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AGROTECHNICAL MEASURES TAKEN TO INCREASE SOIL FERTILITY BETWEEN VINES AND ORCHARD ROWS.

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Abstract: This article discusses the main agro-technical measures aimed at improving soil fertility in vineyard and orchard inter-rows. The study analyzes the effectiveness of soil loosening, cultivation, mulching, the use of organic and mineral fertilizers, green manure crops, and drip irrigation systems in maintaining and enhancing soil productivity. In addition, measures for controlling weeds, diseases, and soil erosion are presented. The paper concludes with scientifically based recommendations for increasing soil fertility and ensuring sustainable crop yields in perennial plantations.

Keywords: vineyard, orchard, soil fertility, agro-technical measures, fertilization, irrigation, green manure, erosion control.

Introduction

The efficiency of agricultural production depends, first of all, on soil fertility. Especially in vineyards and orchards, maintaining a healthy physical, chemical and biological state of the soil, enriching it with nutrients is one of the most important factors in maintaining stable productivity. If the inter-row space is not properly cultivated, the soil compacts, moisture decreases, and the respiration of the root system worsens. Therefore, the correct organization of agrotechnical measures between the rows of the vineyard and the orchard is of great importance.

Main part

1. Measures to improve the agrophysical state of the soil

Timely tillage, loosening and cultivation of the soil between the rows of the vineyard and the orchard improves soil air and retains moisture. In the spring, when the soil is ripe, loosening to a depth of 8–12 cm is recommended. During the growing season, the inter-row space is cultivated 2–3 times.

In order to maintain soil moisture in the summer, shallow tillage and mulching between the rows give good results. Straw, rotted manure, leaves or special agrofilm are used as mulch. This not only retains moisture, but also reduces the growth of weeds.

2. Use of organic and mineral fertilizers

Organic fertilizers play an important role in increasing soil fertility. Especially since vines and fruit trees have deep roots, they need to be supplied with elements such as nitrogen, phosphorus and potassium in a balanced manner.

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Organic fertilizers: applying 20–30 tons of rotted manure per hectare every 2–3 years enhances the microbiological activity of the soil.

Mineral fertilizers: nitrogen (ammonium nitrate, urea) fertilizers are applied in the spring, phosphorus (superphosphate) and potash (potassium chloride) fertilizers after flowering.

The rate of fertilizers is determined based on the age of the tree and vineyard, productivity and soil analysis results.

3. Use of green manure crops

In recent years, leguminous crops - mixtures of alfalfa, peas, oats or rye - have been widely used as green manure. They are sown between rows and plowed at the end of the growing season. As a result of this measure, the soil is enriched with nitrogen, its structure improves and erosion is reduced.

For example, 1 hectare of green mass has the same effect as 60–80 kg of pure nitrogen.

4. Improvement of the irrigation system

Sufficient water in vineyards and orchards is the main guarantee of productivity. The drip irrigation system is the most effective for inter-row irrigation. It uses water economically, reduces soil compaction and prevents fertilizer leaching.

In addition, shallow loosening of the soil after irrigation (target 5–6 cm) helps to retain moisture for a long time.

5. Weed and disease control

Weeds absorb part of the soil nutrients and reduce productivity. Therefore, it is recommended to remove them mechanically (cultivation, mowing) or with the help of environmentally friendly herbicides. Also, the use of agrotechnical hygiene measures between rows reduces the spread of pests and fungal diseases.

6. Soil protection from erosion

Water erosion is especially dangerous in vineyards and orchards located on slopes. To prevent this, rows are placed along the ridge, not along the relief. By planting green manure crops or grain mixtures, a plant cover is created on the soil surface, which slows down the flow of water and preserves the fertile layer.

Conclusion

Proper agrotechnical cultivation, fertilization and irrigation systems between rows of vineyards and orchards on a scientific basis are one of the most important areas of increasing soil fertility.

As a result of these measures: The physical and chemical properties of the soil improve;

Moisture is retained and erosion is reduced;

The root system develops;

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Productivity and product quality increase.

Thus, the implementation of modern agrotechnologies is the most correct way to ensure the sustainable development of vineyards and orchards, preserve land resources and increase agricultural efficiency.

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