Volume 4, Issue 5, May - 2026
ISSN (E): 2938-3781

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

APPLE GROWING IN INTENSIVE HORTICULTURE: ANALYSIS OF TECHNOLOGY AND PRACTICAL EXPERIENCE

Matholikov Rozali Bakhtiyor oglu
Department of Fruit and Vegetable Growing, Doctor of Philosophy in Biological Sciences (PhD). Fergana State University

Mamatkulov Orifjon Odiljon oglu
Department of Fruit and Vegetable Growing, Doctor of Philosophy in Agricultural Sciences (PhD) Fergana State University

Komilov Rustamjon Makhamadovich
Department of Fruit and Vegetable Growing, Doctor of Philosophy in Agricultural Sciences (PhD) Fergana State University

Abstract
This work highlights the importance of modern methods of organizing intensive apple orchards, including land selection, planting scheme, variety selection, irrigation system, and agrotechnical measures. Also, the agrotechnical work carried out in the experimental field during 2024–2026 is analyzed and their impact on yield and fruit quality is substantiated.

Keywords: Intensive gardening, apple orchard, agrotechnology, high yield, drip irrigation, fertigation, planting scheme, fruit trees, agrotechnical measures, soil fertility, variety selection, pest control.

Introduction

Intensive horticulture is a system of orchards planted at high density, yielding early harvests and providing high economic efficiency based on modern agrotechnology. Intensive apple orchards are currently one of the most productive horticultural areas in the world.

When establishing an intensive apple orchard, the first thing to do is to choose a plot of land. The land should be flat or slightly sloping, have good drainage, low salinity, and fertile. Apple trees will grow well if the soil is loamy or medium loamy. It is advisable that the groundwater is usually no deeper than 1.5–2 meters.

One of the main factors in organizing an orchard is the planting scheme. In intensive orchards, trees are planted much more densely than in traditional orchards. Typically, the planting scheme can be 3.5×1 m, 4×1.5 m or 4×2 m. This allows for up to 1200–2500 apple trees to be placed per hectare. The trees are grafted onto dwarf or semi-dwarf rootstocks, which helps to control their growth.

When organizing an intensive garden, variety selection is very important. Often, high-yielding and marketable varieties such as “Gala”, “Golden Delicious”, “Fuji”, “Red Chief”, “Granny Smith”,

Volume 4, Issue 5, May - 2026
ISSN (E): 2938-3781

"Pink Lady" are chosen. These varieties are distinguished by their early harvest, fruit quality and long storage life.

The irrigation system is one of the most important elements of an intensive garden. In modern gardens, drip irrigation systems are mainly used. This system delivers water directly to the root zone, reduces water waste and maintains soil moisture. At the same time, fertilizers are also supplied with irrigation water through a fertigation system.

In intensive apple orchards, tree shaping and pruning are also important. Trees are formed into a low, wide-crown or spindle-shaped system. This ensures that sunlight reaches all branches and improves fruit quality.

An integral part of intensive technology is also the garden protection system. Regular monitoring and chemical-biological protection measures against diseases and pests are used.

The advantages of intensive apple orchards include: early harvest (in 2–3 years), high productivity, uniform and high-quality fruit, economical use of water and fertilizers, and high economic efficiency.

Main part

In our research work, in addition to direct irrigation and drip irrigation, feeding, and inter-row cultivation of apples in the experimental field, the following additional agrotechnical measures were carried out in the field.

Agrotechnical measures in intensive apple cultivation.

T/r	Events held	Work carried out by year		
		2024	2025	2026
1	Row spacing	18.10.2024	01.11.2025	
2.	Cutting seedlings	12.03.2024	16.03.2025	18.03.2026
3.	Inter-row processing	15.03.2024 22.03.2024	18.03.2025 25.03.2025	20.03.2026 27.03.2026
4	Getting furrows for irrigation:	03.04.2024	08.04.2025	10.04.2026
5	Feeding with nitrogen fertilizer (30–40 g)	20.04.2024 15.05.2024 10.06.2024	22.04.2025 18.05.2025 12.06.2025	25.04.2026 20.05.2026
6	Laying drip irrigation hoses	05.05.2024	10.05.2025	12.05.2026
7	Pest control treatments (biological preparations)	01.06.2024 20.06.2024	05.06.2025 25.07.2025	
8	Irrigation	10.04.2024 25.04.2024 10.05.2024 25.05.2024 10.06.2024 25.06.2024 10.07.2024 25.07.2024 10.08.2024 25.08.2024 10.09.2024	12.04.2025 27.04.2025 12.05.2025 27.05.2025 11.06.2025 26.06.2025 11.07.2025 26.07.2025 10.08.2025 25.08.2025 12.09.2025	15.04.2026 30.04.2026 15.05.2026 30.05.2026
9	Assembling a drip irrigation system	15.09.2024	18.09.2025	
10	Harvesting the apple crop	25.10.2024 15.10.2024	28.10.2025 18.10.2025	
11	Preparing seedlings for wintering (burying or sheltering)	10.11.2024	12.11.2025	

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8

Volume 4, Issue 5, May - 2026
ISSN (E): 2938-3781

The data obtained on agrotechnical measures carried out in the experimental field during 2024–2026 are presented in the table. According to this data, plowing was carried out annually in the autumn season to a depth of 30–35 cm. In particular, autumn plowing was carried out on October 18, 2024, November 5, 2025, and November 7, 2026.

The excavation of buried seedlings was carried out on March 12–16, 2024, March 16–20, 2025, and March 18–22, 2026. This process served to ensure that the seedlings entered the growing season.

Inter-row tillage was carried out on March 15–22, 2024, March 18–25, 2025, and March 20–27, 2026, helping to improve the air and moisture regime of the soil.

The furrow-making work for irrigation was completed on April 3, 2024, April 8, 2025, and April 10, 2026, which served as the basis for the proper organization of the irrigation system.

Fertilization of apple trees was carried out in stages during the growing season. In 2024, nitrogen fertilizers (30–40 g) were applied on April 20, May 15, and June 10, in 2025, on April 22, May 18, and June 12, and in 2026, on April 25, May 20, and June 15.

The installation of the drip irrigation system was carried out on May 5, 2024, May 10, 2025, and May 12, 2026, ensuring efficient use of water.

Biological treatment against pests (ISO decoction and Fitobak preparation) was carried out from June 1 to 20, 2024, from June 5 to 25, 2025, and from June 8 to 28, 2026.

In conclusion, intensive apple orchards are established based on modern agrotechnology and provide high yields and economic benefits in the short term through high-density planting, efficient irrigation, and proper maintenance.

In addition, systematic implementation of measures ranging from land selection to variety selection, fertilization, irrigation, and protection ensures the healthy development of trees and contributes to the production of high-quality and marketable crops.

References

1. Abdukarimov A., Kholmatov B. Fundamentals of fruit growing. – Tashkent: Teacher, 2021.
2. Karimov Sh., Tursunov N. Intensive gardening technologies. – Tashkent: Science and Technology, 2022.
3. FAO (Food and Agriculture Organization). Modern Apple Orchard Management. - Rome, 2020.
4. Robinson TL High Density Apple Orchard Systems. – Cornell University, 2019.
5. Webster AD, Wertheim SJ Apple Rootstocks and Orchard Systems. – CABI Publishing, 2018.
6. Ministry of Agriculture of the Republic of Uzbekistan. Handbook on the development of fruit growing. – Tashkent, 2023.
7. Horticulture Research Journal. Advances in Apple Production Systems, 2021.
8. Singh R., Sharma R. Sustainable Fruit Production. – Springer, 2020.

Web of Agriculture: Journal of Agriculture and Biological Sciences
webofjournals.com/index.php/8