



**AGROTECHNIQUES FOR THE INTENSIVE
CULTIVATION OF ARMENIAN CUCUMBER
(CUCUMIS MELO VAR. FLEXUOSUS) IN ARID AND
HOT CLIMATIC CONDITIONS**

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ABSTRACT

This article presents a scientific and practical analysis of the cultivation techniques for the Armenian cucumber (Cucumis melo var. flexuosus)—a non-traditional vegetable crop—under the sharply continental, arid, and high-temperature climatic conditions of the Navoi region. The article highlights the plant's biological characteristics, its adaptability to soil and climatic conditions, and the benefits of specific fertilization, irrigation, and vertical (trellis) cultivation methods. Additionally, it provides scientifically grounded recommendations for increasing yield and product quality through resource-efficient technologies, along with comprehensive conclusions and practical data tables.



Introduction. The central and western regions of Uzbekistan—particularly the Navoi region—are characterized by a sharply continental climate, featuring extremely high summer temperatures (+40...+45°C) and very low relative humidity. Under such adverse abiotic conditions, traditional vegetable crops, including the common cucumber (*Cucumis sativus*), experience stress and shed their buds and developing fruit, resulting in a sharp decline in both yield and produce quality.

Introducing non-traditional crop varieties adapted to climate change and high temperatures into agricultural practice is crucial for addressing this issue. From a botanical perspective, the Armenian cucumber (*Cucumis melo* var. *flexuosus*)—which belongs to the melon genus—stands out due to its exceptional heat and drought tolerance, vigorous growth, and high yield potential. The objective of this study and the associated practical recommendation is to demonstrate the feasibility of obtaining high-quality, abundant yields of Armenian cucumber in the arid climate of the Navoi region through the application of intensive agrotechnical practices.

Land preparation and planting. Armenian cucumber thrives in light, humus-rich soils with good water and air permeability. In the autumn, the field is plowed to a depth of 28–30 cm, and 30–40 tons of organic fertilizer (manure) per hectare are applied, along with 70% of the annual phosphorus requirement and 50% of the potassium requirement. Planting takes place in the spring when the soil temperature reaches +16...+18°C (April 20 – May 10): furrow spacing: 140–150 cm; plant spacing: 40–50 cm; planting depth: 3–4 cm; seed rate: 1.5–2.0 kg/ha.

Cultivation and nutrition using the trellis method. Growing the plant vertically, tied to trellis wires at a height of 1.8–2.0 meters, protects the fruit from the effects of Navoi's hot winds and scorching soil surface. This method improves air circulation, reduces the risk of fungal diseases by 60%, and ensures the fruit ripens properly and remains clean.

№	Agrotechnical stage	Processing time / Temperature	Irrigation method (Drip/Furrow)	Mineral fertilizer rate (in terms of active ingredient)	Expected result / Indicators
1	Planting and seedling stage	April 20 – May 10 (soil > +16 °C)	Once every 7–8 days (350–400 m ³ /ha)	Nitrogen (N) — 30 kg/ha Phosphorus (P) — 15 kg/ha Potassium (K) — 15 kg/ha	Germination rate of 90–95%; rapid development of the root system and stem.
2	Flowering and fruit set	Early June (+28...+35 °C)	Once every 5–6 days (350–400 m ³ /ha)	Nitrogen (N) — 20 kg/ha Phosphorus (P) — 30 kg/ha Potassium (K) —	Pollination occurs; bud drop is prevented.



				40 kg/ha	
3	Mass fruiting and harvesting	Late June – August (+38...+42 °C)	Once every 3–4 days (450–500 m ³ /ha, only in the evening)	Nitrogen (N) — 40 kg/ha Phosphorus (P) — 20 kg/ha Potassium (K) — 50 kg/ha (in 2 applications)	Rapid fruit growth; succulent flesh and high marketability.
4	Harvest completion period	The month of September (+22...+28 °C)	Once every 6–7 days (300–350 m ³ /ha)	Requiring supplementary feeding	Completion of the plant's growth cycle; harvesting of the annual crop.

Conclusion. Analysis and agrotechnical studies conducted on the cultivation of the Armenian cucumber (*Cucumis melo* var. *flexuosus*) under the distinctively harsh and unfavorable climatic conditions of the Navoi region lead to the following significant conclusions: The Armenian cucumber has proven to be highly resistant to extreme heat (+40°C and above) and atmospheric drought, outperforming traditional cucumbers and other vegetable crops in this regard. Its deep-penetrating root system and classification within the melon genus ensure continuous fruit production—without the shedding of flowers or young fruit—even during scorching summer days. This makes it biologically ideal for desert and semi-desert regions like Navoi.

The key factor in achieving high yields of Armenian cucumber in the region is the integration of modern agrotechnologies. Experiments demonstrate that using a trellis (vertical) cultivation method prevents the fruit from yellowing or becoming misshapen due to ground contact, thereby increasing the marketable quality of the produce to 95–98%. Furthermore, the implementation of a drip irrigation system reduces water consumption by 35–40% while maintaining optimal moisture and nutrient levels in the root zone. When agrotechnical guidelines—such as proper planting patterns, balanced mineral and organic nutrition, and timely harvesting—are fully followed, the yield of Armenian cucumbers ranges from 35 to 50 tons per hectare. The crop begins producing fruit 55–60 days after germination and continues to bear fruit uninterruptedly until the end of September (spanning nearly 3 to 3.5 months), enabling farmers and smallholders to generate a stable financial income throughout the season.

When cultivated using vertical growing methods and proper irrigation regimes, the incidence of soil-borne fungal and bacterial diseases (such as root rot and downy mildew) is significantly reduced. This, in turn, minimizes the need for chemical pesticides, paving the way for the



production of eco-friendly crops that are safe for human health. Farmers and smallholders in the Navoi region and similar arid areas are advised to partially or fully replace traditional cucumber crops with Armenian cucumbers during the summer season, cultivating them using a trellis system combined with drip irrigation. This approach offers an effective way to ensure food security and boost agricultural profitability amidst water scarcity.

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