



Report on the Cross-Visit: Italy

Work Package: WP02 - Improving cultivar testing, seed multiplication & health for high quality seeds for the organic sector

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About the report

This report has been produced in the framework of the Horizon 2020-funded project LIVESEED.¹ The main aim of LIVESEED is to boost the production and use of organic seeds and plant breeding for organic agriculture across Europe. It is co-ordinated by IFOAM EU, and its scientific coordinator is FIBL-CH. LIVESEED has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727230 and by the Swiss State Secretariat for Education, Research and Innovation (SERI) under contract number 17.00090.

Work Package 02 of LIVESEED aims at improving cultivar testing, seed multiplication & health for high quality seeds for the organic sector, and partly, at boosting the organic seed production and multiplication in countries where the organic sector is less developed (PL, HU, RO, BG, EL, ES and PT) and/or has particular needs, by promoting smart practices and knowledge exchange. As part of this Work Package, LIVESEED is organising visits to France, Italy, Netherlands and Germany, with the aim to demonstrate and promote smart practices to increase productivity and quality in organic seed production of cereal, vegetable, potato and fruit crops. To foster organic seed multiplication, the cross visits aim to:

- i) enable a mutual learning process amongst professionals engaged,
- ii) reveal regional particularities as well as lessons to be generalized,
- iii) inspire and stimulate regional partners to initiate changes in their system,
- iv) forge relationships as a basis for a professional network that can sustain after the project period.

The visiting teams mainly involve trainers that will organise courses on organic seed production in their countries, and key actors, such as seeds companies, farmers and advisors with interest and official persons involved in seed testing and certification, and researchers. The multi-actor approach is based on the assumption that appropriate solutions must be tailor made, and regional partners are in the best position to initiate change. In order to generate ideas, it is useful for them to explore systems elsewhere and to interact with stakeholders, colleagues and scientists in Europe.

The methodology of the cross-visits is based on the one developed in the EU H2020 project Agrispin. The method is useful to organise exchange between professionals with similar tasks in different regions. However, it was modified to suit the topics and themes of the visits.

This country report is recommended for stakeholders involved in the production and use of organic seed: farmers, certifiers, producers, retailers, seed authorities, and the general public.

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¹ <http://liveseed.eu>



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1. The Italian Cross Visit

LIVESEED partners Rete Semi Rurali and seed production company Arcoiris hosted the cross visit in Italy, between 5th-8th June, 2019.

For the 4-day visit 18 experts participated from Poland, Hungary, Romania, Bulgaria, Greece, Spain, Portugal, Austria, France and Italy. The participants were experts from seed companies, organic farmers, farmer advisors, organic certification, seed health inspection, researchers and agricultural trainers. Participants were selected based on their involvement in the organic sector, their knowledge on seed production, and their capacity to multiply the knowledge in their country as 'change agents'.

The colourful program covered the following topics:

- conservation varieties of cereals;
- good practices of short value chain;
- CPVO-EU field trials of heterogeneous populations of cereals registered under the temporary experiments on marketing of cereal populations (2014/150 EU)
- Population registration in Italy;
- Good practice of cooperation between farmers and universities in the maintenance of conservation varieties and populations;
- Community seed bank and the informal seed sector;
- Seed cleaning, seed processing in a large-scale cooperative;
- Dedicated organic seed processing;
- Organic vegetable seed production and multiplication;
- Common bunt management in decentralised organic seed systems
- Different organisational models for producing, multiplying, storing and sharing organic seeds;
- Setting up participatory research under organic and low-input conditions;
- Involving further stakeholders (bakers, millers, researchers, farmers, health professionals) in the breeding of cereal varieties.

2. The places visited in Italy

PODERE SANTE CROCE – ARGELATO

A mixed farm that uses biodynamic methods in their production of cereals, growing in rotation with legumes, vegetables, forage and pastures. The farm hosts populations for both production and educational purposes.

Podere santa croce — Via Bonaccorsi, 17, 40050 Argelato BO, Italy

Contact: 0039 (0) 51 663 7341 poderesantacroce.com

THE ITALIAN MINISTRY OF AGRICULTURE'S RESEARCH AGENCY (CREA DC) – BUDRIO

Hosting comparative field trials that cover all Italian and German registered bread wheat CCP for evaluation by the expert group of the Directorate General for Health and Food Safety of the European Commission (DG SANTE).

Via Bagnarese 10, 40055 Budrio, Bo

abp.entecra.it/



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C.A.C. SOCIETÀ COOPERATIVA AGRICOLA - CESENA

The largest vegetable seed producing operator in the country that has a new dedicated organic processing plant. We visited 2 fields (one organic field, and one experimental field) and the seed processing plant.

47522, Via Calcinaro, 1450, Cesena

<http://www.cacseeds.it>

RSR AND THE COMMUNITY SEED BANK – SCANDICI

Rete Semi Rurali is an umbrella organisation, a network of 40 organisations, hosting a community seed bank holding local varieties and populations of cereals.

Via di Casignano 25 50018 Scandicci (FI)

<https://www.semirurali.net/>

ROSARIO FLORIDDIA'S FARM - PECCIOLI

300ha organic farm producing ancient and local varieties of cereals, and legumes.

Via della Bonifica, 171 56030 Peccioli (PI)

<http://www.ilmulinoapietra.com/>

We would like to express our gratitude for RSR, the CREA-DC, Stefano Balestri and the C.A.C. Cooperative, Andrea (Podere Santa Croce), Antonio Lo Fiego (Arcoiris), and Rosario Floriddia, and all their staff, for their incredible hospitality and for the highly intensive learning experience!

3. The methodology applied

The methodology was partially based on and modified from the Agrispin Manual for cross-visits (Wielinga & Paree, 2016), and adapted to the case of organic seed production and stimulating own initiatives.

Preparation:

The draft program, and several materials were pre-sent to the participants on the visit, and the methodology that would be used, and on the places that we would visit, three weeks and one week prior to arrival.

Kick off - Getting Acquainted

Acquainted

Since half of the group arrived a day earlier, we organised two sessions to build up the team spirit, one on the eve of 4th June, and one in the 5th June with all participants. The session on the fourth focussed on individuals' motivations, values, the person behind the expertise, and involved light-hearted interactive exercises, and solving a moral dilemma game in a multicultural environment. On the fifth, a personalised Bingo game helped the participants to get to know each other that was based on each individual's professional life. Discussions and further introductions by the participants followed.

Oriented



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The hosts RSR gave an introduction to the cross visit within LIVESEED, the program, an introduction of their organisation, and of the regional context they operate in. Materials were also pre-sent to the participants on the visit.

Updated and Organised

A brief overview of the methodology, the expectations from the participants and the use of observation cards were presented. The visitors were given themes for observation, different ones for day one and day two, for structured learning. Without a focus, technicians are tempted to ask all kinds of technical details while visiting a farmer, but these details sometimes do not serve the objective of the visit. The observation cards should provide some guideline to ask targeted questions and especially facilitate people. The themes of observations were based on the visitors' interest and on the places we visited. 2 series of 18 cards were developed, one series focusing on population registration, and one series targeting general questions on seed production. All participants were given a card a day and was responsible for exploring the answers during the visit. The aim was to gain a focused view on several aspects of seed production and variety populations: technical (how is the seed cleaning etc done), market aspects (how is it sold), organisational aspects (who has which responsibilities), regulatory aspects (what is the legal frame), activities (description of farm, history), future perspective, problems, actors, etc.

Step 1: Field Visits

During field visits, the team studied a particular field / farm / organisation/enterprise. Key actors, such as the farmer or farm family, the support agent and other persons who play a particular role in the management are being interviewed, mostly based on the themes mentioned above.

Step 2: Reflections

After and during the visits, the team took time to share observations and to reflect on them and discussed other technical questions. The cards with written observations were also collected at the end of the day or during the discussions.

Step 3: Social Activity

During the cross visit, the group visited together Bologna after dinner to meet each other in socialising settings. This was important to build good relations that might continue after the cross-visit.

Step 5: Closing

A closing session took place at the end of the cross visit, to allow participants to debrief, and to provide feedback to the host, to reflect on the methodology, on the network building potential of this visit for the participants, and to define missing themes for future knowledge exchanges. Explanation of the evaluation survey in 6 months' time were also provided.

Step 6: After the visit: survey

A survey has been developed that participants would need to fill and send to agnes.bruszik@ifoam-eu.org to IFOAM EU by 31st December 2019. This survey aims to understand the effect of the visit on the participants, the changes it might have introduces into their practices and knowledge. It also gives opportunity to report on aspects that were so useful to learn about that eventually could be exploited in the participant's country.



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04. The Visits

VISIT 01: PODERE SANTA CROCE

Conservation and Catalogue field

Podere Santa Croce is a 30ha large organic mixed farm, using biodynamic methods. They hold a large large collection of local varieties of cereals. The “old local varieties” or landraces they hold are in fact not local, the variety which was found the closest is from Parma which is 150 KMs away. What had been grown in the region was lost or replaced by newer uniform bread varieties. Therefore, what they have here is in fact a collection of landraces from all over Italy. In collaboration with the University of Bologna, that has accessions from the gene bank in Bari (Institute of Biosciences and Bioresources) Podere Santa Croce participates in collaborative regeneration of old varieties. They host 130 local varieties of wheat in search of varieties with the best qualitative properties.



Production

The production includes organic bread wheat, durum wheat, and many other cereals to smaller extent, such as barley, einkorn, emmer, buckwheat, oats, maize, millet. They primarily sell them as grain or flour through direct sales.



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Photo credit: Podere Santa Croce

Milling

They purchased a stone mill from Austria from a craftsman with a capacity of 150 kg/hour and added a tumbler to this mill to sift the flour and more or less separate the bran to get the best from the milling process. In the farm, they produce flours of corn, spelt, millet, and Virgo wheat flour (see next page). They work in small batches to have a product with maximum vitality and with a very high nutritional value. Slow grinding and temperature control in the transformation phases make it possible to obtain a flour with optimal nutritional properties. Before milling, a separate area is dedicated for storing and cleaning, including the removal of dust, insect eggs, etc. from the grain (careful brushing and cleaning). They also perform milling work for third parties (certified organic grain only).



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Virgo and BioAdapt

Virgo is a population of five ancient local varieties of *T. aestivum*, selected for their high nutritional values and baking qualities, as a result of years of research together with the Department of Agricultural Sciences from Bologna. Originally, the population was a dynamic population, which is a mixture, not a result of crossing. Then the University of Firenze and the University of Pisa crossed the five varieties in all possible combinations to create a population called BioAdapt, which then was registered under the temporary experiments from the Emilia-Romagna region.

Podere Santa Croce holds both the original 5 selected varieties in purity, as well as a cross-composite population, and the mixture of them. Their catalogue field of 130 varieties of wheat also serves to find the varieties with the best qualitative properties to be included in mixtures.

The five components of the Virgo² population: Andriolo, Inallettibile, Verna, Gentil Rosso and Frassineto. Although they are ancient varieties, they are already quite heterogeneous.



Gentil Rosso



Verna



Inallettibile



Andriolo



Frassineto

² More information on the Virgo project: <http://www.granovirgo.it/progetto-virgo>



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Over time, the Virgo population has grown into a producers' association "brand". The Virgo brand is a collective brand that brings together farmers, millers, bakers, citizens, with the aim of guaranteeing the origin and quality of the products, through the respect of a strict productive Regulation. The Virgo branded wheats are grown respecting the Virgo production disciplinary which contains the principles of low input agriculture (organic farming and some biodynamic agriculture practices). One who can fulfil the requirements, can grow the Virgo population by either mixing the seeds or by buying the population seed resulting from the crosses (BioAdapt). It is still considered a Virgo population if it is only mixed, and not crossed. Mixing happens simply adding 20% of each variety.

Each farmer grinds the grain produced in his field into selected mills. The grinding with large stone and an accurate control of the flour temperature in the milling phase, allow to keep intact the nutraceutical properties of the grain to obtain wholemeal flour, type 2 or type 1 with a high nutritional value.

The Virgo flour mixed with sourdough starter, extra virgin olive oil, water and salt and following a slow and controlled rising, produces a digestible sourdough bread with the unmistakable aroma, the Virgo Bread. "Pane Virgo" can be produced and sold both by professional bakers belonging to the Virgo brand, and by Virgo farms with a laboratory.

Virgo is above all a good example of a short chain project. Excluding the intermediate steps (wholesalers, retailers, etc.) the supply chain is shortened together with the km travelled by the product, which benefits of the environment and the producer who can sell his goods at a price that allows him to sustain himself. At the same time the consumer supports the local economy by accessing an excellent quality food at a sustainable price.

Quick Facts: **Average waterfall in the area:** 7-800 mm. In drought 4-500 mm, and the extremes are getting stronger. **Crop rotation:** production of cereals, growing in rotation with legumes, vegetables, forage and pastures **Weeding:** by machines **Yield of organically grown wheat:** 3T per ha, in comparison the modern varieties of soft wheat under organic can do 5.5t but yield is less stable.

Any other business

They also have a vegetable garden to support the restaurant, the farm and the family, and maintain rows of various fruits of ancient varieties with forgotten flavours. A "laboratory" was built in compliance with the hygienic-sanitary norms, where they authorization to slaughter directly the courtyard animals (chickens, hens, ducks, rabbits).

Why organic-biodynamic?

"We try to restore and maintain the fertility of the soil using organic preparations. We try to cultivate plants and raise healthy animals, by respecting them and their surrounding environment in a way that makes them independent of human presence, so that the conditions of self-regeneration can recur. Biodynamic agriculture is an important attempt to govern part of nature through new tools generated by the life processes of nature itself."

Andrea (Podere Santa Croce)



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Group discussions/reflections centred around:

- The organisation of quality control in the farm: what does exactly quality control concerns? How do they test the quality? What do they assess? Do they assess baking quality of the flours?

In terms of cereal production, they only control the production quality, yield and the baking quality they don't really assess in the farm. For other issues, such as processing the animals, all the procedure from the live animal to the finished product (salami, pancetta, lard, sausage, etc) is constantly monitored and self-controlled by HACCP, and periodically an analysis is performed on samples to ensure maximum food safety for the final consumer.

- Nutritional value: what is considered in the nutritional value?

Mostly antioxidants, polyphenols and the gluten profile with lower inflammatory response than the modern varieties used today in baking. The University of Florence and Bologna carried out research with hospitals, studying inflammatory markers when consuming different varieties of wheat.

For instance, Virgo wheats compared to a common variety of modern soft wheat (e.g. paesio) was found to have up to: + 12% calcium, +24% iron, + 9% phosphorus, + 6% antioxidant activity, -10% production of toxic substances for cells, + 24% cellular vitality, + 200% prebiotic activity (the ability to stimulate the growth of beneficial bacteria in our intestinal flora), + 15% antioxidant compounds (substances such as polyphenols, flavonoids and carotenoids that prevent cellular aging).

- How do they categorise soft wheat flour from small scale stone grinding?

Sifting is the gradual sieving process of the ground wheat to obtain flour of varying refinements. The rate of sifting or grinding yield is the amount of flour obtained from grinding one hundred grams of wheat. Depending on the sifting rate, the soft wheat flour can be categorised into five types: "00", "0", "1", "2" and whole meal. "00" flour underwent a sifting of 50%; "0" flour of 72%, type "1" of 80% and type "2" of 85%; whole meal flour only underwent an initial stage of grinding, without further sieves, and has a sifting rate of 100%. In Italy, for breadmaking they use type 1. Stone grounded flour is different from the commercial milling in each country. The stone milling of Podere Santa Croce produces type 2 or whole meal. You could do type 1 but then 60 percent is lost. The normal for this kind of milling is type 2.

- How to maintain the 20% each share in the Virgo population over time without rebreeding every year? Without rebreeding, the frequencies will change, inevitable.

VISIT 02: CREA DC - THE ITALIAN MINISTRY OF AGRICULTURE'S RESEARCH AGENCY

The Bologna unit of CREA-DC is the government body responsible for seed certification for Northeast and Central Italy, covering a large area of 8 regions, and about 60 % of Italian seed certification activities. CREA DC has seven experimental fields, out of which the one in Budrio mainly tests industrial crops for listing their new varieties to the national and EU catalogues. Crops tested here: soybean, Sorghum bicolor, sunflower, flax seed, hemp, forage peas, large scale VCU testing for maize and potato. They have twelve VCU test centres across the region they cover. They are a local member of CPVO for soft wheat, artichoke and some crops because they need accreditation from CPVO on those.



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With regards to the populations, their main task is to carry out comparative field trials to assist the European Commission, to evaluate the implementation of the temporary experiment on marketing of cereal populations (2014/150 EU). They host all Italian populations until 2018 (because in 2019 in Italy 4-5 new population were presented to Ministry but we they have not included them into the trials), and also 3 German populations for post-evaluation (post control of the population). The outcomes of CREA-DC's trials shall inform the Commission on identification and traceability criteria, in the drafting of delegated acts of the new European Organic Regulation (Organic Heterogenous Material)³.

The main questions: how can we approach this heterogenous population issue? First getting to know the heterogenous materials present in the crops, to identify as much as possible the different phenotypes present in each population. And then observe how they evolve over time in number and abundance, like taxa within an ecological community. The idea is to try to find an identified frequency of different phenotypes inside every population.

Trial set up

The study approach in 2019 is based on comparative trials, untreated, and using no fertilizer. The samples submitted to these trials: 6 soft wheat, 3 durum wheat and a barley, 3*2 samples from Germany, and 7*3 samples from Italy. The populations are CCPs.

Experiment on Populations (2):
Survey of the samples submitted to the trials

Species	Population	Country	Total Samples
Soft wheat	Evolito C	Germany	2
Soft wheat	Evolito D	Germany	2
Soft wheat	Brandex	Germany	2
Soft wheat	Solibam Tenero Floriddia	Italy	3
Soft wheat	Solibam Tenero Li Rosi	Italy	3
Soft wheat	Biodapt	Italy	3
Soft wheat	Evoldur	Italy	3
Durum wheat	Solibam Duro Floriddia	Italy	3
Durum wheat	Solibam Duro Petacciato	Italy	3
Durum wheat	Mix48	Italy	3
Barley			
Total			27

From the Italian populations, they have 3 different plots: one from the breeder, one from the harvest of our trial from 2018, and one from the certified seed of 2018. From the German populations, they have 2-3 plots: 2 for German population: one from 2015 and one from 2018, (from the breeder and one from German respectively). The plots are in total 27, with 2 replications for each entry, plus they have in the field 2 samples of different years for the Italian populations so they can analyse how they evolve over time. The German partner carries out the same trials but looks into agronomic data.

³ 2018/848 (EU) https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2018.150.01.0001.01.ENG



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CREA researchers make repeated assessments in the optimum stage of plant development all inside a square meter, without removing the plant. In some areas they reduced the number of plants to 120 plants/m² but the rest of the plots have 200 plants/m². In each row, all plants are counted, at every 10 plant, they put a stick in order to identify the block and facilitate the assessment. This way they identify every single plant. They have chosen some macro-characters from CVPO protocols that are considered simple to detect. Some examples below:

For wheat:

- Time of ear emergence
- Ear: density; shape in profile; glaucosity
- Ear: length (excluding awns); length of awns at tip relative to length of ear; awn colour
- Culm: glaucosity of neck
- Plant: length
- Lower glume: hairiness of external surface

For barley:

- Time of ear emergence
- Flag leaf: anthocyanin colouration of auricles,
- Awns: anthocyanin coloration of tips
- Ear: glaucosity
- Ear: attitude; number of rows
- Plant: length

In the table of data assessment every column corresponds to a row in the field, and every row in the table is a plant. For each plant the characteristics are collected, then data is analysed to identify



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different phenotypes and their frequencies with cluster analysis. We need to look at how to identify the plants in the population to be able to get them certified and establish sound traceability criteria. If you find a way to identify a population then you can take any bag on the market and check if it is actually what is written on the bag.

Group discussions/reflections centred around:

Comparison of the populations

The German populations and the Italians: How do you compare the Italian and the German? Should they behave similarly? How about local adaptation? The German populations are late, generally the materials from Northern Europe are late in the season on Italian soil. The German populations were created using modern cultivars, should be harvested by now, but here they are still green and may not reach full maturity under Italian hot and dry conditions. The German partners carry out agronomic performance, not phenotypic, but this is the first year and the results have not been analysed yet on either side.

The different Italian materials from different years, e.g. 2017 and 2018, how do they compare? This year was a bit different from last year because last year all the plants were removed and the phenotypes separated, but this year the CPVO protocol was followed exactly, and the plants were measured in perfect timing. The results though are unknown yet.



Why did CREA take part in the temporary experiments?

In Italy there is a high demand for populations. In the current temporary experiment that ends in 2021, there is no registration process, only an application is necessary, and the requirements are very simple: the population must be made from at least 5 varieties (crossed if they are self-pollinating or grown together, in case of out-crossing – e.g. maize) until you cannot recognise the initial lines. In the new organic regulation⁴ starting from 2021 organic farmers can use the populations, known as Organic Heterogeneous Materials and the EC needs to know how to proceed with the registration of

⁴ The new regulation (EU) 2018/848 of 30 May 2018 on organic production and labelling of organic products



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populations. This also needs to be harmonized with the seed legislation. These experiments are also helping to find criteria for registration for population, to find some protocols.

How to take part in the temporary experiments?

The country needs to ask permission to participate as a country. The relevant competent authority, the Ministry of Agriculture, sends a letter to DG SANTE inquiring participation. Then you can register the materials (populations). Farmers, cooperatives, associations, breeders, seed companies, etc. can provide the dossier to your government to support your population to the list. The process of registration is for free, but you have to provide the history dossier. The registration process in Italy during the experiment is a notification to CREA that one wants to market a given population, you need to describe the population, its origin, etc, and then they express their decision to include or not.

Quick Fact: If you are considering the registration of populations from your own Member State, the deadline of the latest upcoming application of population registration is 31 December 2019 (EU 2018/1519).

“You need to keep in mind that the seed legislation is not made for evolution; it is made for the marketing of populations”

Riccardo Bocci, RSR

What are the main arguments around these populations?

- How to identify a population?
- How to compare results from a research station with on farm (target environment) evaluation?
- How to deal with the fact that a lot of Italian populations are adapted to marginal environments?
- How to make them competitive with modern/uniform varieties? Research shows that putting CCPs or variety mixtures in different environments after a few years the population adapts and finds its balance, but the surprising is that these populations can outperform the best recommended uniform varieties because of the specific adaptation process, and of exploiting the genotype x environment interaction. But you can only do it if you use the population exactly in the area where it has been adapted → dilemma of wide adaptation or specific adaptation.
- How to deal with Ustilago? In Italy is a serious problem in the populations, in local varieties as well as in conservation varieties. In the trials, CREA also found Ustilago in the populations that derived from their trials from 2018, except of one plot where the breeder decided to chemically treat the seed because the alternative was the loss of the variety, and therefore there is one plot without Ustilago.
- Traceability: Each population is registered with a dossier, with all the information about it that the breeder provides in general, including the parent lines, if known. Generally speaking, breeding a population should be no different than any other breeding program. This is a pool of genes and next year it will be the same pool of genes, but the frequencies of the genes will



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change. But we still have to register population, if you register a population, it should have some characteristics. In ten years, it might not be the same, so what CREA is doing is to have a look at the way of tracing back a population, even if it has changed it should be somehow recognized. E.g. in the case of the Solibam wheat, it was the same population in 2009 and now they are completely different in Florence and in Sicily.

- Alternative seed systems: when you deal with populations, farmers get a strengthened role because e.g. in Italy farmers can register as seed companies, and become certified seed producers, they have inspectors, researcher coming to their field trials, the whole landscape is changing a bit.
- In the new organic regulations, there are no limit to what populations can be, any cultivated species, and the reg we have *organic variety suitable for organic production* are defined as less uniform variety.

What other test are carried out in different countries?

- Genetic analysis
- Agronomic analysis

What is the result in Italy so far?

In Italy, as of 31 December 2018, the following populations were registered and marketed:

- Soft(bread) wheat: 7
- Durum wheat: 4
- Barley: 1
- Sorghum: 1

Per Region:

- Emilia-Romagna: Bioadapt, Bio²
- Toscana: Solibam Floriddia, Mix tenero Toscana Pa1, Mix tenero, Toscana 1, Evoldur (durum), Mix duro Toscana Pa1
- Umbria: Barley Mix 48
- Basilicata: Carosella
- Sicilia: Solibam Li Rosi, Angelo (durum)

The following quantities sold (as per 31 December 2018):

- BIODAPT: Kg 14.275
- SOLIBAM FLORIDDIA: Kg 24.000
- SOLIBAM LI ROSI: Kg 19.950
- TOTAL: Kg 58.225

Buying farmers: 107

Issues around registering a conservation variety in Italy

Registering a conservation variety is not always easy in Italy. For instance, the Carosella landraces (bread) variety from South Italy, some month ago farmers wanted to register this variety in some catalogue. They tried to register it as a conservation variety, but it was too diverse according to the regulations on conservation varieties. Then they decided to register it under the temporary experiment, even if that is made for new populations and not for historical landraces, and despite the fact that they are also not CCPs. There are different Carosella too, depending on where you grow. We are still trying to find their place in the new organic regulation's proposed categories.



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In Italy the defining the areas of a particular conservation variety is not so easy. In Norway the conservation variety is where they were adapted: Norway, Finland, Sweden, Denmark. Same thing in France, it is just France. But in Italy, we have to define all areas conservation areas, “areas of historical origin.” Once it is registered in a historical area, others outside that area are not allowed to make the seed.

The LIVESEED project is working on proposals for the new organic regulation concerning the heterogeneous materials and the team is suggesting a toolbox for their identification and characterisation. For the main outcomes and SWOT of experiences from marketing populations under the Temporary Experiment into the commercialisation of heterogeneous populations in the European Union, please visit the LIVESEED website⁵.

RSR’s good example of helping farmers produce and register a population – SOLIBAM Bread Wheat⁶

Rete Semi Rurali is a network of 40 organisations with a mission to create inclusive and highly innovative seed-to-product value chains to enter an official seed market alongside mainstream linear seed systems. Italy is a mosaic of many different environments, most of them are marginal or mountainous, so no private breeding company has particular interest in investing in to suit these environments, and therefore are the opportunities for other seed systems and for materials for varieties and populations. The seed, the genetic resource, landraces, old varieties, everything that is not taken care of by the private sector is at the heart of RSR, their conservation, but also their active revival and circulation between farmers. Along these value chains, there need to be seed systems, the regulatory system and plant health controls that guarantee the seed quality.

The Solibam cereal populations were created in 2009 at the International Research Institute ICARDA by Salvatore Ceccarelli (barley), followed by his colleagues for bread and durum wheat. In the framework of H2020 project SOLIBAM, the populations were distributed from Iran to Morocco to the South of Italy, encouraging farmers to keep saving their own seed. Over time, the Solibam populations evolved and adaptation to different environment. From the original population created in 2009 at ICARDA mixing F2, F3 and F4 from 1996 crosses, in Italy it has been cultivated continuously since 2010-2011 in 2 organic farms (one in Tuscany and one in Sicily, each farm starting with a 5 kg seed). After 7 years of breeding, in 2017, the population evolved into 2 Evolutionary Populations, thanks to years of natural selection. Since 2017, the seed from this populations became commercially available, as certified seed, thanks to 2014/150/EU.

There was a waiting list for the seeds. In Sicily, Solibam was sold directly from the farmer because he was a registered seed producer, and in Sicily, there is a big network of farmers who are interested in organic agriculture and local varieties, which facilitated its adoption. In Tuscany, RSR facilitated the process: the farmer multiplied the seed, whilst Arcoiris, a seed company, took care of the certification and marketing part.

These populations have already met the consumer on the end of the value chain so there is a flour pasta sold, with a label that can be used on the seed bag and also on the products to raise awareness of the consumers on the population. RSR is proposing a pledge for those who use the seed or buy, there are no breeders rights on it, those who use it are committed to use the open source licence.

⁵ https://www.liveseed.eu/wp-content/uploads/2019/07/LIVESEED_MS2.8_heterogeneous_material_marketing_May_version_internal-document.pdf

⁶ For more information on the Solibam population, visit: https://www.liveseed.eu/wp-content/uploads/2019/01/2_Bocci_RSR_heterogeneous-populations-Angers-6-Dec.pdf



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A Sicilian farmer teamed up with a miller in the Northeast that specialised in flour for pizza making and they created the brand “Petra, stone ground flour from Evolutionary Populations”. They have entered the seed market and the product value chain as well. But since the new organic regulations will not be limited to cereals, there is a scope for further CCPs of other species, such tomato and beans (already existing in Italy).

VISIT 03: C.A.C. Cooperative’s fields and plant

The C.A.C. Cooperative was established in 1948 with the mission to multiply seeds in the most suitable Italian areas. They offer contract multiplication of many vegetable and field crops based on the stockseed supplied by the customers. The seeds are grown by the 2,200 associated growers, that includes 100 organic farmers, under the assistance and the control of the CAC’s technical staff. After harvest the seeds are collected in the main warehouse where they are stocked, processed, tested in CAC’s internal laboratory packed and delivered upon customer’s request. As results of its commitment for a sustainable development C.A.C. gained EMAS registration and the certification ISO 4001 for the environmental management system.

C.A.C. multiplies in several Regions in Italy, mainly in Emilia Romagna and Marche, and in other Regions such Umbria, Toscana, Molise and Puglia.

In total, 30% of their seed production is domestic market, export in 40% to Northern Europe, 30% to Asia, Japan, Korea, China increasing. Organic production is mostly domestic, with some export to Northern Europe, mainly to the Netherlands, including chicory, cabbages, celeriac, carrot, lettuce, squash, rocket.

Their services for farmers include:

- CAC’s processing, cleaning, storage and packaging facilities with the latest technologies for seed processing;
- Agronomists and technical staff which takes care of all the logistics involved with seed multiplication, starting from checking the isolation distances and delivery of stock-seed for planting till the collection of the harvested seeds;
- Production of vegetable seeds in open field and tunnel, both open pollinated and hybrid varieties, with conventional and organic methods of cultivation;
- The internal laboratory is I.S.T.A. accredited since 2005, being the first national private laboratory to obtain this accreditation;
- Rental, cleaning and maintenance of machinery and equipment’s;
- Assistance in the harvest.

The lines the company receives from the breeder. Then they assign them to the plant raisers, deliver the plants to the growers, who do the transplanting and the harvest, C.A.C. collects the harvest, cleans and processes the seed, then delivers to the customer.

Field Visit AT C.A.C. #1: Milandri’s Organic Field

C.A.C. grows organic seed on 4-5 % of the total acreage. Every type of crop they grow in conventional, they grow in organic as well. As a seed multiplier you don’t have ask for derogations, you automatically allowed to use any seed as long as it is not treated, because most of the time the seed is not organic. The plants are organic, because it is not allowed to introduce into the soils some part of soil which are not organic. C.A.C. provides the plant raiser the untreated seed who raise the seeds on certified substrate, and the plants are organic plants. The parents’ seed everybody can access, but the company has rights over the hybrids.



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RaccoltoBio2019											
T	N°	Ditta		TIPO	Varietà	linea	Ha contr.	Ha mis.	Destinazione	Data tra/sem (A)	Data tra/sem (B)
LT	10155	NBO	SGP	Lattuga	Green Salad Bowl	Bol-125	0,50	0,27	Mart5	02-04-19	
MZ	10007	IAI	SGT	Melanzana	listada de gandia bio tunnel		0,030	0,025	Mart5	11-05-19	
MZ	00001	IST	SGP	Melanzana	Rimini 3 selezione Bellaria		0,12	0,20	Mart5	11-05-19	
OF	01800	IST	SGP	Salvia	Officinale BIO	2020	0,20		Mart5		
OF	01461	IST	SGP	Menta		2020	0,20		Mart5		
PL	05002	IST	SGP	Pisello	Pea Poi24 (Honey)		1,00	0,55	Mart5	08-03-19	
PM	10092	IAI	SGT	Pomodoro	Datterino nano a terra		0,030	0,025	Mart5	11-05-19	
PP	10019	IAI	SGT	Peperone	Corno di toro rosso		0,030	0,025	Mart5	11-05-19	
CR	10041	NBJ	FGP	CicoriaF1	Rossa a palla	41049-9	5,00	5,00	Milandri	17-03-19	17-03-19
CS	00001	IST	SGQ	Crescione	Comune da germoglio		4,00	4,00	Milandri	08-03-19	
FN	10263	GSV	SGP	Finocchio	Zefa Fino OP Fennel		0,50	0,50	Milandri	20-02-19	
GI	01001	IST	SGQ	Girasole	Germoglio		1,00	1,00	Milandri	03-05-19	
LT	10138	NBO	SGP	Lattuga	Red Lollo	Bol-123	0,30	0,55	Milandri	02-04-19	
LT	10156	NBO	SGP	Lattuga	Lollo Bionda	Bol-127	0,30	0,55	Milandri	30-03-19	
LT	10198	NBO	SGP	Lattuga		Bol-084	0,20	0,40	Milandri	30-03-19	
OF	00760	IST	SGP	Rosolaccio			0,30	0,50	Milandri	13-10-18	
PL	00121	IST	SGP	Pisello	Rondo		4,00	4,50	Milandri	11-03-19	
PZ	00001	IST	SGP	Prezzemolo		Comune2	1,00	1,40	Milandri	13-10-18	
RA	00140	IST	SGQ	Ravanello	Germoglio Chine Rose		4,00	4,80	Milandri	20-02-19	
RP	05204	IST	SGP	Rapa	Turnip Nav003-Golden Ball		1,00	1,20	Milandri	13-10-18	
RU	00005	IST	SGP	Rucola	Selvatica		2,00	1,60	Milandri	02-04-19	
ZA	10136	JTA	FGT	ZuccaF1	No506		0,50	0,50	Milandri	21-05-19	
ZA	10136	JTA	MGF	ZuccaF1	No506				Milandri	02-05-19	
ZO	00105	IST	SGP	Zucchini	Nano Verde di Milano		1,00	1,40	Milandri	02-05-19	

Crops grown in the Milandri farm:

- Hybrid squash: male and female lines planted with about 12 days difference (when the male line is starting to sprout then they sow the female), the female flower removed by the hand. When they cannot control anymore the male flowers, then they mark the fruits which are already pollinated and then they stop.
- Hybrid chicory (red): one female line and two male pollinator lines planted. More male is needed to pressure the pollination. The female is marked, and supported with sticks to help the plant stand, to prevent the plant to fall onto the soil. Damage by worms is significant this year. They harvest only one third of the plants in this field. It means that the yield is poor, but the price is very high. The hybrid is not grown for more yield but for uniformity of maturity. That is an advantage because there is a constant demand from the market for chicory. Big farmers specialised in chicory need to be able harvest 90% of the produce in the same period, then they can have another plot that they sown later and harvest later and this way they can supply more continuously. The grower is ready to pay more despite that disadvantage in yield. On male sterility: they study it but for now the plants are highly incompatible, the self-compatibility of the female plant is much lower so they can get more pollen from outside. They also have a special cleaning technique where they can separate the part of the seed that has high percentage of hybridity.



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- *Papaver rhoeas* poppy for seed production: used for herbs, not for the seed, it is harvested when they are very young, and boiled. The poppy field is not organic yet, but from next year they will try organic.
- Turnip (golden ball), *Brassica rapa subsp.rapa*, has a small seed. To avoid their seed falling to the ground and coming up for 2-3 more years, they apply careful control. A technique used is to wait first with tilling the soil after the first rain. Turnip has very quick sprouting so if you wait for the first rain before ploughing or tilling, you will destroy 90% of the plants from the seed falling to the ground. If you go immediately after the harvest without a rain, then you will have 4-5 years turnip showing up sprouting.
- Lettuce: this year suffered from rain and cold. There is no isolation requirement in the case of the lettuce, because it is self-pollinating, so it does not need isolation. They can be grown side by side and harvested by machine.
- Sunflower for sprouting, not for plant.



Brassica rapa seeds



Main difficulties with organic growing:

- Weed control: they both by machine and by hand, depending on the crop. This year was particularly bad with May having too much rain.
- Isolation: in areas of intensive seed production, there are clear regional rules about distances between crops of same species: when planting a seed crop, an agreement must be made with other seed companies to respect the minimum isolation distances which are fixed by these rules, so if somebody comes to make a squash or chicory which are too close (less than 1000m) and he has not declared before planting, he would be forced to destroy the crop. For this reason, before the planting there is large meeting with all the seed companies to decide who is going to plant what, and in which area, in order to avoid contamination.



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- Pest control: they use biological control in the protected tunnels but not in the open field as it is not effective, the main problem is aphids and they use pyrethrums before flowering or oil emulsion that suffocates aphids.

Field Visit AT C.A.C. #2: C.A.C.'s and Arcoiris company's Organic Experimental Fields

Part of the Experimental Farm adjacent to CAC's headquarters was converted into organic just to make trials to support the production in organic.

They are using the visited parts for production for the company Arcoiris. They have open field experiments and tunnels (remnants of historical Strawberry production in the area). Currently they have:

- A local variety of eggplant which is typical of this area, a long purple variety, transplanted recently and just started to grow, in open field and also in tunnels (it is for small production and also because it needs isolation from the other fields, to avoid cross pollination);



- A local variety of Red Bulls horn, a pointy Pepperone pepper;

- Cherry tomato in tunnel: a bit oblong (date shape), not quite cherry, but rather date shape, it is used for sauce making. The variety was selected for disease resistance, it is open pollinated like all the seeds Arcoiris does. The other main quality of this variety is that the sugar (Brix) content on average 8-9, while the corresponding class has on average 4.5-5. It is a determinate variety, harvested mechanically. Yield is 5-6 kg per plants under organic. It has not been christened yet. The tomato derives from a commercial hybrid resistant to a disease, then going through 9 years of selection process. Tomato is self-pollinating in 99%, but in cherry tomato there are some lines when the stylus is longer and can get out of the flower before it gets pollinated so it can get pollen from the outside. To avoid this, we prefer to cover.

- Squashes, isolated from rabbits with a fence

- Zucchini: 2 varieties developed for organic agriculture. They are going to be registered soon this year (F9 now) and will go on the catalogue.
- Selection of a zucchini for virus resistance, now at F4 stage. They select the single plants that were chosen for the next generation then they would be self-pollinated manually and then the seed of the self-pollinated fruits would be saved, then the next year they would be grown out in each family. It derived from a hybrid *Regas* from Syngenta, then segregated and selected. It is medium size light green with little white stripes. Virus resistance is tested by looking at symptoms, but later on they will do laboratory tests. Now it is still segregating and there is a big diversity the population.

C.A.C. Processing Plant

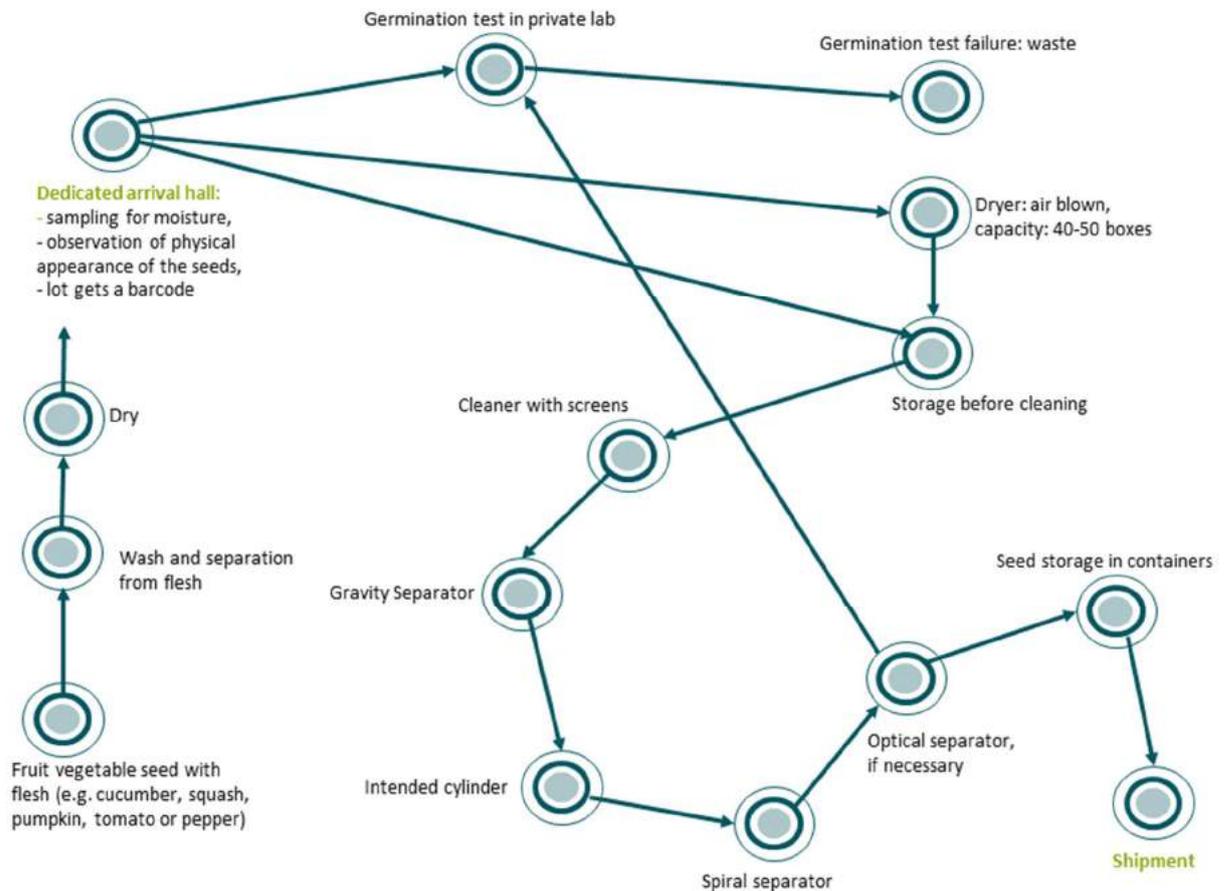
The company is divided to 2 branches: vegetable seeds and industrial crops like (sunflower, soybean, sugar beet). They are processing seed in 12 lines (12 cleaning plants).



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The seed is processed in the following flow:



Dedicated Organic Plant

Special cleaning dedicated only to organic: a new large capacity plant capable of processing a wide range of crops: from vegetables to cereals, to sprouting seeds such as alfalfa (which must be processed separately as this is considered food). The plant combines mechanical and optical cleaning systems and it is still under-utilised compared to its potential.

When operating, special hygiene prescriptions need to be fulfilled:

- to keep traps against the birds
- to keep traps against mice
- people working there need to wear special clothing
- the plant cannot operate in the same hours as the other departments
- human health related issues: rules for the sprouting seeds are very rigorous after the problem with E. coli
- every lot is tested not only for chemicals, but also for the bacteria, especially for E. coli



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Any other business

For hybrid seed harvest, the combines must be cleaned perfectly. For this reason, they have their own combines, and own experts, and when there is a hybrid crop where there could be a problem with mixing, they do it themselves. The open pollinated crops, the owner is free to use their own combine or hire a combine from C.A.C.

For harvesting cucurbits, they provide an extra service, because there is no machinery in the market, therefore they provide the service of harvesting with the machine that they developed specifically for this job.

The company also employs 30 agronomist who visit the farms, there is a person dedicated to visit the organic farmers.

Group discussions/reflections centred around:

- Screen cleaning: Between every lot all the plant is cleaned, all the screens are removed. These screens are used according to the different sizes, different kind of seed, different weeds that have to be removed. The entire plant is cleaned completely after each use in order to avoid the mixture between this seed lots. After the removal of the screens, they let the machine go on empty, so all the seed inside are getting out, and then they use some air pressure to remove everything. The screens are brushed, and the weeds are removed before using them again.
- Optical sorter: they only have two machines: small lots small machine, bigger lot, bigger machine in principle. They select seed of different colour, but not shape. It can be used for any seed. The small machine can handle 5-10kgs.
- Operational capacity: 70 personnel, in peak harvest time they operate in 24 hours shifts with 220-230 personnel.
- Minimum requirements to sell the seed: germination, purity, the ones that are fixed by law and the agreement we have with the customers, usually higher than the minimum germination.
- Seed price: most expensive are hybrid cabbage, hybrid chicory, hybrid carrot.
- Risk distribution: the risk is split with the grower, depending on where the problem is. If the problem is germination, then the risk is split, the price is paid only 80% of the fixed price, but C.A.C. lose 100% of their cost. They try to protect the growers from the risk of losing the crop due to genetic problems. If it is due to weather problems, the grower must take insurance against the weather. Profit is also divided between the associated farmers.



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- Timing: contracting of farmers happens before sowing, e.g. if the sowing of cabbage is in July, they are contracting the cabbage growers in July 2019 for 2020. The onions for 2020 are already in the field because they made them in the nursery. The carrots they'll sow in September so in the summer we contract the carrots, turnip, beets and then in December-January they contract the spring crops, lettuce cucumbers and so on. They have to organise the production, particularly because of the isolation.
- Farmers' involvement: if a farmer wants to produce seeds with C.A.C., they have to send them



the information on the crop. If the product is in their portfolio, or they ordered the crop, C.A.C. visits the farm, and negotiates for next year, minimum area of 0.5 hectares, if it is an open field. The contracted land area depends on the quantity of produce per hectare (e.g. if a carrot produces 500 kg per ha seed, for 2000 kg they would contract for 4 ha).

VISIT 04: RSR's Organic Community Seed Bank

The seed bank is maintained by RSR with a twofold purpose: to keep varieties that they give to farmers to grow, and varieties that RSR wants to test and study in experimental fields or other kind comparative trials. They only store seed on the medium term only (max. 5 years), and they provide seed cleaning, seed identification. They do not sell the seed, or exchange seed, they distribute the seed to anyone making a request. Currently about 250 varieties of rice, and 600 varieties of other crops are stored (mainly cereals).

The following steps are applied for seed:

1. Seed enters the building through one specific door only for sanitary reasons. Small amounts (up to a few kgs) are checked visually for quality and goes through simple machine cleaning. If there is a problem with bunt, the seed is washed with a weak bleach solution and stored separately. Copper will be applied before sowing. For more complicated cases, or unknown diseases, a university lab is consulted.
2. Identification of the variety, description of its sample (kept for further reference)
3. Packaging, giving a storing code is given, accession entered into the database



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4. For cereals, freezing of seed batches for 2 days to kill all insect larvae
5. Then storing in either cold (vegetable seeds) or dry (cereals) in room thermo-isolated
6. Each September a catalogue is published with the quantity of seed available. Every farmer can ask for more than one variety and get 100 grams per package (or up to 1 kg for populations). If they manage to grow and send back some sample, that is possible. About 1-200 farmers order some samples from the catalogue, and they apply material transfer agreements (MTAs).
7. Every 3-4 year they put samples consciously in the field to maintain.



They store:

- varieties from other EU countries
- Italian local varieties
- Italian ancient varieties (made at the beginning of the breeding by breeders, not so uniform as modern varieties but not so diverse as the local varieties)
- Seeds of populations and experimental fields, stored separately, and recorded according to year and place of growing

The model is very successful in raising awareness of ancient varieties, including bread wheat, einkorn, barley, durum wheat. The seed bank is not financed directly through dedicated funds.

VISIT 05: Floriddia Organic Family Farm

The farm is a 300ha organic farm of the Floriddia family, established in 1987, part of the Tuscan Network of Organic Farmers. Since 2009, they specialised in old varieties and landraces.

Co-production and milling and bread

With 8 other farmers, the farm entered into an agreement to produce on 280 hectares 500T of grain, out of which Floriddia buys and processes 350T. Its mill has a capacity of 2.5T/a day. They have an oven that produces 300kg/day. They sell the bread in the farm shop, and online, and in shops in Pisa and Firenze. They also process grains into pasta. All production phase is **certified organic** and the farm is also certified for soil protection.

Crop	Ha	Yield (T)
Winter Wheat	16	40
Durum wheat	20	30
Einkorn	6	
Chickpea	25	
Chick ling	2	

Production of cereals and legumes in numbers

Participatory breeding and field experiments

The farm actively participates in breeding programs, and in the rediscovery and reproduction of old wheat varieties, conservation varieties and landraces. They also grow since 2010 the evolutionary population *Solibam floriddia*, now marketed as seed under the temporary experiments.



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Floriddia's aims:

- To close the food chain from crops to final products, with the farm acting as a guarantee
- To introduce products on the market that are organic, healthy and easy to digest, so those with food intolerance, and those who care to eat healthy food in general, can enjoy!

Common Bunt Session

A knowledge sharing workshop on Common bunt management under organic conditions took place between Italian expert Romana Bravi, Anders Borgen bunt expert from Denmark, Italian farmers and the cross-visit participants. Stephanie Klaedtker from ITAB, France, moderated the event, in an inclusive session. The biology, consumption, crop management and organic treatment options were discussed by the group, and question marks were answered by the experts from Italy and Denmark.



05. Cross-Visit Outcomes

The cross-visit provided a good opportunity to develop the participants' understanding of the organic seed production and population registration, market, legislation, organisational models, and technical aspects of seed production and multiplication, and participatory plant breeding in Italy.

Examples of learning outcomes by participants include, based on feedback and discussions on the observation cards:



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- “I learned during the visit to CREA that it is very important to involve a university in a breeding program.”
- “It is important to control small groups of plants to know the difference between varieties and to register the variety.”
- “Innovative aspect for me was that C.A.C. acquired machines for specific vegetables to facilitate the cleaning.”
- “It was interesting to learn that different characteristics are collected at different stages for each plant per sqm (CREA)”
- “The optical separator was a key innovation for me”
- “The main problems in seed production is the quality of the seed. You need the right growers, provide farmers information. Weather is unpredictable, has big influence on cultivation, in May a lot of rain and cold weather affected especially the organic fields, e.g. pea has to be destroyed”
- “Seed companies in Italy also produce seed to increase biodiversity, and at the same time, they play a social role with the farmers. They contribute to the maintenance of agriculture itself.”
- “In Italy, the seed market is dictated by a large diversity of vegetable and field crops, conformity to the standards agreed in order to achieve the best quality of seed which assures customer satisfaction”
- “They obtain under organic or biodynamic conditions ancient varieties of wheat seeds in order to obtain bread with high nutritional value”
- “They mitigate risks by the selection of disease resistant varieties and crop rotation”
- “I learned that landraces and variety mixtures are more stable”

Other than learning outcomes, practice abstracts on the heterogeneous materials and on bunt management were produced. A video presenting the visited places, and an interview with Anders Borgen on the management of Common bunt under organic conditions were also produced.

Italian seed producers and multipliers formed new networks across Europe through the participants.

06. Initial impact

An idea for a joint proposal on specific bunt management issues has been formed by one of the Hungarian participants.

The Hungarian participants requested further help from RSR in assisting them to register some populations in Hungary before the deadline of December 2019. RSR has provided them example dossiers and English and Italian applications for population registration under temporary experiment.

Many other participants stated already at the end of the visit that they got many new insights and ideas. Further they appreciated this exchange with other professionals from other European countries, many new relationships have been established.

Further impact of the visit will be measured through the evaluation questionnaire in December 2019, which will provide insight on where the knowledge gained here was utilized in the participants' Member States.



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Annex I: Agenda of the visit

05-08 June 2019

Bologna-Florence-Pisa

Day 0 – 04 June 2019		
Time	Program	
17.00 - 18.30	Getting to acquainted: welcome and interactive session (for participants who have arrived on the 4th)	Hotel Pallone, Bologna

Day 1 – 05 June 2019		
Time	Program	
09.30 – 10.00	<i>Travel to Argelato</i>	Pick-up at Bologna Airport (2 participants)
10.00 - 11.30	Visit of a biodynamic farm Podere Santa Croce, with large collection of local varieties & populations of cereals, mill. (Example of value-chain) Podere Santa Croce Argelato	
11.30 - 13.00	Introduction to the Cross-Visit: Getting acquainted part 02: <ul style="list-style-type: none"> • Introduction exercises of participants • Presentation on LIVESEED project and the program • Presentation by the host: Orientation • Presentation of methodology - Organised - cards • Expectations from Participants: Being change agents 	Podere Santa Croce Argelato
13.00 - 14.00	<i>Lunch</i>	
14.00 - 14.45	<i>Travel to Budrio</i>	
14.45 - 16.00	CREA-DC Research Station and visit to the CPVO-EU field trial, holding all wheat populations part of the temporary experiment 2014/150 EU	CREA-DC Research Station
16.00 - 18.00	Group Discussion: Reflections (facilitated session): <ul style="list-style-type: none"> • Learning outcomes of the day • Exploitation and multiplication of learning outcomes in the local contexts – knowledge exchange • Cross-Recommendations 	
18.00 – 19.00	<i>Travel to Bologna Accommodation</i>	
20.00 – 21.00	<i>Dinner</i>	

Day 2 – 06 June 2019



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Breakfast and check-out time, arranging invoices at the hotel		
9.00 – 10.15	<i>Travel from Bologna to Cesena</i>	
10.15 – 12.00	Visit to organic and biodynamic seed producers and organic breeding field trials of organic seed company Arcoiris (two farms near each other)	Close to Cesena
12.00 – 13.00	<i>Lunch at C.A.C. organic seed producing and processing cooperative</i>	
13.00 – 14.00	Introduction to the seed company and the situation for organic vegetable seeds market in Italy	C.A.C. Cesena
14.00 – 15.30	Visit a seed multiplication and processing cooperative CAC – visit to the facilities and the plant	C.A.C. Cesena
15.30 – 18.30	<i>Travel time from Cesena to Florence – Check in Foresteria Valdese, Florence</i>	
18.30 – 20.00	Group Discussions – Reflections (facilitated session): <ul style="list-style-type: none"> • Learning outcomes of the day • Exploitation and multiplication of learning outcomes in the local contexts – knowledge exchange on seed production, processing and multiplication • Selection of best practices and tools (Practice Abstracts) 	Foresteria Valdese, Florence
20.00 – 21.00	<i>Dinner and overnight in Florence at Foresteria Valdese</i>	

Day 3 – 07 June 2019

Breakfast and check-out time, arranging invoices at the hotel			
9.00 – 9.30	<i>Travel time to RSR's new Community Seed Bank</i>		
9.30 – 11.00	Visit to RSR's new Community Seed Bank and discussion on CSB role in local variety and population community management	Scandicci, Florence	
11.00 – 12.00	<i>Travel time to Floriddia's farm, Peccioli (stop at the hotel for check in)</i>		
12.00 – 13.30	Group Discussions – Closing Reflections (facilitated session): <ul style="list-style-type: none"> • Reflections on networking themes for future knowledge exchanges • Reflections on multiplication of learning outcomes as change agents 	Peccioli	
13.30 - 14.30	<i>Lunch break</i>		
14.30 - 18.30	WORKSHOP – BUNT MANAGEMENT Coordinated by Stephanie Klaedtke (ITAB, FR) and Anders Borgens (Agrologica, Denmark)		
18.30 - 20.00	Visit to the Peccioli farm		
20.00 - 21.00	<i>Dinner at the farm</i>		
21.00	Transfer to Hotel Molino d' Era (7km)		

Day 4 – 08 June 2019



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Breakfast and check-out time, arranging invoices at the hotel		
9.30 – 12.30	Visiting a farm field day with activities (classe verte) on local varieties and populations of cereals, seed certification, seed health (cereals) – collecting good practices – <i>knowledge exchange on cereals and bunt management with Italian farmers</i>	Peccioli
12.30 – 13.30	<i>Lunch at the farm</i>	
13.30 – 14.20	Airport transfers	



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Annex II: List of participants

First Name	Last Name	Sending Organisation	Country	Mobile	Email	Profile / Expertise
Angela	Thuringer	AGES	Austria		angela.thuringer@ages.at	Seed health testing, seed certification, field inspection, for the certification process and responsible for the organic seed database
Elisa	Lizana Montero	Ecovalia	Spain		elizana@caae.es	Technician of certification in the department of agriculture at CAAE Certification Body
Evangelos	Korpetis	Aegilops	Greece	+306955965269	korpetis@ipgrb.gr	He works for Hellenic Agricultural Organization DEMETER, Institute of Plant Breeding and Genetic Resources in Thessaloniki for cereal seed production section. He participates also to the National Propagation Technical Committee representing cereal section.
Ilias	Avdikos	Aegilops	Greece	+306909086136	avdikos.elias@gmail.com	Breeder - specialist in tomato seed production
Lidia	Cana	NARDI	Romania		lidiacana@yahoo.com	Expert on seed multiplication regulations for healthy seeds in ecological system
Liliana	Vasilescu	NARDI	Romania		liliana@ricic.ro	Works on national barley seed multiplication and production programme in ecological systems
Maria	Massanet Neubaur	SEAE	Spain		maria_mn_94@hotmail.com	Assesses farmers in a vegetable/wheat seed breeding organization - Mallorca
Matteo	Petitti	RSR	Italy		matteo.petitti@semirurali.net	Expert in participatory breeding in wheat, in participatory strategy of adaptation to climate change for organic and low-input agriculture
Mihaly	Földi	MTA ATK	Hungary		mihaly.foldi@biokutatas.hu	Expert on cereal seed production
Pedro	Mendes-Moreira	ESAC	Portugal		pmm@esac.pt	Researcher, working in Participatory Plant Breeding
Piotr	Ochodzki	IUNG	Poland		p.ochodzki@ihar.edu.pl	Expert in maize and triticale in organic farming system in Poland
Roman	Warzecha	IUNG	Poland		r.warzecha@ihar.edu.pl	Expert on maize breeding, Head of the Maize Varieties Registering Group at the Research Centre for Cultivar Testing
Rosa	Guilherme	IPC/ESAC	Portugal		rguilherme@esac.pt	Agricultural trainer - horticultural organic production at ESAC/IPC
Stephanie	Klaedke	ITAB	France		stephanie.klaedtke@itab.asso.fr	Bunt management expert
Szilvia	Bencze	ÖMKI	Hungary		szilvia.bencze@biokutatas.hu	Expert on cereal seed production
Tsvetanka	Dintcheva	Bioselena	Bulgaria	+359896265792	tdintcheva@gmail.com	Expert on seed production of vegetable crops
Agnes	Bruszik	IFOAM-EU	Belgium	36702148166	agnes.bruszik@ifoam-eu.org	Project Coordinator - LIVESEED



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Annex III: Follow-up questionnaire

CROSS-VISIT SURVEY SIX MONTHS AFTER THE EVENT

1. LEARNING OUTCOMES

What did you learn about the following aspects that you found relevant in your local context since the visit? (Please describe which applies)

Technical aspects

(e.g. How do they produce the seed? What are key innovations? How do they mitigate the risks? (of seed borne diseases, quality loss, etc)

Market aspects

(e.g. What do they produce? Why these crops & varieties? To whom do they sell? How do they know how much to produce? Who has the financial risk in case of crop failure or non-seed certification)?

Support aspects

(e.g. How did they acquire the knowledge to be an organic seed producer? Do they get any specific support to produce organic seed? (e.g. subsidy, other incentives)

Regulatory aspects

(e.g. What are the requirements for them to produce seed? What are the requirements to sell the seed?)

Activities

(e.g. What is the company/farm doing? Why did they start with seed production?)

Actors and Organizational Models

(e.g. How organic seed production is organised? Who are the main actors in the value chain? Who dictates the market? Which actors are the main bottleneck and the main driver of success?)



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Problems

(e.g. What were their technical and structural problems?)

Future perspective

(e.g. What needs to be changed/improved/innovated to overcome their problems? How do they anticipate these developments? (funding, political decisions, publicity))

Networking

(e.g. Which agent you met during the visit (including participants and visited locations) would you find useful to regularly network, and on what aspect? What would be the added value for you of such networking?)

Did you find the contexts similar enough to transfer knowledge into your local context?

What other aspects should have been also useful to cover that you missed?

2. EXPLOITATION

In what useful forms could you process the knowledge that you gained during the visit in the past 6 months? (Please describe which applies):

Everyday practice, knowledge transfer to colleagues:

Developed training materials:

Presented/demonstrated at farmers field days:

Introduced as new practice/method/process:



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- I applied them in developing new innovations:

- Wrote technical leaflets/ Practice Abstracts on methodologies/tools (please provide link):

- Channelled them into meeting outcomes for policymaking or regulations:

- Introduced new elements to our strategies (e.g. marketing, risk management, operational model):

- Set up a local network on an issue:

- Initiated discourse/roundtable concerning an aspect:

- Organised further knowledge exchanges with the actors I met:

- Other:

3. MULTIPLICATION

Who was your target audience/target group for the exploitation activities mentioned above? (Please mention all):

How many occasions could you apply the knowledge gained here?



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What were the limitations of the knowledge you gained for exploitation and multiplication?

What would have facilitated further your exploitation and multiplication efforts?



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