LEGATO

LEGumes for the Agriculture of TOmorrow

Collaborative project
Grant agreement no: 613551
SEVENTH FRAMEWORK PROGRAMME

THEME [KBBE.2013.1.2-02]
[Legume breeding and management for sustainable agriculture as well as protein supply for food and feed]

Deliverable D.6.5

Stakeholder topic meeting report n°2

Due date: M23

Actual submission date: M25

Project start date: 1st January 2014 **Duration:** 48 months

Workpackage concerned: 6

Concerned workpackage leader: PGRO
Concerned task leader: Terres Inovia (CETIOM's new name from 9th June 2015)

Dissemination level: PU (Public)

Content

1. Focus (few lines on the topic chosen)

The LEGATO stakeholder topic meetings are related to the task 6.2 - sharing expertise to orientate and evaluate possible levers of improvement offered by the project results.
The second stakeholder meeting took place in the morning of 1st December 2015 at the University of Cordoba in Spain, and was synchronized with the LEGATO second annual meeting. The stakeholder meeting topic was: "Legume cultivation: economic models, agronomic techniques, and promotional measures" In this context, after presentations of levers for increasing the proportion of legumes in agrosystems and on their interest as pasture and forage crops in the Mediterranean Region, the use of legumes in animal feeding in Spain, France and UK was analyzed from an economic point of view. To conclude, the evolution of EC support for protein crops and its potential impact on EU protein crop areas was reviewed.

The meeting attracted 83 participants including 70% academic researchers, 15% from SME, 7% from agro-industries, and 6% from interprofessional bodies, coming from Europe (See figure 1 below).

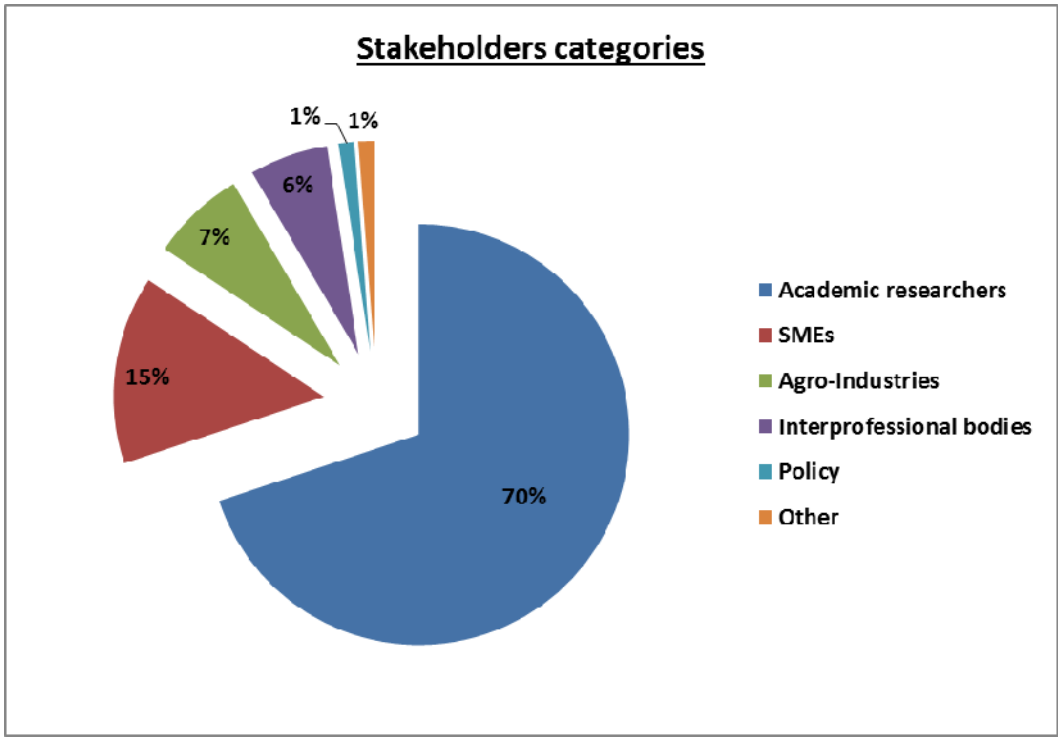

Figure 1: Stakeholder categories

2. Objectives (what we asked of the speakers, why this topic)

The content of the stakeholder meetings was defined in the DOW. Three topic meetings of stakeholders was initially planned: 1 for science, techniques and economy of production; 1 for science, Techniques, and economy of uses; 1 for interfacing production x uses and analyzing the limits.
One final general meeting in year 4: on the basis of the input of results from the different WPs and of the agro-economic context, definition of adapted ideotypes (genotypes x cropping management systems) for different European regions, with seed product quality fitting user requirements, and estimations of their potential development in areas and volumes.
The content of the second meeting at Cordoba, as planned initially, was focused on the use of legumes as pasture and forage in Mediterranean Region and in animal feeding in different European countries (Spain, France and UK) from an economic point of view and by underlining techniques which can improve the economic value of legume seeds. It thus responded to priorities expressed by the Andalusian stakeholders.

3. Short summaries of the presentations

The presentations are available on the LEGATO web site at the following link: http://www.legato-fp7.eu/events/LEGATO_second_stakeholder_meeting_Cordoba,_Spain,_1%20_December%202015.html

- **Introduction**

The meeting was introduced by Richard Thompson - LEGATO coordinator. He presented the LEGATO structure and the objectives of the project. He focused on what is new in LEGATO in comparison with previous EU projects, and then presented the agenda of the meeting (see Annex 1).

- **Legumes in France: obstacles and opportunities (Marie-Hélène Jeuffroy, INRA, France)**

The presentation aimed at answering 3 questions: Why legumes have disappeared from French arable areas? Why legumes are considered good candidates for a necessary agroecological transition? Which levers to increase legumes in agrosystems?

For the first question, 6 reasons, at different scales, can explain the decline of grain legume areas in France:

1- **Increase of short rotations** (oilseed rape – wheat – barley, oilseed rape – wheat – wheat, maize - wheat, monocultures of wheat or maize)

2- **Lower productivity of GL compared to main arable crops,** at the field scale, (low and very variable yields, increasing gap between pea and wheat yields due to the higher sensitivity of grain legumes to climatic stress (heat, water, frost) more frequent in the recent years and development of a soil---borne disease, *Aphanomycès euteiches*, which affects many fields in France.

3- **Economic return on following crops is rarely considered**, at the farm scale: pea has generally the lowest gross margin among arable crops but the crops following a pea have the highest gross margin. Now, this point must be considered: the economic interest of the legume crop should be assessed at the scale of the crop sequence.

4- **A lack of advice on legumes provided to farmers** (At the scale of advisors, references on a pluri---annual period are not available, the environmental benefits of legumes and the determinants of their variability are rarely known and thus taken into account, crop management on legume crops could be improved (compared to wheat or oilseed rape).

5- **Genetic progress is lower and less rapid than with the main arable crops**, at the scale of breeding industry (few cultivars registered (thus lower choice and lower adaptation to various environmental conditions) and lower increase of potential yield (but improvement on other criteria such as frost sensitivity and lodging sensitivity).

6- **Strategies of collecting firms and processing industry reinforce the dominant crops**:, at the scale of collecting firms, activity is concentrated on a small number of products showing the highest volumes and the lowest logistical costs, at the scale of feed industry, there is a competition among available raw materials and legumes are often replaced by other products and then, at the scale of consumers, it is difficult to change dietary habits.

For the second question, legumes are considered good candidates for a necessary agroecological transition because they supply:

- **numerous agronomic benefits** such as a strong reduction in N fertilizer requirements for the legume and for the following crop; and they bring yield increase of the following crop

- **environmental benefits in agro-ecosystems**: decrease of greenhouse gases (N2O and CO2) compared to fertilized crops, at field scale and at crop sequence scale, decrease of fossil energy consumption:-50% compared to a fertilized crop,-11% compared to a 5-year rotation without legume, decrease of weeds and soil-borne pathogens in a crop sequence including a legume crop compared to cereal and oilseed rape-based crop sequences, at field scale. This allows a reduction in pesticide

use, and a contribution to increasing on-farm biodiversity, including a key role in the associated biodiversity whether in the air (pollinators on faba beans, alfalfa, clovers) or in the soil microflora.

- **economic interest at crop sequence scale**: for example, when a pea is placed between two wheats in the rotation: rape-wheat-(Pea)-wheat-barley, the difference of semi-net margin between a crop sequence with/without pea, for 2 price levels is positive, and generates more than 20 €/t in the two French regions “Bourgogne” and “Plateau Lorrain”.

Regarding the question of levers to increase legumes in agrosystems, the reasons for the low development of legumes are strongly linked each other: the strategies and actions of all the actors are strongly interconnected and it is necessary to act simultaneously at the different scales (field, farm, advisors, breeding industry, collecting firms, food and feed industry and consumers). It is also necessary to act to develop food uses.

There are numerous favorable factors for increasing grain legume consumption. Many prospective studies show that the demand for plant proteins may increase at the global scale to replace animal proteins in the next 15 or 30 years. From a nutritional quality point of view, there is complementarity of plant proteins with animal proteins, and plant proteins are more interesting for some age groups of the human population. The development of legumes in the human diet may be promoted by innovations in agri-food processes for ready-to-eat products, food products based on cereal-legume mixtures, fractioning to extract ingredients, and by the development of quality and region of origin labelling.

In France, some examples show that farmers’ cropping systems including GL may reach high performances: among the 1000 cropping systems surveyed in the Ecophyto network, which are the low-cost and multi-performant ones, 31% cultivate Lucerne and 31% cultivate grain legumes. In another study: the comparison of 27 cropping systems with/without legumes in the Burgundy region (PSDR Profile) shows that the presence of GL in the crop system induces reduction of fossil energy use (due to N fertilization reduction), similar economic performances whatever the price level, no increase in pesticide use, but a small increase of work load. Other examples in France can help to convince other farmers to grow GL.

To conclude, it is important to increase the value of GL in the upstream and downstream agri-food chain and the coordination between the stakeholders from the upstream and the downstream agri-food chain.

- **Legumes and Biodiversity: key tools for the sustainable improvement of pasture and forage crops in the EU Mediterranean Region under climate change (David G. Crespo, Fertiprado, Portugal)**

In the EU Mediterranean Region, natural pastures have a low productivity and most soils with natural pastures are poor in organic matter, nutrients and have low water-holding capacity. On the other hand, the predominant climate is favorable for growing legumes.

The prevalent feeding systems for ruminant animals in most of EU Mediterranean region are not efficient, but can be improved. Straw, as a supplement in Autumn and concentrate feed during weaning and fattening are very expensive. Forage crops for conservation as hay or silage (eventually also for grazing) occupy a small area and involve mainly *“Gramineae”,* whose productivity depends on N fertilizer, which provides expensive feed and is often low in protein.

Besides, the subsidized cereals, cultivated with high levels of N fertilizers and herbicides, in short fallow-crop rotations, have degraded natural pastures and led to abandoning of some lands. However, most of the EU Mediterranean Region has excellent conditions for growing pastures, which can be grazed all over the year.

Climate change in Mediterranean areas needs to increase plant adaptation / resiliency to:

- Higher frequency of long periods of drought
- Resistance to waterlogging (because concentrated rainfall induces floods and temporary excess of water in soil)
- Capacity to grow better under higher temperature and CO2 content in the atmosphere

The above plant adaptation / resiliency requirements can be matched by using Sown Biodiverse Legume Rich Permanent Pasture and Forage Crops (SBLRSPP&FC), which will improve animal production and recover degraded lands in a sustainable way. This corresponds to an efficient and low cost system of pasture and forage production developed in Portugal after the middle sixties, based on the formulation and use of mixtures, each one adapted to a particular soil and climate condition, and composed of a large range of species and cultivars. Before mixing and sowing, the seeds of each legume spp. are inoculated with specific strains of Rhizobium to enhance symbiotic N fixation.

Different combinations can be made of annual or perennial legumes with respectively annual or perennial grasses. Biodiverse legume rich mixtures minimize the effects of climate change, assure a good vegetation cover in patchy soil conditions, and minimize the effects of grazing mismanagement.

The different species of legumes may be differentially adapted to different patterns of rainfall. Then, the persistence (after 6 years) of some perennial species under rainfed conditions at Fertiprado's experimental site is good for *Medicago sativa* or *Trifolium ambiguum* for legumes and *Phalaris aquatic* for grasses.

The waterlogging resistance of the different species is also studied

They have also an effect on sequestering atmospheric CO2 in the soil, replacing nitrogen fertilizers by atmospheric N fixation (legume/Rhizobium symbiosis), raising the level of soil organic matter (SOM), increasing soil fertility and acting as a carbon sink.

Furthermore, low fossil energy is required, the photosynthesis is very efficient and it enhances uptake of soil nutrients.

The inoculation of the seeds of each legume species with specific and effective strains of Rhizobium increases yields. It is important to have an early sowing when soil temperature >12ºC; ideally>16 ºC and the use of fertilizers: according to soil analysis is rationalized.

Yields may increase twofold compared with natural pastures. The same result was seen for TRITIMIX, a mixture of triticale and different legume components (*Lolium multiflorum, T. vesiculosum, T. resupinatum, Vicia villosa*).

In conclusion, from 1966 up to now, more than 500,000 hectares of SBLRPP have been established, mainly in Portugal but also in Spain and Italy, most of them still persisting. These pastures, complemented by BLRFC, are allowing a sustainable improvement of high quality animal production at low cost, and also contributing to decrease the amount of greenhouse gases in the atmosphere through the sequestration in the soil of 3-12 t/ha/yr of atmospheric CO2/ha/yr, thus increasing soil fertility. There are more than 20 million ha of natural pastures in the EU Mediterranean countries, a significant part of which could be converted into SBLRPP.

- **The use of legumes in animal feeding (Emilio de León, COVAP, Spain)**

A presentation of COVAP was made: it is a collecting firm based in south of Spain, which works with 4500 farmers. It covers 3 activities:

- Dairy (240 million of l / cows, 3 million l / sheeps, 1 million l / goats), which represents 280 million € turnover, 58% of which are committed to innovation and lead to most advanced technology in Europe dairy industry. Dairy industry COVAP covers 14 000 m² and had a capacity of 400 Million units per year.
- Meat (the livestock is constituted by 18 850 beefs, 133 270 lambs and 57 400 Iberian porks). COVAP produces 25% of the world production of Iberian pure acorn pigs.
- Feed: 440 Million Kg of feed has been produced in 2014 by COVAP.

The firm needs legumes for some animal species: Marketing Goats, sheep and horses. It is important to have a raw material without anti-nutritional factors, which represent safe products, and to have regular supply and quality. The price is also determinant.

The integration of all levels of the food chain conducts to create a value chain "from farm to table", a model that provides safe food from safe feed (from farm to the consumer).

- **Economics of Grain Legumes for feed (V. Biarnès, Terres Inovia, France and C. Peyronnet, Terres Univia, France)**

After a rapid description of the uses, the nutritional value of legumes and conditions of use according to the prices of interest, the economic interest of the dehulling of seeds of faba bean was presented.

First, the pea market in France is mainly based on feed uses (both in France and for export) while the faba bean market in France mainly depends on the export to Egypt for human consumption. But for the last two years, this use fell sharply. The evolution of the markets of pea and faba bean in France since 1984 show that in the 90's more than 2 million tonnes of pea have been introduced in feed. During this period, pea represented more than 10% of raw material used in feed. The evolution of prices of pea, wheat and soybean meal can be divided in three periods: the first one from July 1994 to July 2007 when prices were low, a second one during which prices were higher and the most recent one (from 2012 to 2015) with very high prices for all the three raw materials.

From a nutritional point of view, grain legumes are rich in proteins and starch while rape seed and sunflower have seeds rich in fat. Their seeds are also rich in lysine compared to wheat and maize. There are no anti-nutritional factors in pea because all varieties registered have white flowers which indicate that the seeds do not contain tannins. Also there is a threshold at registration for antitrypsic factors, and varieties with high contents may be rejected. On the other hand, in faba bean, the majority of varieties have colored flowers indicating that their seeds contain tannins. Besides, different studies show that there is a highly significant effect of tannins on energy and digestibility for poultry but a low effect of vicine. High percentages of pea and faba bean may be introduced in monogastric animal diets whatever the animal but the highest values are observed for pigs.

The introduction of pea in animal diets depends on price contexts (prices of raw materials). The interest price can be defined as the maximum price to begin to include the pea in animal diets. In a low price context, with a small reduction in price (5%), a large amount of pea may be introduced in pig diets while in high price contexts, prices have to decrease a lot (25%) so that the pea is introduced in large quantities.

Dehulling the seeds of faba bean was studied in two contexts of prices (high prices for proteins, soybean meal / wheat = 2,46 and low prices for proteins, soybean meal / wheat = 1,57) and with 3 types of quality of faba bean (classic (Espresso), fababean with high protein content and fababean with very high protein content). Dehulling decreases cellulose content and increases the protein and energy contents. In the high price context, it is possible to gain 65 to 90 €/t in value by dehulling and 10 €/t more by increasing protein content. In the low protein price context, the gain can vary from 35 to 65 € in value by dehulling and 10 €/t more by improving the protein content. In conclusion, whatever the price context, dehulling can improve the economic value of faba bean.

- **Faba beans for food and feed - The Optibean project (Peter Smith - Wherry and Sons - represented by Steve Belcher –PGRO, UK)**

OPTIBEAN is a 48 month project with the objective to replace imported Soya with home grown protein and to optimize faba bean breeding, production and use.

Imports of soya meal and soya beans in UK decreased or stagnated in the 4 last years while spring bean areas increased for 3 years and now represent 120 000 ha. At the same time, winter bean areas decreased and pea areas remained stable at around 40 000 ha.

The OPTIBEAN project is divided in three work packages:

- Work Package 1 : Breeding for Improved Yield and Yield Stability and quality
- Work Package 2: To develop an optimized agronomy package for field beans

- Work Package 3: To develop new feed mixtures for Salmon, Turkeys, Chickens, Ducks and Pigs using UK-produced faba beans to reduce the inclusion of imported soya meal

Some results from Optibean WP3 were presented.

Trials have been made on different types of animals:

- Salmon: a trial showed that high bean grower diets with complete replacement of soya (faba beans 18% inclusion rate) lead to similar growth rates and good key quality parameters and performed as well as on industry standard diet with variable soya levels.
- Chicken (meat production): results depend on the bean type. Conventional and low tannin beans performed poorly on weight while low vicine/convicine types gave good physical performance. A 17% reduction in soya usage is possible in broiler feed with the low vicine/convicine types.
- Egg Production: trials using tannin-free beans showed small but insignificant response in egg weight while low vicine/convicine beans produced acceptable growth rate and increased numbers of large eggs. Egg production was not affected by bean inclusion to 10% (which reduced soya usage by 50%).
- Pig (both weaner and finisher trials): an inclusion of up to 20% faba bean works effectively in pig rations, with tannin-free being preferred in this instance but not essential.
- Ducks: overall both conventional and tannin-free faba beans work effectively when fed to ducks, although tannin-free beans showed a slightly improved growth.

A life cycle analysis shows that CO2 emissions of UK grown faba bean equates 249 kg of CO2 /t while UK feed wheat equates 461 kg of CO2 /t and CO2 emissions of imported soya from South America equates to 22 421 kg of CO2 /t (greater than 30% forest use change).

The Optibean project brought together, plant breeders, agronomists, livestock producers and retailers (Waitrose). The benefits of the close collaboration gave a greater insight into the needs of all the parties concerned.

- **Protein crops: EU Market situation and related Common Agricultural Policy tools (Bence Major, DG Agriculture and Rural Development European Commission AGRI/C4)**

The evolution of support for protein crops includes 3 main reforms (2003, 2008 and 2013):

- 2003: Single payment scheme – eligible hectares, additional payment for protein crops of EUR 55,57 per ha (differential with cereals of 9,5 EUR/tonne was transformed in 55,57 EUR/ha, on basis of the average reference yield in the regions concerned), Maximum Guaranteed Area = 1.648 Mio ha and covers peas, field beans and sweet lupins.
- 2008 (Health Check): decoupling of support for protein crops until 2012 at the latest, article 68 allowing Member States to pay specific support to address certain issues, 3 Member States implemented measures covering protein crops.
- 2013: First CAP reform under Lisbon Treaty (EP co-decision), all 4 basic acts (CMO (Common Market Organization), DP (Direct Payments), RD (Rural Development), Horizontal) covering two pillars modified together, 3 principles: competitiveness/sustainability/territorial balance, protein crops in the debate: result directly/indirectly linked to a number of measures in DP and RD (DP: Voluntary Coupled Support (VCS) and greening, RD: AECM (agri-environment-climate measure) and other measures).

In the 2013 reform, VCS (10 % on average of the total DP envelope for EU 28 in 2015) includes different measures which can benefit protein crops. For example, a special provision for protein crops may be used to maintain the protein-based autonomy of the breeding sector: Member States (MS) may use at least 2 % of DP envelope to support the production of protein crops, i.e., can increase VCS percentages by up to 2%.

Greening is based on 3 measures on Permanent Grassland (PG) and arable land (maintain PG ratio, ban on conversion for environmentally sensitive PG, crop diversification: at least two/three crops, Ecological Focus Area (EFA) choice of farmer to cover 5% of arable land with areas listed (chosen by

MS) such as fallow land, landscape features, buffer strips,…) and links to protein/legume crops (PG: legume crops not considered herbaceous forage, EFA: Nitrogen-fixing crops one possible EFA, if more than 75 % of arable land is used for the cultivation of legume crops (or if reaches this combining with grassland) farmer exempted from EFA, only nitrogen-fixing crops that MS "considers as contributing to the objective of improving biodiversity", has a weighting coefficient of 0,7 (so 1m² is worth 0,7m²), 27 MS have chosen it (except DK) (of which 15 included soya). Finally, the reform is favorable to rural development.

The area and production of protein crops has declined in the last 8 years in the EU Pea yield has also decreased. 4 countries are the main producers of protein crops: France, UK, Germany and Spain. The effect of support on protein crop area was also underlined.

To conclude, protein crops show a lack of competitiveness (market orientation leading to decline in production), limitation of arable area in the EU, environmental benefits – recognized in reform but improving performance is also needed. The public policies have to encourage the development of protein crops and several aid measures are at the disposal of MS in the new CAP, 1st and 2nd pillar but also European Innovation Partnership on "Agricultural Productivity and sustainability": networking and "multi-actor approach" in Horizon 2020 (2014-2020) (Work Programme 2016/17 adopted with many opportunities).

4. Main conclusions and eventual actions to be taken

The development of grain legumes needs coordination between the stakeholders from the upstream and the downstream agri-food chain. Legumes may be developed as sustainable crops for pasture and forage crops in the EU Mediterranean Region under climate change. Their use in animal feed may be increased by regular supply of quality products and by using techniques that increase the economic value of their seeds, such as dehulling for faba bean. Use of some specific types of faba bean may partly or totally replace the use of soya in animal diets in UK for different types of animals (salmon, chicken, egg production, pigs and ducks). Finally, public policies have to encourage the development of protein crops with different aid measures, but this has to be accompanied by improved varieties and agronomic practices.

Annex 1: First Stakeholder meeting program

LEGATO 2nd STAKEHOLDER MEETING AGENDA
"Legume cultivation: Economic models, agronomic techniques, and promotional measures"

Tuesday 1st December 2015
At Salón de Actos at Vice-Chancellorship, University of Cordoba, Spain

09h30: Welcome coffee and stakeholder meeting registration
Location: Salón de Actos

10h00: LEGATO stakeholder meeting
Convenors: Prof. Diego Rubiales (CSIC, Spain) and Steven Belcher (PGRO, UK)

- **Dr Richard Thompson – INRA – France - LEGATO Coordinator** - Introduction of LEGATO project
- **Dr. Marie-Helene Jeuffroy – INRA - France**: "Legumes in France: obstacles and opportunities"
- **Mr. David Crespo - FERTIPRADO, Portugal**: "Legumes and biodiversity: key tools for the sustainable improvement of pasture and forage crops in the Mediterranean Region"
- **Dr. Emilio de León Ponce de León, Director of Feeding and Agriculture, COVAP, Spain**: "The use of legumes in animal feeding"
- **Dr. Véronique Biarnes - Terres-Inovia, France**: "Economics of Grain Legumes for Feed"
- **Mr. Peter Smith - Wherry and Sons - represented by Steve Belcher – PGRO, UK**: "Faba beans for food and feed - The Optibean project"
- **Mr. Bence Major - EU DG-AGRI, Belgium**: "Protein crops: EU Market situation and related Common Agricultural Policy tools"

Annex 2: List of participants

First name	Last name	Institute
Richard	Thompson	INRA
Vanessa	Vernoud	INRA
Angélique	Lesné	INRA
Gilles	Boutet	INRA
Céline	Bourlet	INRA
Alain	Baranger	INRA
Marie-Helene	Jeuffroy	INRA
Etienne-Pascal	Journet	INRA
Benoit	Jaillais	INRA
Gregoire	Aubert	INRA
Christophe	Salon	INRA
Marget	Pascal	INRA
Marc	Lepetit	INRA
Nassima	Ait Lahmidi	INRA
Jana	Poslusna	AGRITEC
Marek	Seidenglanz	AGRITEC
Radmila	Dostalova	AGRITEC
Ignacio	Solis-Martel	Agrovegetal
Clara	Marquez	Agrovegetal
Paolo	Annicchiarico	CRA
Luciano	Pecetti	CRA
Diego	Rubiales	CSIC
Sara	Fondevilla	CSIC
Ángel	Villegas-Fernández	CSIC
Nicolas	Rispail	CSIC
Elena	Prats	CSIC
Thaïs	Aznar	CSIC
María Ángeles	Castillejo	CSIC
Juan	Moral	CSIC
Eleonora	Barilli	CSIC
Maria Jose	Gonzalez-Bernal	CSIC
Cristina	Ferrandiz	CSIC
Irene	Martinez	CSIC
Francisco	Madueño	CSIC
Ralf	Metzner	JUELICH
Carel	Windt	JUELICH
Peter	Winter	GXP
Ana M.	Torres	IFAPA
Josefina	Sillero	IFAPA
Vuk	Djordjevic	IFVCNS

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Shivani	Pathania	INIAV
Maria do Carmo	Serrano	INIAV
Carla	Brites	INIAV
Alexandra	Seabra Pinto	INIAV
Caroline	Sautot	IT
Maria Carlota	Vaz Patto	ITQB
Maria do Rosário	Bronze	ITQB
Dunixi	Gabiña	IAMZ-CIHEAM
Gerard	Seelt	Patrimvs
Hélder	Simões	Patrimvs
Stephen	Belcher	PGRO-RL
Shona	Johnson	PGRO-RL
Eveline	Adam	SZG
Georg	Carlsson	SLU
Erik Steen	Jensen	SLU
Marcelino	Perez de la Vega	ULE
Rafael J.	Lopez-Bellido	UCO
Antonio	Evidente	UNINA
Alessio	Cimmino	UNINA
Petr	Smykal	UPOL
Peter	Young	UY
György Botond	Kiss	AMBIS
Kata	Kiss	AMBIS
Véronique	Biarnes	CETIOM
Peter	Smith	Wherryandsons
Ana	Barradas	FERTIPRADO
David	Crespo	FERTIPRADO
Rita	Silva	FERTIPRADO
Photini	Mylona	NAGREF
Lea	Narits	ETKI
Bence	Major	EU-DG-AGRI
Natalia	Gutierrez	ZAYINTEC
Cristobal	Bascon Arjona	Cooperativas Agroalimentarias de Andalucia
María-Dolores	Lozano-Baena	SOLINTAGRO S.L.
Alfonso	Clemente	Estacion Experimental del Zaidin (CSIC)
Veronica	Muñoz	University of Cordoba
Purificacion	Fernandez Garcia	University of Cordoba
Emilio	de León Ponce de León	COVAP
Miguel Angel	Molina	Eurosemillas, S.A.
Bibian	Castro	Eurosemillas, S.A.

Annex 3: Picture of the participants in front of the Vice-Chancellorship, University of Cordoba, Spain