



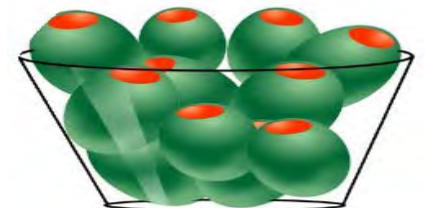
Albanian Organic Olives for Export

Environmentally sound weed, insect and disease management methods now permit farmers to grow olives organically, thus reducing the threat of pollution from pesticides. In Albania, many of these methods have been developed, introduced and/or studied by the IPM CRSP. With IPM CRSP guidance, and in collaboration with the Albanian Organic Agriculture Association (AOAA), three organic olive farms have been established for the first time in 2003 in the Vlora region (Kanina, Aliban and Shamogjin), with a total of 5,400 olive trees. In addition, in Tirana (near Dajti) organic olive oil was being produced for the first time in 2003 from 8,000 olive trees, and the product is certified by an international certification BIOSWISSE). It is anticipated that about 3 tons of organic extra virgin olive oil will be exported to Switzerland.



Olive Exports

Olives and olive oil are traditional Albanian exports and in 2002 there were 40,000 rural households cultivating olive trees in about 40,000 ha (about 10% of general agriculture surface) with approximately 4 million olive trees in production. Since 1998 the area devoted to olives has been increasing at the rate of 200 ha per year. The overall production capacity of olives in Albania in 2003 was about 38,000 metric tons according to FAO estimates. Besides market competition from Albania's neighbors, Italy and Greece, pests are major production constraints. A challenge is to develop pest management tactics and strategies that are economical, socially acceptable and ecologically non-disruptive to existing beneficial natural control agents.



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IPM CRSP (CRSP Grant No. LAG G-00-93-00053-00)
Office of International Research, Education, and Development (ME)
Virginia Tech, 1060 Litton Reaves Hall, Blacksburg, VA 24061
Phone: (540)231-3513 Fax: (540)231-3519 E-mail: ipm-dir@vt.edu
Web: www.ag.vt.edu/ipmcrsp/index.asp



IPM CRSP Progress





Olive groves in Albania



Monitoring weed density and type



Olive fruit fly damage

Key Pests of Albanian olives

The key pests affecting olive production in Albania are weeds; the insects, olive fruit fly, olive moth, and black scale; and the diseases, leaf spot disease, and olive knot. The IPM CRSP is assisting Albanian institutions in their olive production and export program. The IPM CRSP- Albania project is funded by the Albanian mission of the United States Agency for International Development (USAID). To promote the production of organic olives for export, the U.S. universities, Pennsylvania State University, University of California and Virginia Tech are working collaboratively with the Albanian institutions, the Plant Protection Institute (PPI) the Agricultural University of Tirana, the Fruit Tree Research Institute (FTRI) and the AOAA. This consortium is dedicated to the goal of producing high quality olives oil by (1) reducing losses due to pests, (2) reducing environmental contamination

by developing olive IPM practices and increasing quantity and quality Albania olives for domestic use and exportation.



Olive knot



Black scale above and parasitized by *S. cyanea* below



Timing of the Olive Harvest

Proper timing of olive harvest can be used to manage the olive fruit fly infestation and provide high quality and high yields of olive oil. The combination of early harvest method (during the first decade of November) and the application of Eco-traps maintain the olive fruit fly infestation at an acceptable level, thus avoiding the use of insecticides. During 2003, using the early harvest method, it was possible to produce Extra virgin olive oil with an acidity level below 0.4%. As a result, in the Vlora region (one of the most important centers of olive production in the country), about 80% of the olive crop is harvested before mid-November. Based on these results the AOAA is promoting a change in the mentality of farmers in other regions with different climatic conditions and different cultivars, by promoting this highly profitable and environmentally safe technology.

Environmentally Benign Insect Traps



Natural enemy populations are extremely high in Albanian olive groves and it is important that pest control tactics employed preserve



Leaf spot disease

them. For example, percent parasitism of the black scale by the parasitoid, *Scutellista cyanea* averaged about 50% over eight olive growing regions with percent parasitism reaching 75% in the Pusi i Mezinut and Qafa e Kociut regions in 2003. Infection of the black scale by entomopathogenic fungi reached 80% in the Vlora region in 2002. Thus, methods safe to natural enemies and pollution free were developed to control the major pest of olive, the olive fruit fly. The “attract and kill” method, an improved form of mass trapping using an Eco-trap® containing an attractive feeding bait + sex pheromone + insecticide at the rate of one trap per tree maintained the olive fruit fly below economic threshold levels. Based on IPM CRSP results, the Ministry of Agriculture and Food (MoAF) supported a large-scale application of this approach in Novosela district.



Eco-trap

Pruning Technology

Proper pruning of olive trees results in good linear vegetative growth, proper canopy shape with plenty of shoots, high fruit yields, and good spray penetration into the canopy for effective pest control. During the course of the IPM CRSP project, farming practices have greatly improved and farmers have learned new techniques of pruning that enable them to improve yields. In Albania, about 80,000 olive trees are now pruned according to recommendations. The proper pruning technique has been demonstrated by IPM CRSP specialists in various sections of the main region of olive cultivation (Sarande, Elbasan, Tirane, Berat, etc.).



Weed Control Tactics

Weeds are abundant in Albanian olive groves and left unattended reduce production. In surveys, 102 weed species in 32 different families were identified. To produce organic olives, non-herbicidal methods of weed management must be developed. In a study comparing two herbicides and four non-herbicidal cultural practices, the use of straw mulch provided the highest olive yields of 234% more than the untreated control at 23 kg olives/plant compared to 12 kg/plant for the two herbicide treatments. The mulch treatment had the added benefit of conserving soil moisture. Thus, effective, non-herbicidal weed management technology for organic olives is available.

Technology Transfer

The IPM technology for the production of organic olives is being transferred to olive farmers through a variety of routes.

In cooperation with MoAF (Directory of Science and Extension Service), regional workshops have been conducted. Presentations on the management of olive pests were made by the IPM CRSP project and participants (inspectors, Albanian olive growers, farm-advisers) were provided extension materials. In cooperation and with the funds of FAO, workshops / demonstrations were conducted and 10,000 Eco-traps distributed, to facilitate the understanding of olive IPM tactics and to improve the control of olive fruit fly in Novosela district. Extension agents and farmers were trained in the application of the "Attract and Kill" method. On farm demonstration trials are used to teach farmers about improved IPM technologies for olive insect pest and disease control. Through their participation in the demonstration trials 35,000 olive trees were managed as based on IPM CRSP recommendations.

Benefits of the Olive IPM Program

Economic analyses of olive IPM indicate that the Albanian olive industry has the potential to derive a net IPM research benefit between \$39 million (assuming that farmers move directly from minimum spraying to IPM) and \$52 million (assuming that farmers move from a maximum pesticide spray program to IPM) over the next 30 years. The Albanian olive IPM program also has global benefits. IPM approaches developed to manage olive pest problems in Albania have broad applicability, especially in the neighboring countries. The olive fruit fly, the world's most serious pest of olives has recently invaded the California olive groves covering 35,000



acres with an annual value at about \$100 million. American commodities are facing loss of key pesticide groups and US specialists will benefit from working in the Albanian system and learning about non-pesticidal alternatives. Biological information and management tactics developed in Albania have potential value for management of the olive fruit fly in California.



For further information regarding this article contact:

- Doug Pfeiffer, IPM CRSP Albania Site Chair, Virginia Tech, Blacksburg, VA 24061-0319, 540-231-4183, dgpfeiff@vt.edu
- Josef Tedeschini, IPM CSP Albania Site Coordinator, Plant Protection Institute, Shkozet-Durres, Albania, 355-52-24343, ipmcrsp@icc-al.org
- E. A. "Short" Heinrichs, Interim Program Director, IPM CRSP, Virginia Tech, Blacksburg, VA 24061-0334, 540-231-3516, ipm-dir@vt.edu