



AgriTech Solutions: Innovating VET for Sustainable Agriculture
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2024-1-RS01-KA210-VET-000244168

FIELD VISITS

Technologies in agriculture

Experts/organizations: ZZ "STUBA", TD DZP KLECHOVCE DOOEL, ADUT GVN, AG FUTURA Technologies, „KAV KOMERC AND AGRO KAV KOMERC", COMPANY „STOJCHEVI and WINERY ARBESKA", INDIVIDUAL FARMER MARJAN TANCHEV, LISA – KOM KAVADARCI, INDIVIDUAL FARMER STEFAN STOJCHEV, AGRIJA DOOEL, Individual farmers groups and individuals, IZ Branko Atanasov, Livestock farm

Engaged teachers: Stefanovski Saso, Milosheva Zaklina, Jovanova Kristina, Doncheva Milica, Nikolov Efremcho, Slavkovic Sonja

Location: Kumanovo, Sveti Nikole, Skopje, Strumica, Kavadarci, Valandovo, Veles

Short description

Agricultural company "STUBA" from the village of Studena Bara near Kumanovo applies various technologies in the production of vegetable plants, primarily tomatoes and peppers, in order to increase productivity, improve quality and reduce costs and environmental impact.

environment.

In particular, in the production of tomatoes and peppers, modern technologies are actively applied technologies, such as:

Greenhouses and greenhouses are under controlled conditions, which means constant automated control of temperature, humidity, light, and ventilation.

Irrigation is fully automated and precise, with a drip system installed, which means efficient use of water with minimal losses. At the same time, it is combined with fertigation (the introduction of nutrients through the irrigation system) if necessary.

Sensors are installed in the protected areas themselves to monitor soil moisture, pH, temperature and light. Applications are also occasionally used for monitoring and analyzing data.

in real time that help in timely decision-making for the application of appropriate measures. The farm has appropriate machinery for soil processing, planting and packaging.

LED grow lights have also been installed in some of the greenhouses to continue photosynthesis on days with low light.

Conventional methods are used for pest protection and management, with treatment with appropriate pesticides, but with strictly controlled and prescribed doses.

Modern technology represents the future of agriculture. With proper application and support, Macedonian farmers can become more competitive, more economical and environmentally responsible individuals in society. Macedonian



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Farmers and others are in need of increasing technology that will facilitate the production process itself.

For the needs of the project, at the end of June 2025, I was on a field visit to the village of Sopot, Kavadarci, to the registered individual farmer and former student of ours, who graduated as a viticulture and winemaking technician at the SOZSHU from Kavadarci, Mr. Stefan Stojchev. He owns about 40 ha of agricultural arable land, about 20 ha of vineyard under grain crops with varieties of wheat and barley. Stefan also owns about 20 ha of intensive vine plantation with trellis construction and high-quality grape varieties: Chardonnay, Rhine Riesling, Merlot and Cabernet Sauvignon. He also owns the most important autochthonous grape varieties Vranec and Smederevka. Until last year, according to Stefan, he struggled with organizing the harvest of wine grape varieties, i.e. As the years go by, there is less and less labor in the village to harvest the wine grapes. They are very expensive and there are no

great profitability if I did not modernize this year, i.e. if I did not buy an automatic machine or a picker for harvesting wine grape varieties, which replaces a lot of labor per unit area, the harvest is very relieved and on large areas this new technological agricultural machine has a very high utility value. I got the idea last year when, on my initiative, I visited the agricultural company AD Goce Delchev from the village of Trstenik, Kavadarci, which has already purchased a similar automatic picker for wine grape varieties, a trellis construction of

vineyards. I am the first

in the Tikvesh region who, as a registered individual farmer, owns this grape harvesting machine. Its performance is as follows: it has about 130 horsepower, the machine during harvesting. The speed of shaking the grapes is reduced, only the grains are separated and only the vine stems remain. With this, my goal is to reduce harvesting costs, to achieve greater profits and to be faster and more efficient in harvesting the grapes.

Conclusion

The application of technologies in the production of tomatoes and peppers, to the extent and scope that are represented in the "STUBA" Agricultural Production Plant, currently enables optimal and stable yields, good quality, optimal use of resources for ecological production. The integration of these solutions and their upgrading in the future will certainly significantly improve the efficiency and sustainability of production.





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My goal is to reduce harvesting costs, make more profit, and be faster and more efficient at harvesting grapes.

Also, as your former student, I make myself available to your students, so that part of the practical teaching and its implementation through Learning by Doing can be freely carried out by students at my small family agricultural farm, provided that we sign a memorandum of mutual cooperation.

Since modernization in agricultural technology is increasingly being used and needed, both in terms of monitoring water and fertilizer needs, as well as measures to detect and monitor attacks by diseases and pests on plants, information platforms and applications, sensors that will constantly send data on conditions, there is a need for specially trained and educated people who will enable and assist in the use of such modern technologies, who will enable, through education, to deal with any type of obstacle or problem in the reception and use of them. Curricula in the field of modern technology should be included in every sector of agriculture, which curricula would help to facilitate the application of the same, and would enable generations to emerge who will apply the knowledge, and with that, there will be greater use of technology in agriculture.



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