Precision Agriculture Practices in Albania

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OBJECTIVES

• NEXUS implementation as a cross sectorial interlinkage with Precision Agriculture Practices in Albania

• Build a road map on how should Albania adapt the implementation of the different PA practices

• Adjust a pre-feasibility study on the application of PA technologies in pilot locations in Albania.
Actions

• Mapping the related national and local strategies, plans and support schemes
• Engage National Stakeholders in the Project Development and Implementation of PA
• Describe and Propose technical solutions for 3-4 different pilot sites depending on crop, irrigation and other farming inputs
• Propose funding and budget alternatives
Actual Situation

- Agriculture production dominant by smallholders
- Extremely small and fragmented fields (average size of 1.2 ha)
- Labour deficiency due to low mechanization
- Poor Irrigation and Drainage infrastructures – Maintenance Problems
- Land Ownership Problems and Migration of young farmers
- Lack of Market opportunities
- Regional Divisions by Crops: (ATTC & AREB)
  - Shkodra – Medicinal and Aromatic Plants & Maize
  - Lushnja – Vegetables & Wheat
  - Vlora – Olive orchards, grapevine and fruit trees
  - Korca – Apples and cherries
Current Policy, Strategies and Action Plans

- SARDF is aligned with CAP and Green Deal
- SARDF states “precision agriculture and digitalisation in agriculture are still rarely applied”
- Implementation of Irrigation and Drainage Strategy 2019-2031 increasing resource-efficient irrigated land
- **MARD** Action Plan for 2022 – 2024: providing advice for farmers and the rural development/demonstration farms
- IPARD III (Strategy 2021-2027) : PA investments for fruits and vegetable farmers, related to precision agriculture
Processes and analyzes temporal, spatial and individual data and combines it with other information to support management decisions.
Precision Agriculture Technologies – Satellite Imagery

- Free resources from Copernicus (Sentinel 2)
- Ready available outputs – Vegetation Index NDVI
- 1 image per week (average)

Applications:
- Crop growth monitoring
- Harvest date decision
- Variable rate application of inputs
- Larger scale analysis for crops and drought
Crop growth monitoring - Grapevines

Limitations:
- Row crop – high % of soil cover is between rows and the proportion of vines/cover crop changes along the year
- Sentinel 2 imagery has a minimal pixel of 10 m

Benefits:
Possible to identify differences of cover-crop development at early stages and early canopy senescence
Variable rate application of inputs – Colza
Total area of 15 ha
Map represent variable doses of nitrogen for application
Precision Agriculture Technologies – Satellite Imagery
Precision Agriculture Technologies – Drone Imagery

Advantages over Satellite:
- Much higher resolution (cm level)
- Fly when want and “under clouds”
- Commercial available options

Disadvantages:
- Investment cost
- Operation constraints (know-how, risk evaluation)
Precision Agriculture Technologies – Irrigation Management

Soil monitoring sensors:
- Soil water content monitoring;
- Define when and how much to irrigate
- Manage the irrigation system according to crop water requirements

Plant monitoring sensors:
- Adding an extra layer of information
- Manage crop stress in real time
1. Key National Actors and Stakeholders:
   - Government, public agencies and institutions
   - Academic and research institutions
   - NGOs, organizations and farmer associations
   - Private service providers involved in digitalization of agriculture

2. Online Survey
https://docs.google.com/forms/d/e/1FAIpQLScsHiu1v5XeKpBLc0PGBWaYQC0r9vgpK5LbnqXiKjRmYo-CbQ/viewform
According to the Survey and the Stakeholders Consultation:

i. Just a very small percentage of the farmers are aware and use/adopt PA. These are mainly bigger producers in vegetable and/or apple farms.
ii. Which kind of PA was more encouraged through information/training/advisory activities?

- Global Navigation Satellite System (GNSS) - 28.6%
- Controlled Traffic Farming - 14.3%
- Yield monitor - 14.3%
- Parcel boundary mapping with GNSS - 7.1%
- Management zone maps - 7.1%
- Variable rate technology - fertilisation - 7.1%
- Variable rate technology - crop protection
- Variable sowing / planting
### What factors influence farmers' adoption of PA in your territory?

<table>
<thead>
<tr>
<th>Factor</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment – climate reasons (e.g. less water pollution, improvements)</td>
<td>4</td>
<td>28.6%</td>
</tr>
<tr>
<td>Efficiency gains (e.g. less production costs, less time spent)</td>
<td>9</td>
<td>64.3%</td>
</tr>
<tr>
<td>Improvement of labour conditions (e.g. better working conditions)</td>
<td>7</td>
<td>50%</td>
</tr>
<tr>
<td>Support to farming decisions through better data and information</td>
<td>5</td>
<td>35.7%</td>
</tr>
<tr>
<td>Introduction of innovative practices</td>
<td>7</td>
<td>50%</td>
</tr>
<tr>
<td>I do not know</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>
iv. How would you assess the potential effects of PA on labour at farm level?
According to the Survey and the Stakeholders Consultation:

v. Are farm Management Information Systems used by farmers in your territory?

![Graph showing project progress]
According to the Survey and the Stakeholders Consultation:

vi. Are there any systems providing information to improve decision making for farmers?
Next Step...

3. Workshop with stakeholders to discuss on proposed pilots from Project team

- Academic and research institutions
- NGOs, organizations and farmer associations
- Private service providers involved in digitalization of agriculture