

## Outlook of the inspection of sprayers in Province of Trento

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### Summary

Mountain landscape is the environment of agriculture in Trentino. Most of the hectareage is of high quality products like apples (11,500 hectares), grapes (10,000 hectares) and lesser extent small fruits and vegetables. There is a strong co-operative spirit, and many activities are conducted in partnership form. APOT (Association of Fruit and Vegetable Producers in Trentino) is a second degree Producers' Organization of about 10,000 farms. Average size of farms is 1.5 hectares and, as a form of income integration, part-time model characterizes about 50% of them.

Many housing districts are placed in sparsely among apple orchards and vineyards. Due to this condition the rural population has become more and more sensitive to issues related to spray drift. About 8,000 sprayers are in use on orchards and vineyards.

To achieve a better efficacy of treatments and rationalize use of chemicals, APOT in accordance with the local Government has decided to start the inspection activity since 1997. In addition a calibration of sprayer is made on the basis of farm orchards characteristics. Using two mobile test stations until now nearly 10,000 checks have been carried out (many sprayers have been checked twice or more). In compliance with Directive 2009/128/CE will also be organized activities for the control of sprayers used for weed control on localized application and for those in minor crops. ENAMA Guidelines have recently been made available and inspection activity is going on in close harmony with recommendations of ENAMA Working Group for national coordination on inspection activity.

### Introduction

Trentino-Alto Adige/Südtirol is a Region in the North East of Italy, located in the mountain area south of the Alps. It is made by the two autonomous Provinces of Trento and Bolzano (Fig. 1). The territory is mainly mountainous and woodlands occupy more than 50% of it.

Agriculture is an important industry and is particularly specialized in the production of apples and wine grapes; in higher areas, livestock is still the most important activity and in some valleys the main production is small fruits (strawberry, raspberry, currant, cranberry) and arable crops (cereals, potatoes, vegetables, etc.).

In particular the production of apples is very important both for the quantity produced (70% of National and 15% of European production) and for the quality related to the vocation of growing environments.

With regard to the Province of Trento the apple orchard surface is about 11,500 hectares while the vineyards are about 10,000 hectares. There is a strong co-operative spirit, and many activities are conducted in partnership form. APOT (Association of Fruit and Vegetable Producers in Trentino) is a second degree Producers' Organization of about 10,000 farms. Today APOT consists of three consortiums: Melinda, La Trentina and Sant'Orsola.

The population of the Province is about 529,500 residents on 217 municipalities. Many housing districts are placed in sparsely among apple orchards and vineyards. Due to this condition the rural population has become more and more sensitive to issues related to spray drift.

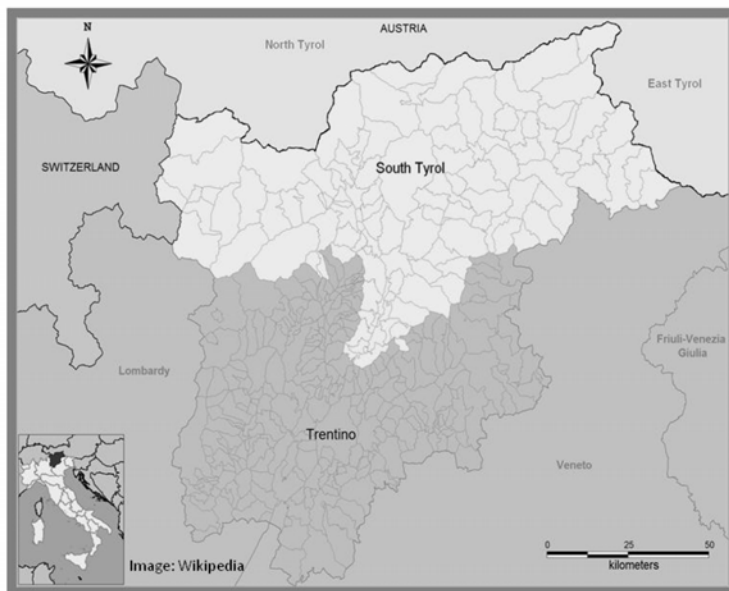


Fig. 1. Map of the two autonomous Provinces of the Region Trentino-Alto Adige/Südtirol.

### **Sprayers in use: types and characteristics**

In the last twenty years, fruit growing has become more specialized with plantings of about 3 to 3.5 m between rows and trees 70-100 cm spaced from one other, using dwarfing rootstocks. Where possible orchards and vineyards have been mechanized even on slopes.

In this context, sprayer's requirements are different than in the past: the trend is to pass from standard axial fan sprayers towards tower sprayers and application volumes of 300-500 liters per hectare; in recent years anti-drift devices like anti-drift nozzles and airflow exclusion screens on one side of the sprayer are also taken into account on upgrading.

Very small farms lead growers to have a high number of sprayers in use (it is estimated in about 8,000 units, including those used in viticulture). These are often underutilized and in general medium to good condition.

In addition, the autonomous Province of Trento (PAT), with the Rural Development Plan 2007-2013, is also funding the Initiative No. 121 for the purchase of anti-drift sprayers equipped with devices to enhance the protection of the environment and human health.

In smaller farms knapsack sprayers are adopted for localized applications of herbicides, otherwise in bigger ones, there are combined equipments with mulching or small booms with one or two nozzles. Farms of minor crops like small fruits, vegetables and cereals use various plant protection equipments (handheld lances or guns, mist blowers, cannon sprayers, etc.).

### **Inspection of sprayers in use and calibration activities**

Since 1997 the PAT in agreement with APOT and Advisory Service for agriculture (CTT-FEM) has decided to start the inspection and adjustment of sprayers in use. Two mobile centers with automated data collection were bought by the PAT and assigned free of charge to APOT management service. In 2010 the two centers have been replaced with two other, always of the same type, purchased directly by APOT. The inspection activity was entrusted to a company of mechanics. Recently, these mechanics were officially enabled with specific course. Initially, two technicians were working for the center, while today the activity is performed by a single operator. Itinerant inspections are carried out at fruit cooperatives by a truck equipped with spare parts: technicians can replace worn or not working parts.

In recent years the cost of the service requested by the company responsible, payable by the farmer or, in some cases, by the Organization of Fruit Growers is around 80 € per inspection. The cost of spare parts is always paid by the farmer. It is important to remark once more that the inspection service company uses for free the inspection tools.

It should be pointed out that APOT since 1999 has included the requirement of inspections in the Scheme for Integrated Production, with intervals of 6 years. This Scheme was then certified ISO 9001 since 2006 with inspection interval of 5 years.

APOT, through the individual cooperatives, has always monitored and managed the inspection activity: the schedule of checks is drawn up each year to ensure the regular activity of inspection within the time prescribed. In this way, each center works regularly throughout the season from March to September. At present sprayers in use, if not replaced, are at the third round of inspection. The Fig. 2 shows the trend of the controlled sprayers over the years in the Valleys of the River Noce (Associate Producers of Melinda), which represents, with 6,400 ha of orchards, the main productive area of the Province.

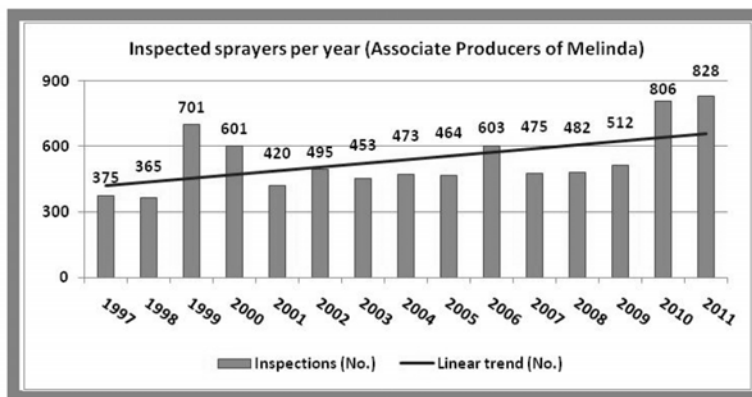


Fig. 2. Controlled sprayers in the Valleys of the River Noce (Associate Producers of Melinda) up to 2011.

The inspection consists of visual checks on the general feature of sprayers (pipes, filters, pump etc.) followed by instrumental measurements with particular reference to the nozzle flow rate, manometer precision and vertical distribution homogeneity (Fig. 3). Farmers will then receive a printed report containing sprayer measured parameters and calibration in terms of relative speed gear and engine speed, nozzle type, number and working pressure, according with orchard characteristics. At the end of inspection and calibration procedures the sprayer is marked with a sticker which is printed and distributed by APOT, indicating that the inspection has been passed successfully.

The software currently used is the one provided by the supplier of the inspection equipment. It needs a set-up with regard to controls and their acceptable limits provided from specific documents produced by the National Working Group of ENAMA.

Until today the wine industry, has worked on a more bland inspection activity. In the wine sector a part of sprayers, in recent years, have been checked with the mobile centers operating in the fruit industry and a regularly accredited private workshop is currently operating. During 2011 were checked 250 sprayers. Moreover it is ongoing a monitoring activity to quantify the number of equipments for herbicide application and sprayers used only in small fruits. Then it will be necessary to organize as soon as possible an inspection schedule also for these checks, and more in general, for all sprayers for which inspection is mandatory according to Directive 2009/128/EC.



Fig. 3. Instrumental measurement of the nozzle flow rate and vertical distribution homogeneity during inspection and calibration activity.

### Critical points to accomplish the obligations of the directive 2009/128/EC

The institutional bodies of Province, regarding the provisions of the dir. 2009/128/EC for the inspection of equipment in use, are going to develop the official resolutions of the service activation: implementation of ENAMA National Guidelines, recognition of authorized inspection centers and qualified inspectors, establishment of the monitoring committee for the centers and their activities, organization of monitoring. The National Action Plans, which should be available by the second half of 2012, will specify certain requirements.

It will be necessary also to quantify the amount of sprayers in use in fields other than the fruit/vine growing in order to organize inspections with an adequate number of centers and qualified personnel. Certainly the experience gained to date will facilitate this task.

Particular attention should be given to the adjustment of sprayers where fruit and vine growing is made by the same grower, as the calibration parameters adopted on vertical growing systems are not useful in other training styles (e.g. inclined trellising on Pergola vineyards).

Moreover the adaptation of the software for inspection checks and collection of data is necessary as required by in the ENAMA Guidelines.

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