**UNECE Rapporteurs Meeting on Seed Potatoes**

**Lima and Cusco, Peru, 23-31 May 2018**

**Report of the Rapporteurs Meeting and Technical visit, Peru, May 2018**

**I. Introduction**

1. The rapporteurs meeting took place in Lima and Cusco in Peru and was timed to coincide with the World Potato Congress (WPC). The meeting of the rapporteurs of the Specialized Section on Standardization of Seed Potatoes was chaired by Mr. John Kerr (United Kingdom).The purpose of the meeting was to engage proactively with seed potato interests in the region both scientific and business but most importantly seed certification officials.

2. Through the rapporteur from Belgium, Mr. Guido Mussche, the UNECE rapporteurs joined the Belgian delegation for several important parts of the WPC programme and side events. The Belgian delegation is involved in the region through the NGO, Trias, which runs very active and successful capacity building projects with potato growers in Peru and Ecuador; through the current president of the WPC (Mr. Romain Cools) who is also head of the Belgian industry body Belgapom. This provided the UNECE rapporteurs group with a good opportunity to network with these groups and facilitated discussions with stakeholders from, and with an interest in, Latin America.

**II. Attendance**

3. Australia, Belgium, South Africa, United Kingdom and United States of America.

**III. Technical Visit**

4. The International Potato Centre (CIP) which is CGIAR research centre hosted an open house event in their headquarters in Lima before the start of the WPC. In the welcoming remarks Mr. Rodney Cook, CIP Board Chair, talked about the progress they have made over the last five years in moving the debate from food to nutrition and from yield towards sustainability as well as raising the benefits of potatoes in these and other areas compared to cereals. This speech was clearly in line with the SDGs as well as the focus of the work of the UNECE’s Specialized Section on seed potatoes.

A range of CIP scientists gave presentation including the following:

5. Ana Panta who showed the cryopreservation technique used to preserve the large CIP genetic resource collection of potato cultivars. The technique is based on taking meristem cuttings in which the cell’s water has been replaced by a cryo-protectant solution then freezing them in liquid nitrogen. This allows them to greatly reduce the costs of genetic preservation which would otherwise involve labour intensive and continual micro-propagation.

6. Willmer Pérez who described a simple hand held decision support tool the CIP has developed to help growers control late blight whilst also reducing the number of fungicide applications used. This topic was to recur through the WPC for both developed and developing countries and serves to illustrate that adopting sustainable production systems, as well as operator exposure, is centre in the thinking across the potato world.

7. Soledad Gamboa who demonstrated the use of in field diagnostics and the use of FTA cards. These cards allow the filed inspector or farmer to simply take a DNA sample from a pathogen, particularly late blight, and send it in a stable form to a laboratory for analysis. Again this simple but powerful tool was discussed several times during the event as it allows for tracking of the evolution of *phytophthera infestans* from Europe (through the EuroBlight network) to the Andes and is used in most other potato producing regions.

8. Cristina Fonseca who described the traditional method of freeze drying potatoes to make Chuños. This is a method of storing potatoes as well as removing unpalatable bitterness which is particularly important for the frost resistant varieties which are high in alkaloids. The potatoes are frozen for 4-5 days, then put in a flowing river for 30 days this concentrates the starch (whilst removing the unpalatable compounds). The Potatoes are then tramped by foot to squeeze out all the water leaving just the starch. The potatoes are then dried in the sun (or in the dark depending on the method). To use the potatoes they need to be rehydrated overnight before being cooked. They are used in soups and stews.

9. Giovanna Műller and her colleagues who described the CIP diagnostics including the nutritional analysis the lab are currently offering for both in house and external customers. This also supports the bio-fortification work that CIP are focusing on to boost Fe and Zn content of potatoes to tackle malnutrition, particularly anaemia in the Andes region as well as in other developing countries. Their diagnostic program is accredited by the United Kingdom Accreditation Service.

10. Other topics included:

* Lamp PCR for in field molecular diagnostics
* Variety diversity of cultivated potato varieties, landrace/native varieties and wild relatives.
* Novel commercial uses for potatoes
* Reduced value chains for value added products to benefit the small farmer.

11. The rapporteurs had the opportunity to discuss seed potato matters with members of the CIP Board and Directors. There was a lively discussion, *inter alia*, on the subject of true seed potatoes and the business model, described by Bejo seeds in the UNECE Netherlands meeting, for deploying this novel propagation method commercially. Other topics of discussion were the use of Elisa and PCR-tests for the determination of viruses and the way of certification of seed potatoes in Peru where seed potatoes, intended for export are certified by private certifying agencies and seed potatoes, intended for local use are certified by official certifying agencies. CIP board members also expressed a distinct interest in education on the nutritional benefits of potatoes.

**IV. World Potato Congress**

12. Thanks to “Potatoes USA” (particularly Mr. Saul Mercado) and the UNECE secretariat, the UNECE rapporteurs were able to distribute the UNECE Guide to Pests and Diseases in Spanish to delegates of the congress on USB memory drives. The rapporteurs also distributed copies of the UNECE promotional leaflet and a leaflet size copy of the UNECE Specialized Section’s Sustainable Development Goals poster which was displayed during the first day of the congress in English and Spanish (thanks to the UNECE secretariat and Ms. Sylvia Breslin, SASA). “Potatoes USA” informed the Rapporteurs that the UNECE Standard was used to facilitate an export from the US to Panama. Panama and the USA were only able to come to an agreement regarding surface soil, upon referral to the UNECE standard of 2% soil tolerance. This made it possible for both parties to agree that the shipment could proceed in light of their view that the UNECE Standard was an acceptable standard for international trade.

13. The congress had a focus on sustainability and small farmers and highlighting biodiversity, food security and business. Mr. David Nowell (FAO) opened the Conference with his keynote plenary presentation stressing the need for sustainable intensification and stating that almost everything we have done in the past needed to change. This was due to the pressure current production systems are putting on the environment. There was a need to shift these systems to bring them within sustainable levels of inputs against a backdrop of changing climate and population. This theme was repeated in several sessions notably around water and nitrogen use efficiency with several speakers tackling the topic from different regional production centres. There was good evidence presented that changes in irrigation systems and nitrogen application timings can dramatically reduce use of both these resources without any yield losses. Tools to assist growers in making application decisions such as remote sensing (from in field IR cameras to satellite sensing) were described by speakers. Noteworthy is the Belgian “Watch it Grow” remote sensing work done by a company called “Vito” in Belgium but with potential for global coverage, using a combination of Sentinel 1 & 2 (visual and infrared satellites), drone based, and farmer submitted data. This company is looking for partners to develop real world applications for this technology and to take its application to scale.

14. There was also a strong focus on family farms, the importance of women in farming decisions as well as the aging nature of farmers across the globe and the need to reengage with young people to bring them into primary potato production. The FAO speaker used the term “peasant” farming to describe this sector. FAO have their focus in this area. There is a need to both assist these farmers in increasing their yields but, more importantly, there is a greater need to ensure that there is fair access to markets for their produce and that the value chain delivers more of the value back to the primary producer. This aspect was picked up later in Plenary session 4 by Mr. Marcelo Huarte who gave the example of cocoa where the market price has gone from 3.2 $/kg to 2.01 $/kg whilst over the same period the market price of chocolate has gone from 14.22$/kg to 14.75$/kg so the value extracted by the supply chain (i.e. not passed to the farmer) has gone from 4 x to 7 x the commodity price. The joint presentation from Ms. Lieve Van Elsen, Region Director Trias Andes and Mr. Leoncio Pichihua Quito, the chair of farming group Coopagros described that work to support local cooperative farming systems has helped subsistence farmers in the Andes derive higher value from their produce. This was done through cooperative working and direct access to markets as well as assisting them to create higher value products notably potato crisps (chips) made form native potatoes. The latter are then sold into the high value tourist and duty-free market in Lima. Mr Quito asked the scientists present to ensure that their work made its way usefully into the hands of growers like him.

**Other important themes that were developed during the WPC included:**

15. Potato Late Blight: There was a very effective and coherent session on *Phytophthera infestans*, building on the EuroBlight academia-industry platform, which covered genetics to decision support systems. This session focused on both the developed EU systems right through to simple subsistence farmer focused systems in Latin America. This session clearly showed the value of international work and the direct benefits that both large and small agricultural businesses can get from this collaborative and outcome focused partnership approach. Researchers presented evidence that *Phytopthora infestans* is developing resistance to the fungicide fluazinam in Europe indicating that growers need to be vigilant in rotating fungicide classes to maintain useful chemistry.

16. In her plenary talk, Ms. Barbara Wells focused on how potatoes will be a major part of feeding the future population, in particular, she emphasised the nutritional benefits of potatoes over other stable carbohydrate crops. She went on to discuss the CIP’s work to boost the iron and zinc content of potatoes using the native potatoes to breed new varieties in order to tackle malnutrition, particularly anaemia which is a significant problem for women and children in the region.

17. There was frequent mention of the critical importance of seed quality throughout the congress, however, there was no specific session or speech on this topic. Several speakers mentioned various schemes to allow subsistence farmers to improve their seed (e.g. GIAHS/SIPAM in Latin America) and there was a poster from Ethiopia on Quality Declared Seed. This is an area where the UNECE’ Specialized Section could provide a coordinating role in the development of a minimum standard and appropriate inspection and administration systems at this basic quality level.

18. There were several speakers who discussed the topic of biodiversity, however, they focused on the maintenance of the genetic diversity of potatoes and their wild relatives rather than biodiversity in the wider sense.

19. In the margins, the rapporteurs had a number of meetings including with “Potatoes USA” and discussions with the head of the Latin American Potato Association (ALAP, officials from Ecuador, the former head of ALAP and representative from Argentina, Peru, China as well as with TRIAS and farmers and seed growers from Ecuador and Peru. This led to furthering discussion on the UNECE Specialized Section’s core work, see 37 below.

20. Other topics of interests noted by the rapporteurs: biotechnology advances and plant breeding including breeding using inbred diploid lines for true seed variety development. This led to furthering discussion on the UNECE Specialized Section core work, see 40 below. Several discussions on genetics derived from landraces and commercialising native varieties into the marked for added value to the producer.

21. Several speakers discussed a shift towards marketing focused on adding value and sustainability rather than simply a yield focus.

22. The rapporteurs attended to a networking event attended by the vice president of Peru, and the Minister for Agriculture from Ecuador.

**IV. WPC Field Visits**

23. The WPC offered two field day options and the rapporteurs were present at both.

Instituto Nacional de Innovación Agraria (INIA) Andenese

24. The rapporteurs had the opportunity to hear about and exchange views on scientific and technical aspects of potato production globally and with a focus on the Andean Highlands. Some of the programme, which included 20 separate topic discussions, overlapped with the Open House event hosted by CIP mentioned earlier, however the field plots and screen house demonstrations provided for a more focused discussion. At the station on certification of seed potatoes, it was revealed that less than 1% of seed stock in Peru comes from a formal seed system. In another station, production of pre-basic seed stock was demonstrated where cooperative groups of farmers were educated on minituber production and 16-farm units were supplied with one screenhouse each to produce disease-free minitubers from *in vitro* microplants. Additionally, INIA based scientists and field personnel as well as commercial businesses working in partnership with the field station added to the scope and usefulness of the visit.

25. The crop rotation for potatoes in the region includes three tuber based crops in addition to potato as well as one legume. These are mashwa (tuber), ocha (tuber), olluco (tuber), jacong (tuber), tarwe (lupin like legume producing beans). These crops are grown in a three to four-year rotation of potatoes – other root crop (1 or 2 years) – tarwe – potatoes. The growing season is November to May with a fallow dry season from June to October. Although not mentioned specifically in the rotation discussion, it is clear that maize is also an important staple crop in the Andes.

Potato Park

26. The Potato Park, established in 1998, is an initiative for the conservation and sustainable use of biocultural heritage that brings together six Quechua communities from Pisaq, Cusco, Peru. Farmers in the Potato Park cultivate around 1,400 native potato varieties in an area of 9,000 ha, making this Andean ecosystem the setting where the richest potato diversity on the planet is maintained and where a sustainable production model, integrated into the landscape, is practiced.

27. The 6,000-indigenous people who live in this traditional agricultural landscape, which borders the Sacred Valley of the Incas and is located between 3,400 and 4,600 meters above sea level, apply agricultural knowledge, practices and technologies and ecological management systems inherited from the Incas. The farmers in the Potato Park keep traditional knowledge, practices and innovation systems alive actively applying them in their conservation and development efforts and these practices are reinforced with agro-ecological approaches and integration of advances in science. Local technicians maintain dynamic relationships with national and international scientists and research centers.

Visit of the community of Sacaca (3,900 m.)

28. This is the location of the Natural Products Processing Centre, where soap, shampoo and natural medicines are made from materials collected in the area, using ancient and modern techniques.

Four economic groups have been established that contribute to improving the quality of life of the communities and preserving the environment: agro-ecotourism, handicrafts, gastronomy and the use of natural products based on medicinal plants. The functioning of the collectives is based on Andean principles of reciprocity, equity and solidarity economy, as well as on contemporary principles of self-management. The income generated reaches some families directly through their participation in the collectives, and all the families through contributions from the collectives to the communal fund, which is distributed annually to the communities according to criteria established by the Association of the Communities of the Potato Park.

Visit of the community of Pampallaqta (3,900 m.)

29. This is the location of the Seed Bank, the Centre for textiles and crafts and the Site Museum of traditional practices of Potato Cultivation Management. The Seed Bank aims to conserve local varieties and prevent the loss of genetic diversity due to the pressures of industrial agriculture and climate change. The seeds are accessible and available to the communities. The collection of native potatoes is stored as tubers and botanical seeds. The Centre has been built taking into consideration ancestral principles of seed storage. There is no phytosanitary control done by an official body. The farmers are doing a visual control of their seed potatoes. [They have enough experience to see whether the seeds are good or not](https://www.google.be/search?source=hp&ei=7fQYW-FvkcfBAqnzoUg&q=vertalen+engels+nederlands&oq=vertalen&gs_l=psy-ab.1.0.35i39k1l2j0i131k1l2j0l2j0i131k1j0l3.1963.13481.0.15262.23.17.1.4.4.0.106.1366.15j2.17.0....0...1c.1.64.psy-ab..1.22.1488.0...0.-hoiVZS47No). The farmers exchange the different varieties with other communities and they know that in exchange for good quality seeds, they will receive good quality seeds.

Visit of the community of Amaru (4,000 m.)

30. There are 230 families living in a landscape of biocultural heritage, understood as an indivisible system that contains knowledge, practices and innovations of indigenous and local communities. The communities collaborate to achieve Sumaq Kausay, which is a holistic vision to reach a harmonious quality of life known as ‘good living’ and the governance system is based on a traditional mode of decision-making.

Visit of the community of Paru Paru (3,250 – 4,620 m.)

31. This community is a centre of origin and contains wild species of potato. The small indigenous farmers of the Potato Park face major challenges related to climate change, which pose a threat to livelihoods, sustainable agriculture, crop diversity and Andean culture. In this community a Seed Multiplication Centre has been developed and is managed by local technicians. Participatory potato breeding techniques and research on multiplication are carried out and experiences are shared.

Visit of the community of Chawaytire (4,100 m.)

32. This is the Culinary Sanctuary of the Potato Park and is a way of sharing a long history of culinary tradition, based on a long history of domestication of a wide range of crops and animals and a deep knowledge of local species and ecosystems, with the world.

**V. UNECE Work**

33. The rapporteurs from the UK and Belgium updated the group on the topics discussed at the (March 2018 Specialized Section session in Geneva and the work to be progressed during the Peru session.

**Draft survey on bacterial testing methodologies**

34. The rapporteurs made progress in drafting the survey based on the lessons learned from the virus survey. The focus of the editing was to improve the clarity of the questions with an analysis of the answers in mind. The amended survey will be circulated to the wider working group on this topic prior to the March 2019 session.

**Minituber Guide**

35. The minituber guide was discussed and the rapporteurs agreed that progressing this topic would be useful. The Chair agreed to contact the head of the European Seed Association (ESA) to discuss their concerns. The rapporteurs agreed that seeking the active participation from the ESA representative in the Geneva sessions as well as other interested parties (e.g. EuroPatat) would be helpful to achieve a useful final guide. A draft Minituber guide will be submitted the March 2019 session of the Specialized Section.

**Pest and disease App.**

36. The group viewed the completed disease guide app and discussed making this live. The chair agreed to write to Horticulture Innovation Australia to offer ongoing collaboration to maintain the content of the App, particularly, to add emerging pests of importance and potentially to translate the app into more languages. This is likely to be supported by technical help from many UNECE participant countries, which have already shown interest in updating the content for the public good.

**Capacity Building and Standard Harmonisation**

37. The rapporteurs spent much of the meeting talking with representatives in the region regarding harmonisation of seed standards in Latin America. This was welcomed by WPC and ALAP delegates with an interest in this area and the Chair was invited to the ALAP seed potato working group to take this initiative forward. The rapporteurs agreed to work with individual country representative to gather certification scheme details with a possibility of then hosting a workshop were regional harmonisation could be discussed, possibly at the ALAP meeting in Mexico in 2019.

38. The rapporteurs also discussed the potential for capacity building in Africa and growers from South Africa indicated that Zimbabwe may be a good option to host a meeting in that region as this country opens up for trade and opportunities for its agricultural sector as it has a high potential to produce and benefit from quality seed potatoes. There is also strong interest from Ethiopia, Mozambique, and Malawi as well as Kenya.

39. The Chair will ask the UNECE secretariat to inform the group of the scope for hosting a capacity building event in either/both of these regions and the mechanism for taking this forward possibly in 2018 or 2019.

**True Potato Seed**

40. The topic of true seeds was raised at the WPC by a speaker from Solynta. This was also discussed in the margins of the meeting and it is clear that several European potato breeding companies are investing in this area. The rapporteurs will provide updates on this topic at the March 2019 Specialized Section session.

**Updates and discussion on new and on-going work**

41. The rapporteurs noted that the Andean Potato Weevil pest has been detected in Spain. It was suggested that the Specialized Section should discuss this emerging pest at its March 2019 session.

42. The rapporteurs group discussed the situation with TPP (Tomato Potato Pysilid) in Western Australia and agreed to provide updates on this topic at the March 2019 Specialized Section session along with the discussion on *Liberibacter*.

43. The rapporteurs who attended the WPC will update UNECE Specialized Section on the points of interest at its March 2019 session.

**XIV. Other business**

44. The rapporteurs discussed the possibility of holding the Rapporteurs meeting in the autumn of 2019 in Belgium to coincide with Potato Europe, though it was noted that Sweden had also expressed interest in hosting a meeting at this time.

**XVI. Adoption of the report**

45. There rapporteurs adopted their report for transmission to the UNECE secretariat. The tentative date of the next session of the Specialized Section is 18-20 March 2019.