Maximization of fruit growing activity using an precision management

Gabriela Teodorescu 1

1 Valahia University of Targoviste, Romania, theo_0200@yahoo.

Abstract

Most important, practical aspects and aims for the maximization of fruit growing activity are by using management activities which are specific to this field along with their impact in the economical and ecological performances. It is important to develop the research of new resistant apples varieties and to develop an integrated fruit growing system.

The specific objective of precision horticulture must be understand by the specialists: to create a precision horticulture management available for Romanian growers; to develop an informational system. Sustainability and competitiveness have become key words to horticultural crop producers. Growers need to be efficient in production to stay competitive and they need to conserve and protect soil and water, to be sustainable.

Keywords: fruit growing, management, precision horticulture

Introduction

Best management practices for orchards include attention to: site preparation, soil management, water management including irrigation and drainage, nutrient management and pest management. For that, its also important the promotion on national and international market of resistant at diseases fruit varieties.

To be considered a best management practice, an action must maintain or increase crop production while minimizing impact on the environment. In the case of many crops, this means using good management, so that the crop is well-established and healthy. This allows growers to reduce treatments such as pesticides that may affect the environment

Soil is vital to all crop production, vegetables or fruit. Healthy and productive soil helps crops develop good root systems and reduces crop stress caused by drought or excess rainfall. Intensive production of horticultural crops creates some unique challenges in soil management/2/

Material and Methods

Using the precision horticulture methods is a challenge for the growers in Romania. Precision horticulture can be used to increase production efficiency, improve product quality, improve the efficiency of crop chemical use, and protect the environment.

Precise information is important in every phase of production, from initial planning to post harvest. Information requirements include spatial and temporal data on the crop, soil, pests, topography, and weather during the field production phase. During the post harvest phase, temperature, humidity, moisture, and a host of other parameters are important. Some of this information can be gleaned from previous crop records.
Technology is the second critical component of the system. Production equipment and systems must be compatible with the operational requirements of precision agriculture. The foundation of precision agriculture, from the mechanization perspective, is traced to the development of precision seeding and chemical-application equipment. GPS, with differential correction, has proven to be an effective tool to geo-reference features or data in the field. GIS provides the ability to organize data by geo-referenced position. Computers have given us the analysis and control capabilities to develop the comprehensive system needed in site-specific and post harvest process management.

Soil and plant testing will be used to determine the cause of the yield variability, and experimental manipulations will be conducted to optimize yield and management efficiency.

One of the method is to improve the fruit growing management, to introduce a series of theoretical, methodological and, most important, practical aspects for the maximization of fruit growing activity. This is possible using management activities which are specific to this field, along with their impact in the economical and ecological performances.

As a result, the consideration of horticultural production in the context of its supply chain, offers some challenging requirements for precision horticulture technologies for all specialists in horticulture in Romania.

In this way, the Romanian growers have more opportunities to produce optimized fruit quality. Using the key elements of information, technology, and management practices such as field scouting, field mapping, variable rate control, yield mapping, and post harvest processing we can improve the quality of crop production. In Romania much of this technology is still in its infancy. More research will be necessary to develop this technology. These techniques include using GIS database structures, handheld data capture devices, remote sensing equipment, database management at different levels in the supply chain.

Other method, for fruit production and quality improvement, is to reduce the pesticide use. One of the way is the breeding and growing of resistant at diseases apple cultivars. Equipment designed for accurate control and delivery of crop chemicals makes modern variable-rate applications possible. In addition, the global positioning system (GPS), geographical information systems (GIS), and computers are key building blocks in this foundation.

**Discussion**

Sustainability and competitiveness have become key words to horticultural crop producers. Growers need to be efficient in production to stay competitive. They need to conserve and protect soil and water to be sustainable.

The increase of the population, the continuous rise of the life standards, the necessity to develop the food industry and the need to intensity the export of same fruit-growing products in great demand on the external market, put in front of Romanian research the necessity for creating varieties and hybrids with a much greater efficiency: richer in vitamins, parotids and lipids, with taste and technology qualities better than those of the existent varieties.

For this reason, apple varieties with genetic resistance at diseases have been created on witch the number of the chemical treatments decreased with 50%.

In the world, there are 26 of such varieties and Romania, with its 6 homologated varieties, occupies one of the top-ranking positions in the international research, order to achieve this objectives.

At the same time with the introduction in cultivation of the resisting varieties, it is imperative to study the causes which can lead to reduction or even to the growth of the
resistance at diseases of the apple trees, respectively the resistance at *Venturia inaequalis* and *Podossphaera leucotricha*.

As a rule, nutritional disorders that inhibit growth and yield only slightly are not characterized by specific visible symptoms. Symptoms become clearly visible when a deficiency is acute, a growth rate and yield are distinctly depressed.

Diagnosis may be complicated in field growth plants when more than mineral nutrient is deficient or when there is deficiency of one mineral nutrient and simultaneously toxicity of another.

In order to make more precise visual diagnosis, it is helpful to acquire additional information, including Ph soil, results of soil testing for mineral nutrients, weather condition and the application of fertilizers. In some instances the type and amount of fertilizer to be used can be recommended on the basis of visual diagnosis immediate. In other instances, visual diagnosis in an inadequate basis it is important for making fertilizer recommendation. It offers the possibility to focusing further attention on chemical and biochemical analysis of leaves and other plants part of selected nutrients.

**References**

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