PRECISION FIELD MANAGEMENT FOR SUNFLOWER PRODUCTION ON A HETEROGENEOUS SLOPING FIELD IN ZALA COUNTY, HUNGARY

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MAIN CHALLENGE/ OBJECTIVES

Strong spatial variability in a 12.4-hectare sloping sunflower field in Zala County caused unequal productivity between lower and higher zones. The objective was to use NDVI data, soil sampling, topography and field observations to develop a site-specific management plan for better input use and decision-making.

MAIN RESULTS/ OUTCOMES

A site-specific management plan for sunflower production was developed. NDVI satellite images, soil sampling, topographic data and field observations were combined to identify better and weaker zones, and so differentiated plant density, nutrient supply, soil cultivation and plant protection recommendations were prepared.

PRACTICAL IMPLICATIONS / RECOMMENDATIONS

Strong spatial variability was characteristic of the 12.4-hectare field in the Felső-Kemeneshát micro-region, Zala County. The field has sloping terrain, brown forest soil with clay illuviation, low humus content, gravelly layers and signs of erosion. The process started with the analysis of previous yield data, NDVI images and soil test results.

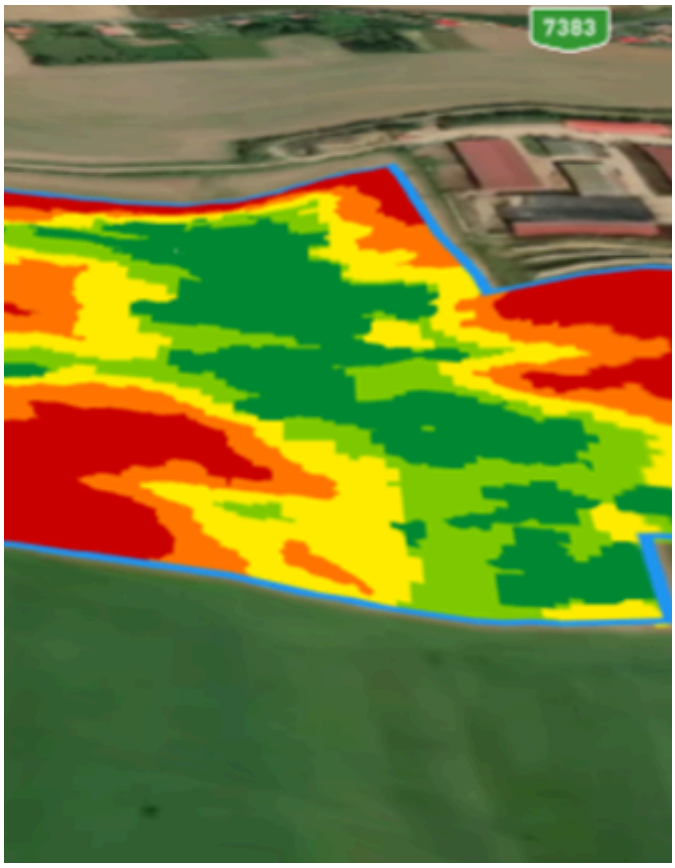

PHOTO CREDIT: SZE-BOOTCAMP - TABLAMERNÖKÖK

Selected suitable satellite images from previous years were processed them with QGIS to detect spatial heterogeneity. Soil samples were taken from four locations, and field inspections allowed to compare good and poor production points. The farmer was actively involved throughout the process. Consultation with the farmer included the assessment of available machinery, previous cultivation practices, seed preferences and critical field zones. The main professionals involved were agronomy students/advisers, the farmer, soil testing specialists and precision farming technology providers. The collaboration was organised through data sharing, field visits, joint interpretation of results and practical planning of the next production season.

GEOGRAPHICAL LOCATION

The field is located in the Felső-Kemeneshát micro-region, Zala County, Hungary. The area is characterised by hilly terrain, erosion-prone slopes and heterogeneous soil conditions.

FURTHER INFORMATION

The farmer and the advisory team were motivated to analyse the field more precisely and to develop a differentiated management approach. This practice abstract was developed based on the outcomes of the TechCoach BootCamp held on 24 April 2026 in Mosonmagyaróvár, Hungary. The approach is transferable to other farms facing similar problems, especially fields with heterogeneous soils, slopes, erosion risk, variable yields or uncertain nutrient supply.

TECHCOACH has received funding from the European Union's Horizon Europe research and innovation programme under Grant Agreement No. 101182908.

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