

## Scanning report Hilaire Christian, Ruesch Julien (Ctifl)

- \*Project title (native language):** EUFRUIT : Réseau européen d'évaluation des fruits
- \*Project title (English):** EUFRUIT: European Fruit Network
- \*Author/native language editor:** Ruesch Julien, Ctifl, 751, Chemin de Balandran, 30127 Bellegarde, France.  
ruesch@ctifl.fr, +33 (0)4 66 01 10 54

### Section A. Summary for EIP dissemination

- \*Keywords:** Variety testing, stone fruits, Peach-nectarine, apricots
- \*Main geographical location:** FR812 Gard
- Other geographical locations:** FR8 Méditerranée; FR81 Languedoc-Roussillon
- \*Summary (native language):**

La création variétale en France est très intense pour les espèces pêche et abricot. Les variétés sont créées par les obtenteurs (par croisements) et diffusées par les éditeurs. Les variétés sont, dans la majorité des cas, inscrites au catalogue des nouvelles variétés. Cette étape est réalisée par l'Inra, qui est également en charge de l'étape DHS (Distinction, homogénéité, stabilité). Enfin, les variétés passent par une phase d'évaluation au sein d'un réseau d'évaluation composé du Ctifl (responsable de la coordination) et des stations d'expérimentation régionales.

60 variétés sont introduites annuellement l'espèce pêche et 50 pour l'espèce abricotier. Elles sont évaluées par les différents sites du réseau. Les critères d'évaluation portent sur la conduite de l'arbre, la phénologie, les potentiels agronomiques, la présentation et qualité gustative des fruits ainsi que sur la sensibilité des variétés aux maladies et ravageurs. Des études sont également menées sur l'évaluation des porte-greffe.

Le développement des variétés de pêche et d'abricot en France vise à étendre et compléter le calendrier de maturité pour disposer de variétés performantes durant toute la saison (et, dans le cas de la pêche, pour toutes les sous espèces). La variété idéale doit répondre à un certain nombre de critères, à savoir un haut niveau de production (charge et calibre), une bonne régularité de production, une bonne qualité organoleptique et une belle présentation des fruits. Idéalement, les variétés retenues doivent également avoir une moindre tolérance aux maladies et ravageur. Enfin, pour l'espèce abricot, les variétés autofertiles sont recherchées.

#### Summary (english):

Breeding program are very intense for peach and apricot in France. The evaluation of the plant material is organized in different steps involving various actors. The breeders are responsible of hybridation and creation of the new varieties. The editors are responsible of the distribution of the varieties. The varieties are following a process to be registered and evaluated. Inra (French National Institute for Agricultural Research) is responsible of the registration of the varieties in the "catalog" and realize the DUS (Distinction, Uniformity and Stability) phase. After this step, the Ctifl and regional experimental center are proceeding to the evaluation of new cultivars.

About 60 cultivars for peach and 50 cultivars for apricots are introduced each year and assessed on the different sites of the network. The criteria that are observed are the tree (vigor, shape...), the flowering and phenology (floribondy, pollination), the agronomic potential (maturity, entering in production, yield and fruit size), the fruit (presentation / attractiveness, physico-chemical and organoleptic characteristics, post-harvest conservation) and the sensitivity to pests and diseases. The evaluation of vegetal material is led on rootstocks and on new cultivars

The objective of peach varieties development in France is based on various goals. One goal is to extend and complete the planning of maturity to dispose of good varieties during all the season and for all subspecies. The ideal variety need to dispose of a high level of production (yield and fruit size) and need to guarantee the regularity of production. These varieties have to propose a good organoleptic quality and a good presentation of the fruits. Ideally, we also try to favorise varieties with less sensitivity to pests and diseases.

## 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 (Wareme-Borgworm), BE335 (Verviers), , FR6 SUD-OUEST, FR512 Maine et Loire, FR611 Dordogne, , 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. Etablir un réseau européen orienté sur les fruits
2. Développer et établir une approche systématique pour identifier et synthétiser les connaissances pratiques et scientifiques existantes.
3. Etablir un dialogue continu entre les institutions politiques régionales, nationales et européennes.

4. Identifier et soutenir de nouveaux axes de recherche prioritaires par un suivi continu et une analyse des activités de recherche existantes, futures et innovantes.

**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 report<sup>1</sup>

## Scanning report

### Hilaire Christian, Ruesch Julien, Ctifl

**Author:** Ruesch Julien, Ctifl, 751, Chemin de Balandran, 30127 Bellegarde, France.  
ruesch@ctifl.fr, +33 (0)4 66 01 10 54

**Country:** France

**NUTS 3 region(s)<sup>2</sup>:** FR812 Gard

**WP no. and title:** WP 2 : Performance of new fruit varieties

**Date:** 31-03-2017

#### Source materials and methodology

The Ctifl is an institute for applied research on fruit and vegetables. It was established in 1952 under the law passed on 22nd July 1948 concerning industrial technical centres, Ctifl is a non-profit organization of about 270 employees (including 164 engineers and technicians). The Ctifl is spread on 6 sites in France (including the head office in Paris).

All experimentation, studies, training and publications are aimed at improving the level of expertise necessary in all sectors of the fruit and vegetable industry, as well as improving company performance. Ctifl is particularly involved in carrying out work of general interest to the public sector under the aegis of the government. In answer to consumer concerns Ctifl's expertise contributes to managing quality, to guaranteeing food safety and hygiene as well as traceability, to preserving the environment and to striving for sustainable development. Facing society's demands and the challenges of tomorrow, Ctifl aids communication and consultation between all those involved in the fruit and vegetable industry.

The Ctifl, Centre of Balandran is at the heart of national production area (¼ of French fruits and vegetables) and works closely with the centre in St-Rémy-de-Provence (specialized in quality and technology).

The Ctifl, Centre of Balandran regroup 66 employees (39 engineers and technicians, 27 farm labourers, 45 seasonal workers, 30 trainees and fixed-term contract) and 75 ha (2,4 ha of greenhouses and tunnels, 43 ha of orchards, 19 ha in production, 20 ha of field vegetables, 3 ha in organic agriculture). The Ctifl works on various species of fruits and vegetables.

Concerning stone fruits. Ctifl works on peach-nectarine, apricot and sweet cherries. The evaluation of vegetal material is led on rootstocks and on new cultivars. The evaluation of the plant material in France is organized in different steps involving various actors. The breeders are responsible of hybridation and creation of the new varieties. The editors are responsible of the distribution of the varieties. The varieties are following a process to be registered and evaluated. Inra (French National Institute for Agricultural Research) is responsible of the registration of the varieties in the "catalog" and realize the DUS (Distinction, Uniformity and Stability) phase. After this step, the ctifl and regional experimental center are proceeding to the evaluation of new cultivars.

Testing new peach and apricot varieties is organized around a "national chart" established by industry partners involved in varieties: growers (FNPF), nurserymen (CEP), Inra (research) and Ctifl (experimentation) since 1997. Ctifl is coordinating the national network of regional stations.

#### Best practice findings

##### Peach and nectarine

The peach and nectarine production is mostly located in the south of France. The production is mainly located in three areas: 1) Roussillon 2) Gard, Crau area, PACA and 3) Rhone Valley.

The production of peach is continuously decreasing since the last 10 years. This can be partially explained by the impact of phytosanitary crisis (Sharka) and the increasing concurrence of other countries. In 2015 the peach and nectarine production in

<sup>1</sup> Equivalent to 'final report' in EIP-AGRI format.

<sup>2</sup> Please see [ec.europa.eu/eurostat/ramon/nomenclatures/](http://ec.europa.eu/eurostat/ramon/nomenclatures/) for details on NUTS regions, level 3

France (including paves) represented about 10 000 ha and 217 100 tons. The innovation is really important for new varieties of peach and nectarines.

The objective of the network is to realize a screening of agronomic and commercial interest of new varieties and, for the interesting cultivars, to define the optimum technical itinerary.

The network is composed of 4 sites: Ctifl, centre of Balandran (Bellegarde, 30), Sefra (Etoile-sur-Rhône, 26), Sud Expé Serfel (Saint Gilles, 30) and Centrex (Toreilles, 66). The Ctifl is responsible of the coordination and the synthesis of the results. The 4 sites are localized in the main basin of production and permit to evaluate the behavior of the cultivars in different pedo-climatic conditions.

3 sites are in charge of evaluating the agronomic potential of the cultivars : Ctifl, Centre of Balandran, Sefra and Centrex and 1 site is in charge to evaluate the behavior of the cultivars in low input conditions (Sud Expé Serfel). On all the sites, About 60 cultivars are introduced each year (10 var. / editor / year). 2-3 trees per variety in Ctifl, Sefra and Centrex ; 8-10 trees per variety in Serfel

The criteria that are observed are the tree (vigor, shape...), the flowering and phenology (floribondy, pollination), the agronomic potential (maturity, entering in production, yield and fruit size), the fruit (presentation / attractiveness, physico-chimic and organoleptic characteristics, post-harvest conservation) and the sensitivity to pests and diseases. The data are stored in a private database.

The last year the evolution of varieties is characterized by varieties with an high level of coloration of the epiderm (most of recent varieties are close to 100 % colored and present dark overprint coloration). The varieties are now mostly characterized by a low acidity, a crunchy texture and an higher level of sugar content.

The flat peach represent a few part of the French production

The objective of peach varieties development in France is based on various goals. One goal is to extend and complete the planning of maturity to dispose of good varieties during all the season and for all subspecies. The ideal variety need to dispose of a high level of production (yield and fruit size) and need to guarantee the regularity of production. These varieties have to propose a good organoleptic quality and a good presentation of the fruits. Ideally, we also try to favorise varieties with less sensitivity to pests and diseases.

Since 2015, the beahvior of 15 varieties is followed in Ctifl Centre of Balandran in organic farming.

## **Apricot**

The production represented, in France, in 2015 a surface of 11 960 ha for a production of 175 760 tons. More than 100 varieties are grown in France. However, only 6 varieties represent 55 % of surfaces (Bergereon : 29 % ; Orangé de Provence : 10 % ; Orangered ® Bhart : 8 % ; Bergarouge ® Avirine : 4 %). The main production areas are The North Rhone valley and Baronnie area, the Gard, Crau and PACA area and Roussillon.

The objective of the evaluation is to dispose of a longer maturity planning. The ideal varieties must have an high level of production with a good fruit size, a good regularity of production and a non-alternating behavior. The varieties should also have a good taste / organoleptic quality, a good conservation aptitude and should be satisfying for the distributors and consumers (fruits presentation, skin coloration, fruit shape...). Other criteria of selection are considered (less sensibility to pests and diseases, serf-fertil varieties).

The objective of the network is to realize screening of agronomic and commercial interest of new varieties and, for the interesting cultivars, to define the optimum technical itinerary

The network is composed of 4 sites: Ctifl, centre of Balandran (Bellegarde, 30), Sefra (Etoile-sur-Rhône, 26), Serfel (Saint Gilles, 30) and Centrex (Toreilles, 66). The Ctifl is responsible of the coordination of the network and the synthesis of the results. The 4 sites are localized in the main basin of production and permit to evaluate the behavior of the cultivars in different pedo-climatic conditions. 3 sites are in charge of evaluation agronomic potential of the cultivars: Ctifl, centre of Balandran, Sefra and Centrex and 1 site is in charge to evaluate the behavior of the cultivars in low input conditions (Sud expé Serfel).

On all the sites, about 50 cultivars are introduced each year (6 varieties / editor / year). 2-3 trees per variety in Ctifl, Sefra and Centrex ; 8-10 trees per variety in Serfel.

Observations are realized on the tree (vigor, shape), the flowering and phenology (floribondy, pollination), the agronomic potential (maturity, entering in production, yield and fruit size), the fruit (presentation/attractiveness, physico-chemical and organoleptic characteristics, post-harvest conservation) and the other sensibilities to pests and diseases. The evaluation of new varieties is completed, for some varieties by complementary studies : dormancy, sensibility to spring frost, pollination / inter-pollination tests, conservation / post-harvest itinerary, production in organic farming. The data are stored in a private database

Since 2016, the behavior of 10 varieties is followed in Ctifl Centre of Balandran in organic farming. 2 more varieties have been planted in 2017.