

Scanning report (EIP format for practice abstracts)

***Project title (native language):** EUFRUIT: Europäisches Obst-Netzwerk

***Project title (English):** EUFRUIT: European Fruit Network

***Author/native language editor:** Ph.D. Martina Boschiero, p.a. Massimo Zago, MSc. Julia Strobl, Ph.D. Walter Guerra, Laimburg Research Centre, Laimburg 6, 39040 Post Auer, BZ-Italia, Martina.Boschiero@laimburg.it, +390471969680

Section A. Summary for EIP dissemination

***Keywords:** Thematic Network, Fruit Sector, EUFRUIT, Berry fruits, best practices, variety testing

***Main geographical location:** ITH10 Bolzano-Bozen

Other geographical locations: ITH10 Bolzano-Bozen

***Summary (native language):**

Presso il Centro di Sperimentazione Laimburg, la ricerca sui piccoli frutti si concentra essenzialmente su fragola. Confronto varietale e miglioramento genetico sono le due tematiche su cui si focalizza la sperimentazione.

Poiché la fragola è estremamente suscettibile alle condizioni pedo-climatiche e alle tecniche di gestione, diventa fondamentale testare ogni cultivar nella specifica zona di produzione. Questo permette di determinare l'idoneità di una cultivar ad essere coltivata in un certo ambiente e verificare il suo potenziale economico per l'agricoltore.

Il programma di miglioramento genetico del Centro di Sperimentazione Laimburg è cominciato nel 2010, ed è svolto in collaborazione con CREA-OFA (Consiglio per la Ricerca in Agricoltura e l'analisi dell'Economia Agraria, Unità di Ricerca per la Olivicoltura, Frutticoltura e Agrumicoltura) con sede a Forlì (Italia). Lo scopo di tale programma è quello di ottenere un genotipo superiore di fragola, che sia idoneo all'ambiente alpino (specialmente adatto e resistente alle gelate tardive), che presenti una qualità straordinaria, un gusto unico, che garantisca profitto agli agricoltori locali e che sia tollerante alle malattie, al fine di raggiungere e promuovere una coltivazione sostenibile di tale prodotto.

Al momento, otto selezioni hanno raggiunto una fase avanzata del programma di breeding. Lo scorso anno, una selezione in particolare è stata valutata molto positivamente. Infatti presentava una eccellente produzione, buona dimensione del frutto che ha mantenuto per tutto il periodo di raccolta, bella forma, colore e dimensione del frutto. Quest'anno verrà sperimentata da diversi frugolcoltori locali su scala allargata.

Altri piccoli frutti, come lampone, ribes rosso e nero, mora e mirtillo, giocano un ruolo minore in Alto Adige. Il Centro di Sperimentazione Laimburg sta attivando due progetti di confronto varietale sia su lampone che su *Actinidia Arguta*.

Summary (english):

At the Laimburg Research Centre, research on berries currently focuses mainly on strawberry production. Variety testing and breeding represent the main focus of the research.

Since strawberry is extremely susceptible to pedo-climatic conditions and to the cultivation management, it is fundamental to test every variety in a specific growing area. This allows to determine the suitability of a variety for a certain pedoclimatic condition and to assess if the variety has the potential to provide some economic advantages for the farmers.

The Laimburg strawberry breeding program started in 2010 and it is carried out within the project "La fragola saporita dell'Alto Adige" (The tasty strawberry of South Tyrol), in collaboration with the CREA-OFA (Consiglio per la Ricerca in Agricoltura e l'analisi dell'Economia Agraria, Unità di Ricerca per la Olivicoltura, Frutticoltura e Agrumicoltura) in Forlì (Italy). The aim of the breeding program is to obtain new superior strawberry genotypes, which should be suitable for the alpine environment (especially regarding

the resistance to late frosts), should have an extraordinary quality, a unique taste, should guarantee the profitability to local farmers and it should be pest-disease tolerant, in order to achieve a sustainable production. At present, eight selections reached an advanced selection phase. Last year, one selection was positively evaluated, presenting a very good yield, good fruit size, which was maintained for the whole harvesting period, attractive colour, shape and taste. This year it will be tested by local farmers at a larger scale.

Other berry fruits, such as raspberry, black- and red- currant, blueberry and blackberry play a minor role in South Tyrol.

Research projects on variety testing both on raspberry and *Actinidia Arguta* are going to be established at the Laimburg Research Centre.

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), 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. Errichtung eines europäischen Netzwerkes, welches sich auf den Obstsektor konzentriert

2. Entwicklung und Umsetzung einer systematischen Vorgehensweise zum Festhalten und Synthetisieren des bestehenden wissenschaftlichen und praktischen Wissens
3. Schaffen eines kontinuierlichen/anhaltenden Dialogs mit relevanten EU, nationalen, sowie regionalen politischen Körperschaften
4. Identifikation und Unterstützung von neuen prioritären Forschungsgebieten durch das kontinuierliche Monitoring und Analysieren von bestehender und aufkommender Forschung und Innovationsaktivitäten.

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

Martina Boschiero, Massimo Zago, Julia Strobl, Walter Guerra, Laimburg

Author: Ph.D. Martina Boschiero, p.a. Massimo Zago, MSc. Julia Strobl, Ph.D. Walter Guerra, Laimburg Research Centre, Martina.Boschiero@laimburg.it, +390471969671

Country: Italy

NUTS 3 region(s)²: ITH10 Bolzano-Bozen

WP no. and title: WP2, Performance of new fruit varieties

Date: 12/04/2018

Source materials and methodology

Autonomous Province of Bozen-Bolzano (2016). Relazione Agraria e Forestale. <http://www.provinz.bz.it/agricoltura/flip/raf2016/>.

Baruzzi Gianluca and **Faedi Walter** (2016). Strawberry Breeding. In Amjad M. Husaini and Davide Neri Strawberry : Growth, Development and Diseases, edited by, CABI. ProQuest Ebook Central, p.26-40, <https://ebookcentral.proquest.com/lib/unibz/detail.action?docID=4767090>.

Boschiero M. and **Zago M.** (2017). Die schmackhafte Erdbeere aus Südtirol. VIP Blick (2), 28–29

Zago M. and **Hack F. M.** (2017). Stand der Erdbeersortenzüchtung. Der Südtiroler Landwirt 71 (6), p. 54

Zago M. (2010). Fragola nella Val Martello, pp:126-131. In: La Fragola, Faedi W., Cultura&Cultura, Bayer CropScience, Ed. Script, Bologna, p. 548.

Best practice findings

The research of Laimburg Research Centre (LRC) on strawberries currently focuses on variety testing and breeding. The variety testing at LRC aims to verify the suitability of the varieties available on the market for their cultivation in the South Tyrolean area, by identifying the phenology, the productivity and quality of the fruits, and the resistance against pests and diseases. Based on the results, recommendations of varieties for the local growers are made. Another scope is to identify a strawberry cv. whit very good post-processing characteristics, suitable for jams and juices.

LRC started a breeding program with the aim to obtain a new superior strawberry genotype suitable for the alpine environment (especially resistance to late frosts), with an extraordinary quality, a unique taste, profitable to local farmers and pest-disease resistant for a sustainable production. This breeding program is carried out within a joint project with the CREA-OFA in Forlì (Italy). CREA-OFA is responsible for the selection of the parents and for the crossing (phase 0), whereas Laimburg carries out all the other open-field phases:

phase 1: about 3000 new seedlings are tested every year. During the selection procedure, the fruit quality (colour, size, shape and taste) and the plant behaviour and health (vigour, habitus and resistance to the main plant diseases) are evaluated;

phase 2: 8-10 plants per interesting selection and the yield potential are evaluated.

phase 3: testing the selections in randomized blocks;

phase 4: the selections with good evaluations are planted and evaluated in plots with more than 100 plants and tested in other representative sites.

At the moment, 8 selections reached phase 4. In 2017, one selection was positively evaluated, and 2018 it will be tested by local farmers at a larger scale.

Currently, LRC is looking for rustic genotypes able to substitute the medium-late-season cv. Elsanta. Elsanta is the June-bearing reference variety cultivated in South Tyrol. Lately it shows some weaknesses, such as its susceptibility to severe winters, late

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

frost periods. It is not resistant against soil-disease problems. Other June-bearing cultivars that are cultivated by local farmers are: Darselect, Roxana and Sonata.

There is an increasing interest in adopting ever-bearing cultivars. Murano cv. shows satisfying performances both in open field and as a table top crop. Farmers are trying also the Florina cv. However, due to the climatic conditions, at the moment, with the current available cultivars and with the actual field management, the cultivation of the ever-bearing cvs. is economically profitable only at lower altitudes.

Regarding cultivation techniques, 2019 different planting densities and different mulching materials will be investigated. The applied research will focus also on soil-disease resetting and on plant protection solutions.

In South Tyrol, the cultivated summer bearing varieties are Tulameen and Glen Ample, whereas the variety Polka, Himbo Top and Enrosadira represent the standard ever-bearing varieties.

At LRC a research project on raspberry varieties is going to be established. The aim is to update and revise the variety assortment suitable for South Tyrol. Some varieties and selections of an Italian breeder are already under study.

LRC is installing a trial on *Actinidia Arguta*, with the main scope to test and compare different cultivars (such as Fresh Jumbo, Super Jumbo, Red Jumbo, Red Beauty, Kens Red, Issai und Orsola). Two different training systems will be trialed too, to compare the performances of the aforementioned cultivars cultivated with a pergola (T-bar) trellis and with a "guyot" trellis.

Regarding Blueberries, two cultivation systems are tested: tops, and the plantation directly into the soil, using two different substrates. The aim is to verify if blueberry cultivation could be feasible at 1,200mas and which system can guarantee satisfying results.

Challenges:

- Severe late spring frost events and lower precipitations in winter are big challenges. 2017, spring frost caused a reduction of the strawberry production of 40% on average. Solutions to this problem should be found.
- Soil-disease resetting: Most of the farmers cultivate strawberry in open fields, under tunnels. Farmers are obliged to continuously cultivate for several years the same berry cultivation on the same field, due to the small size of the berry fields. Only big and well-organized farms can adopt the rotation technique, which seems to be not profitable for smaller realities.
- Damages induced by *Drosophyla suzukii*, even if they can be significantly reduced with the use of insect-nets, remain a challenge.
- Find more varieties suitable for the peculiar alpine climatic conditions of South Tyrol.
- A standard method with a description list for testing strawberry cultivars is missing, and novelties are planted without a proper and common testing-standard.
- Even if results on the variety testing and breeding are presented to local farmers every year, an easily and free accessible database is missing.