

NEW AGROTEHNICAL PROCEDURES FOR IMPLEMENTATION IN ORCHARDS

PROCEDEE AGROTEHNICE NOI PENTRU APLICARE ÎN LIVEZI

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Abstract: *In the article it described the new processes: of the directional formation of the roots is provided by the limitation of their blocking off their expansion through with a plastic film and their cutting, cultivation of the soil by using stimulation of the cutting of the roots.*

Key words: Perennial plant, roots, blocking, cutting, mulching soil.

Rezumat. *În prezentul articol se descrie un procedee noi: formarea direcționată a sistemului radicular la plantă prin limitarea mixtă și eșalonată pe ani a răspândirii radiale a rădăcinilor orizontale, și anume, în anul plantării în dreptul tulpinei plantei cât și de prelucrare a solului cu scopul stimulării creșterii rădăcinilor prin tăierea periodică a lor.*

Cuvinte cheie: plante multianuale, rădăcini, limitarea, tăierea, mulcirea solului.

INTRODUCTION

If the care of the aerial part of the multi-party plant is direct, meaning that the agrotechnical procedures directly acts on the organs of the plant, then the part in the ground they can influence only through the soil. Hence, the energy costs required to care for their root systems are doomed to be incomparably greater than those of crown care, for example the tree. On the other hand, biological and economic effects of agro-technical processes are more delayed and less sentient when relations between horticulture and plant are mediated by something (soil) compared with the case when it lacks such mediation.

Economic and organizational conditions that are characteristic for this stage of development of horticulture strongly require the rationalization of the technologies of growing perennial. The most important reserves in this aspect are hidden in the complex agrotechnical processes related to soil. It is obvious that technological operations of maintenance (care) of the land should be directed not all over the land that the plantation occupies (as practiced today), but only on certain portions (strips). Only thus can obtain a substantial reduction in expenses of any kind. Decisive circumstance that compels us to tackle the problem in this particular argumentative context is the extremely high prices of fuels and lubricants.

As you know, horizontal roots of plants tend to grow rapidly in the soil all over the land available to plant, according to distance planting, "leaving behind"

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significant soil layers unused that only after many years after planting, they will necessarily occupy. Horticulturalist, however, can interfere with the formation of roots for the optimization (and compliance) architectonics root system taking into account new requirements ahead of agrotechnical procedures that are used in plantations.

Actually possible given the required characteristics of root systems by limiting the spread of radial roots in the early years after planting. Summary of the process of training directed to the root system is to use the following phenomenon: if the limitation is part of radial spreading horizontal roots, the plant is forced to push the development and spread of other parts of horizontal roots. This results in straightening roots spread in certain directions and soil layers and strips of land where the action is expected to concentrate the care of the plantation agro-technical measures.

An important part of the complex of agrotechnical measures, used in orchards, is the soil management. If you care to tree crowns from a technology perspective, is adjusted relatively well to the requirements of the developing stage of fruit growing, the soil processing still requires considerable research efforts to rationalize. Priority direction of improving the technology of tillage must be determined taking into account the need to halt the loss of humus in the soil from excessive processing of the orchards.

Therefore, growers vision researchers, the first priority now is solving the problem of minimizing soil processing.

This article includes description of agro-technical processes: training targeted to the perennial plant root system (Z 157 patents MD 2010.03.31), tillage in perennial plantations (Case no. 6730 AGEPI of Moldova from 27.10.2010 to grant a patent).

MATERIAL AND METHOD

During the elaboration of agrotechnical procedures were used plastics such as polyethylene film and plant debris. Their achievement has been the application of agricultural machines produced in series. They also used specific research methods and analysis of fruit growing literature required for certification.

RESULTS AND DISCUSSIONS

Directed training process of the plant root system.

The problem solved by the process, the invention is to simplify technology training targeted to plant root systems and the extraction of ground at the end of the operation of the plantation, the polythene used as limiter display horizontal roots.

Summary of the process, which removes the disadvantages mentioned above, the invention is directed formation of the plant root system by limiting mixed and spread over years of radial spreading horizontal roots, namely, in planting the right plant stem from remoteness 25 - 30 inches of it buried in the soil vertical screen crescent shaped limiter (height 60 cm, width 75 cm and 8

cm thick), and since year six after planting, then every three years, the limit applies cutting horizontal roots. However, limiting screen is made of polyethylene and filled with plant debris in a package, until the end of the operation of the plantation, rot and provide substantial relief without digging and full manual extraction of the film avoiding soil pollution pieces of plastic. In turn, shaped package limitation screen is manufactured using a rectangular wooden boxes in which to install polyethylene film, which then is filled with plant debris soft stuff, already formed after the package is extracted from the box.

Claimed process provides considerable decrease in energy expenditure by decreasing 3 times the amount of polyethylene used as screen limitation and reduction of 2 times the number of cutting operations by limiting the roots.

The result is a higher level of control over the conditions for growth and development of plants, increase productivity and considerable decrease in the cost of agricultural production.

The procedure is performed as follows. First, the time limitation are made screens. The rectangular wooden box install polyethylene. The cavity thus formed is filled with soft vegetable scraps, then forms package, which will act as screen limitation, which has the following dimensions: height-60 cm, width-75 cm, thickness-8 cm. When planting the plant in the planting hole to install screen vertically limited to 25-30 cm away from it. After sealing the grave soil and tamp it down takes time structure (texture) should be kept operating throughout the plantation. Horizontal roots of the plant, reaching limiting screen, walk around him. Thus they are forced to locate the volumes (layers) of soil in the area established by planting strips of land which are targeted to expand. The horizontal roots coming out of the perimeter strip is subject to mechanized harvesting (applying machine type, Vibrolaz-80E ") than every three years since six plants after planting. Under certain technological scheme for implementing this process called targeted training to avoid cutting the root system roots thicker than 10 mm (agrotechnics requirement in force and which aims to minimize stress caused plant). If no such limitation applies in planting screens would need to start cutting limiting horizontal roots from the third year after planting and more often (than every two years) to meet the above requirement of agricultural technique. Towards the end of the operation of the plant remains plantation screens limiting decay forming a nearly empty cavity that is easily and without digging manually, fully extracted polyethylene film avoiding soil pollution with plastic pieces.

Method for processing multi-plantation soil.

The problem solved by the process is: avoid excessive decomposition of humus in the soil and thereby ensure the stabilization of humus content of soil fertility dependent, reducing costs of care in planting soil, simplifying interpretation of agricultural technology, raising the plant responsiveness agrotechnical measures applied, using the full potential fertility of the soil by plants.

Summary of the process, which removes the disadvantages mentioned

above according to the invention, consists in that in order to minimize soil in plantation processing multi-processing is carried out soil to stimulate root branching horizontal grower use mass produced, which is adapting the installation frame with a passive knife on the edge, which cut the roots at the depth of 40 cm, and the knife with the distance of 5 cm to install two blades rippers that scarify the soil to a depth of 30 cm before securing the realization of such tillage in strip width 55 cm.

Tillage to stimulate root branching parallel horizontal row of plants is made only in years 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23 and 25 after planting the plant line following the line distance: year 3 to 0.5 m, year 5 to 0.7 m, year 7 to 0.9 m, year 9 to 1.1 m, year 11 to 1.3 m, year 13 to 1.5 m, year 17 - 1.9 m, year 19 to 2.1 m, year 21 to 2.3 m, year 23 to 2.5 m, year 25 to 2.7 m. Last working to stimulate the horizontal roots branching out depending on the distances between rows of plants in coming years from their planting as follows: the distance between rows 8 m - in 25, 7 m - in 23, 6 m - year 21, 5 meters - in 17, 4 m - in 15, 3 m - in 13.

The process, if the orchard planting distances 5 x 3 m is achieved as follows.

First, for performing the procedure, accommodate one of the cultivators in series production for perennial plantings, such as KSG - 5 (Ru), KSM 5 (Ru) and PRVN (Ru), depending on the distance between rows of plants. The accommodation consists in that the grower elected to the frame to install passive knife (or cultivator equipped with knife function to exclude deviations from the direction of motion, it changes with the particular), which can cut the roots depth of 40 cm and two scarifiers blades from the cultivator equipment and for each the working width is 24 cm. The distance between the knife and the first scarifier leg is 5 cm. Thus adjusted, the cultivator can perform scarification to stimulate branching in the strip of land with the width of 55cm. The knife cut the roots up to 40 cm depth and scarify soil paws up to 30 cm depth by creating conditions that stimulate an additional branches (due to the facts that : the action of roots falling knife which is thicker than 5 mm wich regenerates easy and guaranteed by designing the branch in November, is loosen up the soil) more often, horizontal roots.

Scarification is carried over each year fall in October, or spring, as soon as soil physical condition allows, starting from the third year after planting. Strip of land where the soil is subject to special scarification to stimulate root branching horizontal moves each time (over each year), to the center of the interval between rows of plants at a distance 20 cm. Thus, if the distance between rows plantations of 5 m, scarifying the soil to stimulate root branching is performed parallel to the row following the row line distances in those years after planting plants: year 3 to 0.5 m, year 5 to 0.7 m, year 7 to 0.9 m, year 9 to 1.1 m, year 11 to 1.3 m, year 13 to 1.5 m, year 17 to 1.9 m. Last tillage to stimulate horizontal roots branching out depending on the distances between rows of plants in the years after planting as follows: the distance

between rows 8 m - in 25; 7m - in 23, 6 m - in 21, 5 meters - in 17, 4 m in 15, 3 m - in 13. After these years of the process, horizontal roots spread radially freely, not further subject to regular cutting. Following soil scarification to stimulate root branching system, for example the tree, acquires a specific architecture. Root of the skeleton placed in 10-30 cm soil layer, the subject cut in the 3 year after planting, thereafter evolves by growth in a branch system, which is extremely high, often lies in the soil layer 10-40 cm - the most fertile layer. This circumstance is residing with positive processes of plant growth and fruition, because it improves plant nutrient provision. However, plants possess and skeleton roots, semi-horizontal frame, which were not subject to the branch cut in 40-60 cm soil layer.

Some of the roots of skeleton branches are oriented mainly to the ground, others are aimed at soil depths. In case of excessive drought can rely on plant roots located in the deeper soil layers, which are relatively wetter than the superficial layers. In plantations where the expected application of this procedure every year, instead of the usual deep plowing (18-20 cm) in autumn shallow processing is applied by the autumn planting or cultivation depth of 6-8 cm. In October, the first interpretation is performed scarification technology described above, and then, immediately or over several days the cultivation of the soil surface to a depth of 6-8 cm, the full width of the interval between rows. To do this procedure can accommodate large cultivators with working width (3.0 to 3.5 - 4.0 to 4.5 m) that can be deep soil scarification to stimulate branching roots while growing superficial of the full width of the interval. Because the replacement of ordinary deep plowing, which provides returning arable layer with the surface treatment that provides no return layers (cultivation, harrowing), is reached to avoid excessive decomposition and humus content of the soil to stabilize the multi plantation.

CONCLUSIONS

Agrotechnical procedures directed training new root systems and tillage in order to stimulate growth by cutting regular roots, can be applied not only in apple orchards and to other tree species. So they can be applied in vineyards, forest and dendrological.

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