

Scanning report [Beatrice Michaela IACOMI, USAMV]

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Country: Romania

NUTS 3 region(s)¹: [Romania]

WP no. and title: WP3 Reduction in pesticide residues

Date: [10-05-2016]
[Y1 report due May 2016 for the period 03-16 to 05-16
Y2 report due May 2017 for the period 06-16 to 05-17
Y3 report due May 2018 for the period 06-17 to 05-18]

Source materials and methodology

The data are collected from reports of the research institutions and public institutions as Ministry of Agriculture and Rural Development (National Program of Rural Development) <http://www.madr.ro/ro/agricultura-ecologica.html>; <http://www.adcon.at/Products/AgroExpert.html>; <http://www.pomosat.ro>

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Best practice findings

Apples are the most important tree fruit grown commercially in Romania at the present time in terms of area, volume and value. Today's consumer has high expectations for fruits free of pesticide residues. Romania has a relatively new history of the organic products market, but the growth of operators registered in the system is one spectacular - from 2000 in 2008 to nearly 14.470 operators in 2014. However, only 2% of agricultural land from Romania is cultivated in certified organic system. The area cultivated organically increased from 211 ha in 2006 to 6,083 ha in 2012. Orchards and vineyard represent 3,25% from the total surface in organic crop (<http://www.madr.ro/ro/agricultura-ecologica.html>). For orchards, of the 6,083 hectares approximately 86% are under conversion and only 14% are certified (FAO Statistics; PNDR 2014).

A major factor that led to the decline of the orchards sector is excessive fragmentation of land, especially in hilly favourable fruit crops; average surface area owned tree farm was 0,38 ha in 2010, much less than the minimum area required for a holding fruit

¹ Please see ec.europa.eu/eurostat/ramon/nomenclatures/ for details on NUTS regions, level 3

to become viable (minimum 0,3 - 5 ha). In terms of ownership structure, 88% of holdings are individual properties and only 10% are held by associations or societies (Badiu et al., 2015).

To minimise the risks from pesticides residues on fruit, part of conventional apple production is based on IPM practices.

The "AgroExpert" Disease Forecasting System (<http://www.adcon.at/Products/AgroExpert.html>) it is generally used by growers to determine the optimum time for chemical treatment and to reduce the amount of pesticides and the number of treatments (USAMV Survey). Five on-site weather stations were established in growers orchards (POMOSAT Project). Growers used models to assess scab infection periods and timing for fungicide application. The only limitations encountered were occasional weather station/computer software interface issues, and lack of time during a busy period for orchard activities to fully analyze all the information available for decision-making. Weather and apple scab infection period information from these orchards were posted on the POMOSAT web site (<http://www.pomosat.ro>) for neighboring growers access, helping them make fungicide application decisions.

Almost all apple growers used pheromone traps for monitoring and risk assessment of pests (ex. (atraPOM) for *Cydia pomonella*, codling moth). So, the threshold is established and the decision to apply treatments is made, with more effective pesticide application.

Cultural practices are also used for apple scab management. These include scab-resistant cultivars and sanitation by means of tree pruning and removal of leaf litter to physically reduce fungal inoculum in the orchard. Researches made in orchards with vulnerable varieties (Jonathan, Golden delicious) showed that the average number of treatments was 15, while for the resistant varieties was 7. Savings made in the orchard with resistant varieties by removing up to 90% of fungicides, and a reduction of 81% of insecticides and acaricides, represents 66% compared to those with vulnerable varieties (Popescu, communication - Research and Development Station for Fruit Growing Voinesti, Romania).

Reduced risk alternatives, such as "green products" were identified as potential tools in apple diseases management, with the goal to obtain fruits with less pesticides residues. For example, researches regarding the use of potassium bicarbonate or potassium bicarbonate mixed with potassium silicate as an alternative to classical fungicides (based on copper and sulfur) to control scab and powdery mildew in apple were made. The results obtained highlight the effectiveness of potassium bicarbonate in apple scab control in conditions of Cluj-Napoca, Romania (Mitre, 2009; Mitre 2010).

Some data on the effectiveness of urea as foliar applications (5%), after harvest (but before leaf-fall), to reduce apple scab inoculum are available (Mitre, 2012) but this practice it is still not used by growers.

Unfortunately, there is a little or no readily available informations with regard to the variables that influence growers' decisions to adopt strategies that minimise residues in fruits. Once growers had discovered a combination of management options that was successful, they would not change that combination unless forced to do so by circumstances (the repeated failure to control pests and diseases - increasing resistance, the emergence of a new pest/disease). When interviewed, growers indicated that their orchard climate, varieties, and history were the determinants of the pest and disease management practices they used. Their choice of pest and diseases management practices is influenced by the availability of chemical and biological options and the cost and effectiveness of those options (USAMV Survey)

The following projects were identified in the National Rural Development Programme 2014-2020: ADER 2015-2018 (Ministry of Agriculture and Rural development – Romania: **ADER 3.1.1.** *Evaluation, conservation and management of genetic resources and horticultural ecosystems biodiversity fruit by developing and promoting innovative eco-friendly environment practices;* **ADER 3.2.2.** *Breeding of fruit trees to increase safety and food security;* **ADER 3.3.2.** *Development of new products, practices, processes and integrates technologies for horticultural production;* **ADER 3.3.1.** *Maintaining the authenticity and health of fruit trees propagating material through biotechnological and phytosanitary methods;* **ADER 4.1.1.** *New IPM solutions for pests and diseases in orchards;* **ADER 4.1.4.** *Integrated technologies for pests management in agricultural and horticultural crops with minimum resource consumption;* **SusOrganic** - *Development of quality standards and optimised processing methods for organic produce* (USAMV Bucharest)

Pesticide residues

Romania has a Monitoring Plan of Pesticide Residues in vegetables, fruits and grains as a part of the National Plan of Integrated Control, developed in accordance with Regulation EC no. 882/2004. The Ministry of Agriculture and Rural Development, National Sanitary Veterinary and Food Safety Authority (NSVFSA) and Ministry of Health have the responsibility for National Monitoring Plan of Pesticides Residues in fruits. Implementation of monitoring plans is performed by Agriculture and Rural Development Ministry through Central Laboratory for Pesticides Residues Control in Plants and Vegetable Products. Data on pesticide residues in fruits could be found at <http://www.madr.ro/ro/reziduuri-de-pesticide-in-plante-si-produse-vegetale.html>. Generally, 400 fruits samples are analyzed each year

Research studies were conducted to reveal and draw attention to the great problem of environmental pollution, in particular by pesticide residues in 13 types of fruits from Romania, to ensure safety and quality (Soceanu et al., 2012). The obtained results showed the predominance of aldrin in most of the analyzed samples but levels of studied pesticides did not exceed the maximum permissible levels established by European Communities regulations.

Romania has a National Action Plan regarding the reduction of pesticide use or risks in specific areas:
http://ec.europa.eu/food/plant/pesticides/sustainable_use_pesticides/docs/nap_romania_en.pdf
<http://www.madr.ro/ro/utilizarea-durabila-a-pesticidelor/plan-national-de-actiune.html>

Also, training sessions are organised by the Plant Protection Association Industry in Romania (AIPROM) regarding “Best Management Practices (BMPs) for foliar applications (AIPROM provide guidance for critical factors that influence coverage and reduce potential for off-target movement).

<http://www.aiprom.ro/SUI/materiale.html>

<http://www.aiprom.ro/SCAPA/colectare.html>

Required activities

- The Best Practice Guide for Romanian Fruit Production
- workshops/factsheets on the: a) biological control of pests and diseases; natural enemies orchards ; b) improved pesticide application techniques
- Interactive seminars involving both researcher and consultants/agronomists to improve rapid dissemination of information