From harvest to flowering – my visit to Andalucia

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Andalusia (southern Spain) is the world's leading olive oil-producing region. Spain produces 33% of the world's olive oil, and the Andalucian region accounts for 80% of total Spanish output. The largest olivegrowing areas are concentrated in the provinces of Jaén, Córdoba, and Granada, in eastern and central Andalusia.

Driving through Andalucìa, it is easy to see that the most abundant crop throughout Andalucia, and in particular, Jaén, is the olive. In certain areas, tidy line after line of olive trees stretch for as far as the eye can see. In Jaén more than 4500 square kilometres is devoted to olive groves containing around 40 million olive trees. In Andalucia, southern Spain, there are about 1.5 million hectares of olive trees. In the provinces of Jaén (570,000ha of olives), Córdoba (351,000ha of olives), Granada (180,000ha), Málaga (130,000ha), and Sevilla (205,000ha of olives). Spain is undoubtedly the world leader when it comes to olive production. This country dedicates 2.4 million hectares of land to this valuable crop.

It was a new experience for me to go from autumn to spring, from olive harvest to olive flowering, like a half a year different from Australia. It was very exciting to come to Andalucia during spring time in warm weather, and to experience a new culture, new food and a Mediterranean style of life.

I attended Expoliva XIV Scientific-Technical Symposium and the International Fair. And the extra virgin olive oil meeting was in Jaén, May 13-15, 2009. During the Forum on olive groves, the environment, the availability of water, and the impact of climate change on olivegrowing was discussed. Also considered was the current situation and integrated control of Verticillium dahliae in olive groves and the problems and perspectives for integrated handling. A few lectures were presented on Verticillium wilt as this is one of the important olive diseases in Spain.

I participated in the 4th European Meeting, of the IOBC/wprs working Group Integrated Protection of Olive Crops. This meeting, which had been organised on behalf of the International Organization for Biological Control of Noxious Animals and Plants, West Palaeartic Gegional Section, was in Cordoba, Spain, June 1 to 4, 2009. It brought together olive crop pathologists and entomologists with the aim of providing an overall Olive Crop

Protection approach. The aim was to cover, through five sessions of oral communications and their corresponding poster sessions, the key aspects of the knowledge currently available about pest and diseases effecting olive crops worldwide.

Olive diseases and disorders in Australia and Sustainable pest and disease management in Australian olive production: without olive fly, but with olive lace bug were oral presentations by entomologist A/Prof Robert Spooner-Hart and myself.

Cordoba is a city with over 2000 years of history, and is a declared World Heritage Site. The old city of Cordoba in Andalucia, Spain, was founded in 169BC by the Romans, but olives were mentioned by Homer, who lived in the 8th century BC.

I visited the Department of Agronomy is one of the most dynamic departments at the University of Cordoba located on Rabanales Campus. Also the laboratory of the "Patología Agroforestal" with the leader of the group, Professor of Plant Pathology Antonio Trapero Casas. I visited olive orchards and vineyards with students who were studying pest and diseases. I participated in diagnostic work on diseases identification in the field and laboratory. We exchanged our research work with a plant pathology group, made presentations, and discussed current and collaborative further work on olive diseases, such as peacock spot, anthracnose, cercosporiose and fruit disorders. Following this, oral presentations were made by researches at the 4th European Meeting.

- *Genetic resistance, a part of integrated control of olive diseases? Trapero A.*
- *Effects of soil management systems and phytosanitary treatments in the control of main olive pests and diseases; Trapero A*
- *Control of olive anthracnose caused by Colletotrichum spp.; Moral J.*
- *Search for alternatives to copper for the control of olive leaf spot caused by Fusicladium oleagineum; Roca L.F.*
- *Distribution of Verticillium dahliae through watering systems in irrigated olive orchards in Andalucia; López Escudero F.J.*

We discussed with Prof. Miguel A. Blanco López about some very interesting work that has been done on Verticillium wilt. This disease was first observed in Spain in 1975. Since this time, the disease has spread with the increase in the olive plantations. The main contributing factor for the increase in disease incidence and severity has been the establishment of orchards in fields previously cropped with susceptible hosts of the pathogen, such as cotton and some vegetables. Nevertheless, other means of transmission of the pathogen, such as the use of infected planting material or contaminated irrigation water, cannot be dismissed as unimportant. Losses to Verticillium wilt potentially are very severe due to the proximity of olives to highly virulent pathogenic cotton defoliating isolates *V.dahliae* that may infect this crop. Efforts had focused on a resistance screening program started in 1994 and involving major Spanish and foreign cultivars from the olive world germplasm bank and on the recovery of young olive trees from *V.dahliae*. Soil solarisation is an effective technique in reducing inoculum density of soilborne pathogens such as V.dahliae. In Australia this disease was recorded in 1960 in New South Wales. Currently it is not recorded as a common problem in recent diagnostic activities, and probably the defoliating pathotipe is not present in Australia.

The other diseases different to Verticillium wilt, such as peacock spot, anthracnose, cercosporiose, and other fruit rots are important in Spain and olivegrowers have to control them by using fungicides, mainly copper compounds.

We discussed with Professor Luis Rallo Romero about the

breeding program that is being carried out in Córdoba. This breeding program includes the development of new cultivars with resistance to *F. oleagineum*, *Colletotrichum spp.*, and *V. dahliae*. They are using several parent cultivars for crossing, such as Arbequina, Picual, Frantoio, Lechín de Sevilla, Empeltre, Koroneiki, etc. One of the best progenies was 'Picual' × 'Arbequina'. It was found that the new olive cultivar of this crossing possesses the following combination of characteristics:

- displays low vigour and a compact and weeping growth habit that is adapted for growing in high density orchards
- displays an ability to form an olive crop at an early age
- efficiently forms attractive olives having a high oil content and quality.

The new cultivar can be distinguished from its parental cultivars and all other olive cultivars known to the originators. The new cultivar 'Sikitita' is moderately susceptible to *F. oleagineum* and *Colletotrichum spp.*, and particularly well suited for growing as an alternative cultivar in high-density hedgerow orchards where the male parent 'Arbequina' cultivar has been utilised as a standard cultivar in the past. The new cultivar in view of its reduced vigour is believed to be a superior candidate for ease of management in a high density hedgerow orchard system. Hereafter the characteristics of the new cultivar are compared in detail with those of the 'Arbequina' cultivar.

The new cultivar of *Olea europaea* was created by artificial pollination during the course of a breeding program where two parents were crossed which previously had been studied in the hope that they would contribute the desired characteristics. This breeding program was a cooperative program conducted by the Cordoba and the Andalusian Agriculture Research and Institute (IFAPA) at Cordoba, Spain. The new`Sikitita` cultivar has not been observed under all possible environmental conditions to date. Accordingly, it is possible that the phenotypic expression may vary somewhat with changes in light intensity and duration, cultural practices, and other environmental conditions.

Dr Vera Sergeeva visited olive orchards in Jaén to study pest and diseases.

I visited a world Germplasm Bank with 400 cultivars of olive trees and the Museum of the Olive near the town of Baeza, Province of Jaen.

Further reading

The cultivar susceptibility to pathogen *Fusicladium oleagineum*, *Colletotrichum spp. Pseudosercospora cladosporioides*, *Verticillium dahliae*, *Phytophthora spp.* and *Pseudomonas savastonoi* can be viewed at: www.oleadb.it