



**Practice Abstract 24 -
Smart Farming Services for Climate-Resilient Cultivation of
Old Vegetable Varieties (ABS Veggie OC SIP)**

24. Smart Farming Services for Climate-Resilient Cultivation of Old Vegetable Varieties (ABS Veggie OC SIP)

Short Summary for Practitioners in English

Problem:

Small vegetable farms are particularly vulnerable to climate change, rising production costs and limited access to digital technologies. Many farmers in Serbia are reintroducing traditional vegetable varieties because they are better adapted to local conditions and more tolerant to drought and heat. However, these varieties are rarely accompanied by production guidelines, reliable market information or digital decision-support tools. Existing precision agriculture solutions are often designed for large farms, making them too complex or expensive for smallholders. As a result, farmers rely mainly on personal experience, making it difficult to optimise irrigation, fertilisation and crop protection while maintaining profitability and traceability.

Solution:

ABS Veggie is a free-to-farmer Agricultural Digital Solution (ADS) developed within the Farmtopia project to support small-scale vegetable production. The platform combines production planning, Earth Observation (EO) monitoring, the Farmtopia Digital Field Book, gene bank information on traditional varieties and optional drone-supported field operations into a single decision-support environment. Farmers receive parcel-specific recommendations based on satellite-derived vegetation and soil moisture indicators together with local weather data. The Digital Field Book records all farming activities, improving traceability while continuously enriching the decision-support process. Gene bank information helps farmers select traditional varieties adapted to local agroecological conditions, while drone integration enables precise application of crop protection products where required. The solution was co-created and validated with the family farm PG "Svetislav Pačarić" on cabbage and onion production in Serbia, progressing from TRL 6 to TRL 8 under real farming conditions.

Benefits:

The pilot demonstrated that digital decision support can improve resource efficiency without increasing production complexity. Compared with conventional practice, fertiliser use was reduced by up to 21% while maintaining crop performance. EO-supported irrigation scheduling contributed to 12%-20% water savings, with further optimisation expected during longer-term deployment. Drone-assisted spraying reduced water consumption for pesticide application from approximately 200 L to 20 L per treatment. More than 85% of field activities were digitally recorded, providing reliable traceability and supporting sustainability documentation. The platform also facilitated the introduction of traditional vegetable varieties by helping farmers identify suitable cultivars and manage them using site-specific recommendations. Although the pilot focused on cabbage and onion, the modular architecture allows the solution to be adapted to other crops and small-scale production systems.

Practical recommendations:

To achieve the best results with ABS Veggie, farmers should:

- Digitally register production parcels before the growing season and maintain accurate parcel boundaries.
- Record all field operations regularly in the Farmtopia Digital Field Book to improve recommendation quality and ensure complete traceability.
- Consult EO-based recommendations before making irrigation, fertilisation and crop protection decisions, while combining them with local field observations.
- Use local weather forecasts together with satellite information when planning field operations.

-Consider precision drone applications where available to reduce water consumption and improve input efficiency.

-Select traditional varieties suited to local soil and climatic conditions using available gene bank information and gradually integrate them into commercial production.

Further information

- n/a

About this practice abstract and Farmtopia

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Farmtopia: The project is running from September 2023 to August 2026. The overall goal of Farmtopia (**GA No.: 101083541**) is to democratize digital farming to empower small and medium farms.

Website: <https://farmtopia.eu/>

Agro Budžet Sistem (ABS) – SIP leader, ADS provider

Poljoprivredno gazdinstvo “Svetislav Pačarić” (PGSP) – Farm partner; pilot testing on parcels cultivating old cabbage and onion varieties in Vojvodina, Serbia.

Website: <https://agrobudget.com/>

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