactiviteiten te analyseren.

Project Objectives (English):

1. Establish a European network focused on the fruit sector.
2. Develop and implement a systematic approach for scanning and synthesizing existing scientific and practical knowledge.
3. Establish an ongoing dialogue with relevant EU, national and regional policy bodies.
4. Identify and support new priority areas of research by continually monitoring and analysing existing and upcoming research and innovation activities.

***Project partners:**

1. Aarhus University, Department of Food Science (Denmark) • AU
2. Research Station for Fruit npo (Belgium) • Pcfuit
3. Centre Technique Interprofessionnel des Fruits et Légumes (France) • CTIFL
4. Obstbauversuchsanstalt Jork (Germany) • OVA
5. Stichting Wageningen Research (Netherlands) • WR
6. ~~East Malling Research (United Kingdom) • EMR (terminated 08-02-2016)~~
7. Institut de Recerca i Tecnologia Agroalimentàries (Spain) • IRTA
8. Federal Department of Economic Affairs, Education and Research (EAER), acting through Agroscope Institute of Plant Sciences (Switzerland) • Agroscope
9. Laimburg Research Centre for Agriculture and Forestry (Italy) • Laimburg
10. University of Agronomic Sciences and Veterinary Medicine of Bucharest (Romania) • USAMV
11. National Agricultural Research and Innovation Centre Fruitculture Research Institute (Hungary) • NARIC
12. Lithuanian Research Centre for Agriculture and Forestry (Lithuania) • LRCAF
13. Assemblée des Régions Européennes Fruitières, Légumières et Horticoles (France) • AREFHL
14. Variety Innovation Consortium South Tyrol (Italy) • SKST
15. Freshfel Europe (Belgium) • FRESHFEL
16. Elbe-Obst Erzeugerorganisation r.V. (Germany) • EO
17. Fruitconsult BV (Netherlands) • FC
18. University of Greenwich (United Kingdom) • UoG
19. University of Hohenheim (Germany) • UHOH
20. Università di Bologna (Italy) • UNIBO
21. Institut National de la Recherche Agronomique (France) • INRA
22. NIAB EMR (new 09-02-2016)

Section C. Annex: Scanning report¹

Scanning report Boonen Miet, pcfruit

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Country:	Belgium
NUTS 3 region(s)²:	BE211 (Arrondissement. Antwerpen), BE212 (Mechelen), BE213 (Turnhout), BE222 (Arr. Maaseik), BE223 (Tongeren), BE231 (Aalst), BE232 (Dendermonde), BE233 (Eeklo), BE234 (Gent), BE235 (Oudenaarde), BE236 (Sint-Niklaas), BE241 (Halle-Vilvoorde), BE242 (Leuven), BE251 (Brugge), BE253 (Ieper), BE254 (Kortrijk), BE255 (Arr. Oostende), BE256 (Arr. Roeselare), BE257 (Tielt), BE258 (Veurne)
WP no. and title:	WP2 – Performance of new fruit varieties
Date:	04/04/2018

Source materials and methodology

Pcfruit npo was started in 1997 as a coordinating structure of three former research institutes and experimental gardens, all specialised in fruit growing and located in Sint-Truiden, the heart of the fruit growing area of Belgium. The success of pcfruit is due to the combination of applied scientific research, demonstration activities to growers and services for industry and fruit growers at one central location with suitable infrastructure like labs, greenhouses, storage facilities, plastic tunnels, shelters and warehouses and orchards.

In pcfruit new and existing technologies, techniques and varieties are permanently evaluated and judged on their added value to fruit growing. Finally, the individual fruit growers are assisted in the introduction of new technologies and sustainable production methods. A close relationship with individual growers and grower associations exists, which benefits transfer of research results or information.

It is the task of the department field research berryfruits (PAH) to test and demonstrate new developments of the scientific research on strawberries; raspberries; blackberries; blue berries; red, black and white currants; gooseberries and kiwiberries. The main topics for all soft fruits are: **variety testing** and optimisation (production & fruit quality), crop protection, cropping systems (as well protected as in open field conditions), fertilisation, soil & water management and rendability.

For strawberries and other soft fruits there is a quick change to other varieties in comparison with pome and stone fruits. Consequently it is very important for soft fruit growers to estimate the value of new varieties as quick as possible. An existing market can be boosted or disturbed by a new cropping system or by a new variety. That is why new varieties are tested in specific cropping systems and variety specific characteristics are evaluated within the research of the department field research berry fruits of pcfruit.

In Flanders, soft fruits are mainly produced for the fresh market. Soft fruits have the typical characteristic of a vulnerable, fragile skin (except red currants) with a limited shelf life. They are harvested in summer time in a period of 5 to 7 weeks. Even with the most advanced techniques, the fruits have a shelf life of about 1 week. Although a continuous supply of high quality fruit is required.

The harvest of soft fruits can be expanded through the season by cultivating different varieties. Yearly new varieties and selections are developed worldwide in different breeding programs. Intensive screening of these new varieties and selections from over the world is necessary to compare them with varieties used in common practise.

¹ Equivalent to 'final report' in EIP-AGRI format.

² Please see ec.europa.eu/eurostat/ramon/nomenclatures/ for details on NUTS regions, level 3

In addition, it is not an evidence that every variety is suited for every cropping system or can be grown under all climatic conditions. That is why it is important to stay permanently in touch with breeding programs for soft fruits all over the world, to check if new varieties can have a potential value for the Flemish soft fruit growers.

The source materials for this scanning report are amongst others:

- Trekels H. & Boonen M., 2013. Screening and testing of new everbearing strawberry varieties and selections. Poster at the second International Strawberry Congress, Hoogstraten, Belgium.
- Gallace N., 2015. Nieuwe alternatieven bij de doordragers in vollegrond?. Proeftuinnieuws 20 blz. 18-21.
- Bogaerts I., 2016. Vaste waarden en beloftevolle nieuwkomertjes. Fruitteeltnieuws 21-22 blz. 10-11.
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- Gallace N., 2016. Veelbelovende nieuwe selecties doordragers. Management & Techniek 6 blz. 46-49.
- Gallace N., Boonen M., Lieten P. & Bylemans D., 2016. Electrical conductivity of the nutrient solution: Implications for flowering and yield in day-neutral cultivars. ISHS Acta Horticulturae 1156: VIII International Strawberry Symposium blz. 223-228.
- Gallace N., 2017. Doordragers 2016 pcfruit. Fruit 5 blz. 14-16.
- Gallace N., 2017. Optimiering des Anbaus im Tunnel. Spargel & Erdbeer Profi 2 blz. 82-86.
- Boonen M., Gallace N. & Bylemans D., 2017. Screening of new strawberry varieties/selections for open field production at pcfruit. Poster at the third International Strawberry Congress, 6-8 September 2017. Antwerp-Belgium.
- Herckens K. & Boonen M., 2017. Zomerframboos: Windstilte voorbij? Fruit 17 blz.8-10.

Best practice findings

Variety testing of strawberries and other soft fruits

The variety screening process at the department field research berryfruits of pcfruit consists of four steps/phases (Figure 1). New varieties/selections are collected from breeding programs all over the world.

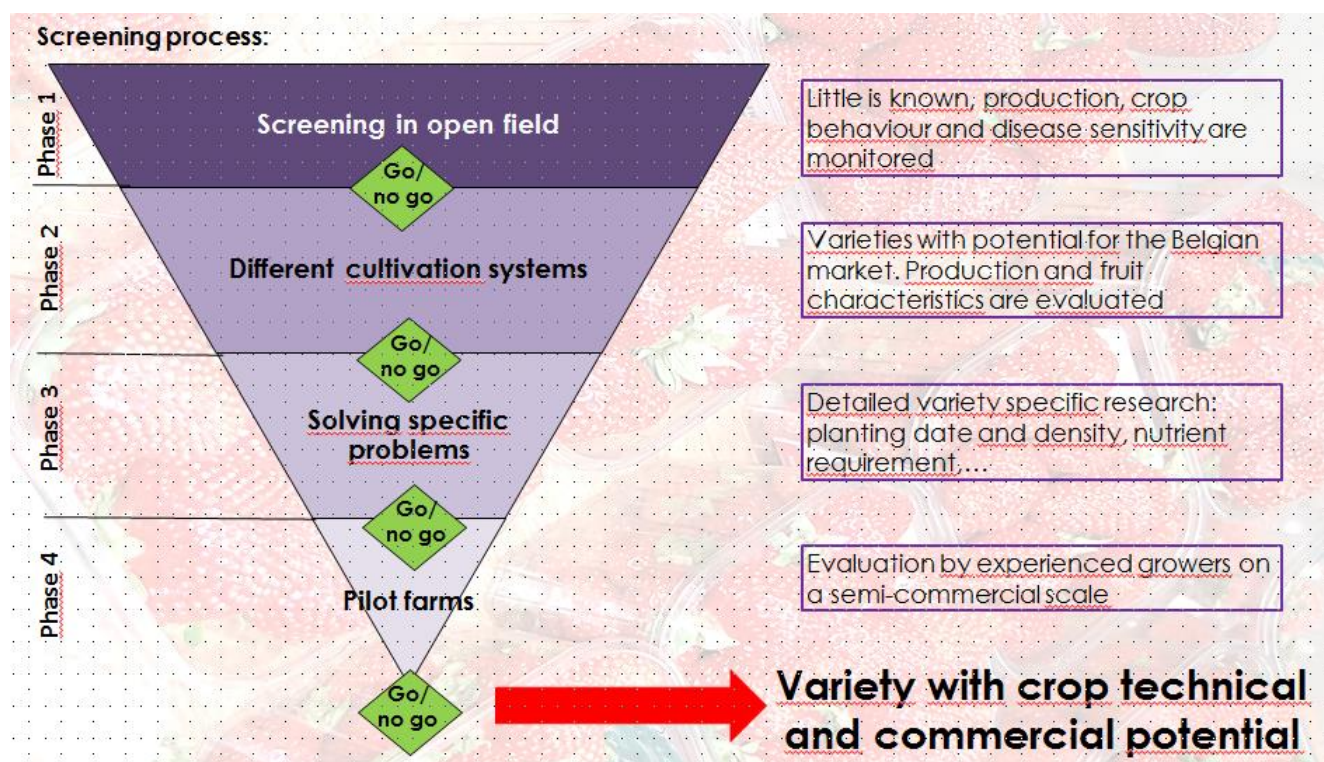


Figure 1: Screening process for new soft fruit varieties at the department field research berryfruits of pcfruit.

During the evaluation several characteristics are evaluated: production, fruit classification, harvest period, fruit colour, fruit weight, fruit firmness (fresh and after storage of 7 days at 4°C), fruit size, shelf life, vulnerability for diseases, plagues and climate conditions. Annually a report is sent to the breeders.

At this moment the reference varieties are:

Floricane raspberry: Tulameen; primocane raspberry: Kwanza; Blackberry: Lochness; Blue berry: Duke; Red currant: Junifer (early variety) and Rovada (Late variety); short-day strawberry: Elsanta and day-neutral strawberry: Portola.

Challenges and gaps

There are some important challenges and gaps for soft fruit growers:

- Some varieties are not available for all growers, because they are launched as a club variety.
- Novelties are planted without proper testing (certainly for strawberries).
- Infestation of all soft fruit species by *Drosophila suzukii*.
- Most soft fruits are limited in production area, which means that generally there are little products available to control pests and diseases. Especially for covered crops.
- Changing climatic conditions.
- Taste is underestimated, shelf life is more important.