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## Assessment of Wheat Yield Using NDVI in the Dobrogea Region

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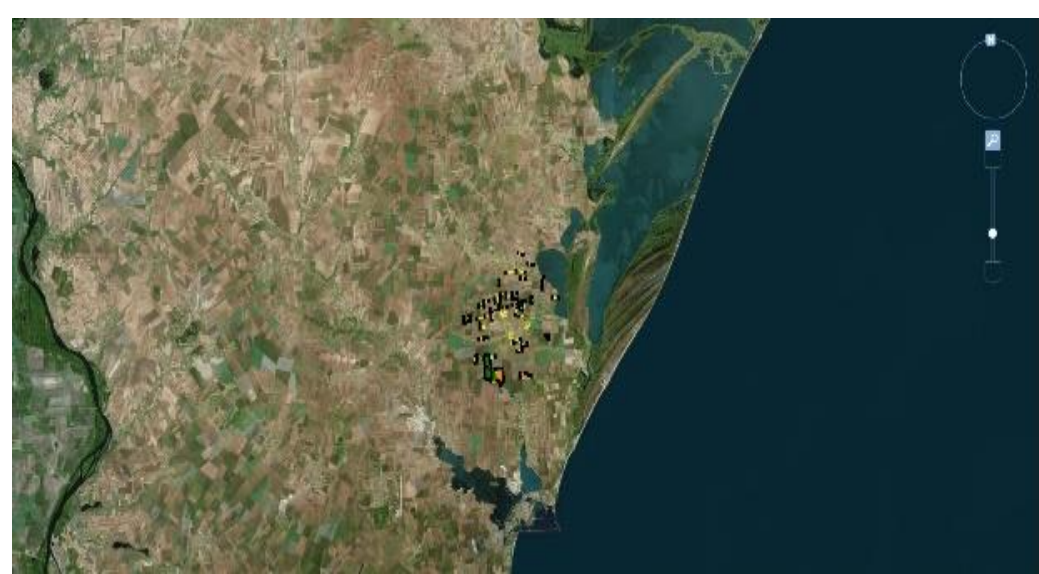
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**Abstract:** In precision agriculture, NDVI is valuable for assessing crop health and predicting yield. This study investigates the correlation between NDVI values and wheat yield in Dobrogea, focusing on dry, variable climate conditions. Using data from satellite imagery and meteorological inputs over five years, we found a strong correlation between NDVI during late vegetative stages and yield outcomes, supporting NDVI's role as a predictive tool for sustainable crop management.

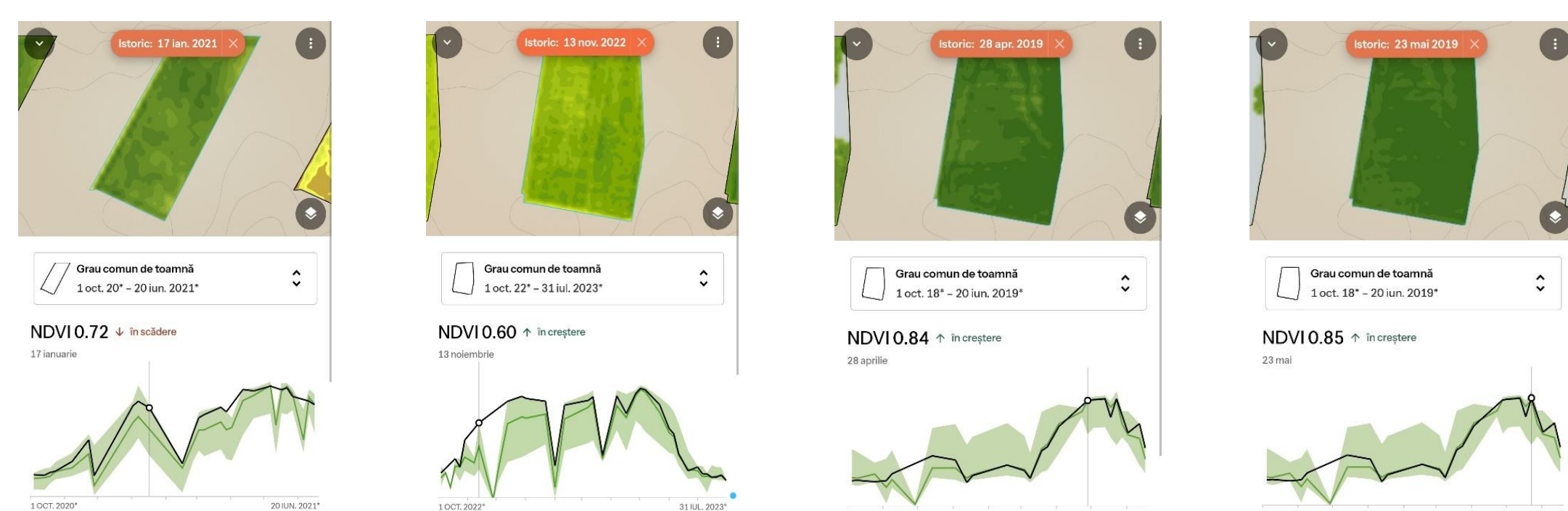
### • Introduction

Dobrogea's semi-arid climate with inconsistent rainfall challenges wheat production. NDVI is a key index that indicates vegetation health, essential for monitoring crop stress and optimizing resources in regions with water limitations.



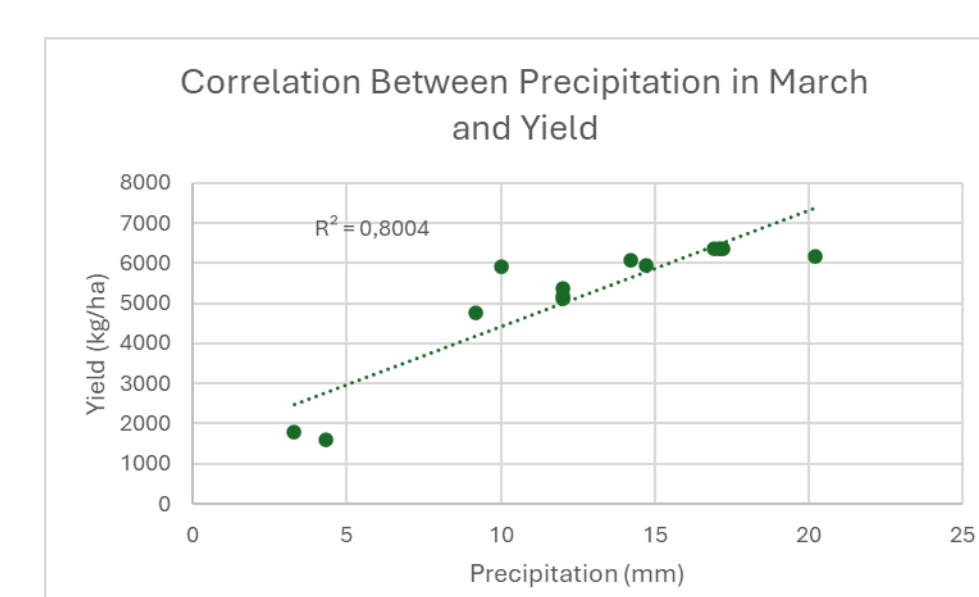
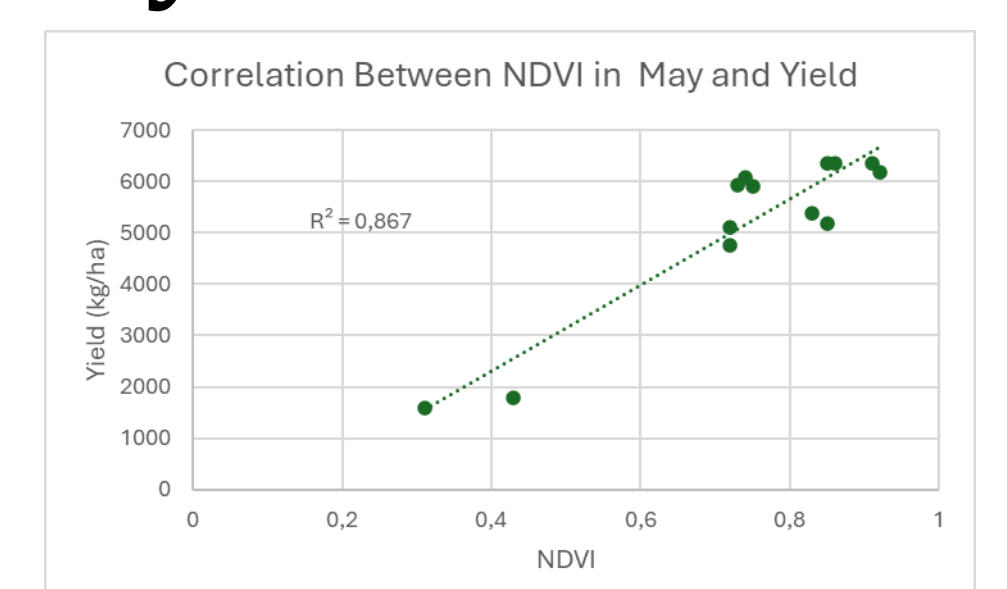
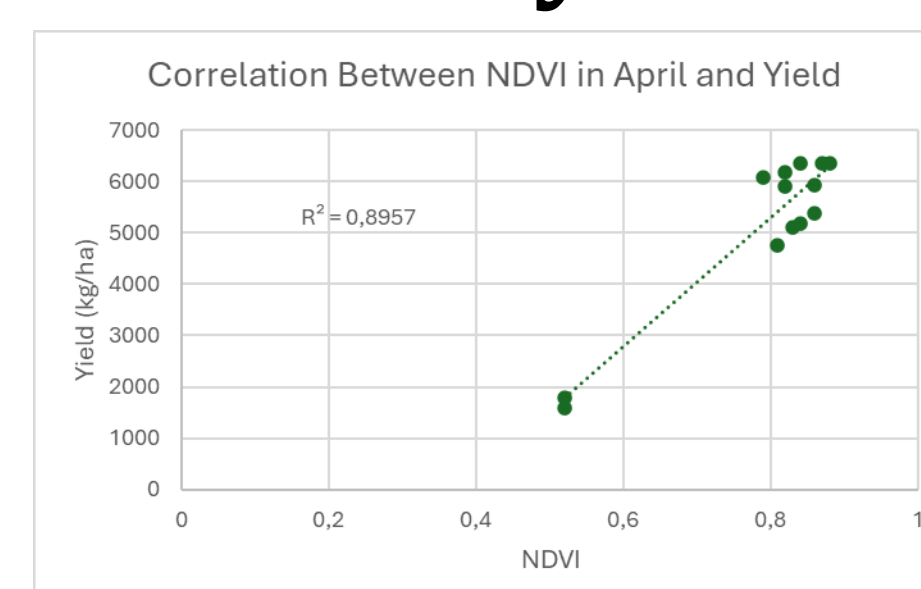
### • Material and method

Data were collected in Constanța County using Sentinel-2 imagery (2019-2023) during key growth stages. Monthly precipitation and wheat yield data were analyzed. Statistical methods assessed the correlation between NDVI, precipitation, and yield quality.



### • Results and discussions

The analysis showed a significant positive correlation between NDVI in April-May and wheat yield, highlighting these stages as predictive of production outcomes. Precipitation variability, especially in March, greatly influenced yield, with wetter periods improving NDVI and resulting in higher productivity and quality.



### • Conclusions

NDVI values during the reproductive stages were the most reliable predictors of wheat performance. This suggests that NDVI can effectively guide farmers in making timely decisions to maximize yield potential, especially in water-stressed environments like Dobrogea.