IMPPeach –
INTEGRATED MODEL AND DIGITAL PLATFORM FOR HARVEST PREDICTION OF CANNED PEACHES

Vangelis Vassiliadis
Agrostis

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Goal and context

Production planning and execution in fruit (Peaches) canning facilities is affected by <u>uncertainties</u> on fruit deliveries to the plants:

- Delivery Dates
- Delivered Quantities (at specific quality standards)

The uncertainties leads to:

Inefficient production

Not able to commit to market demand, lost orders

Higher costs due to over-allocation of employees and raw-material stocks

They affect overall product value and profitability

..and the income of farmers upstream

Primary Goal: Improve harvest prediction accuracy with the use of prediction model integrated with the farmer's FMIS and facilitie's production planning systems.

Main project activities / challenges

Activities

- Data collection

- Build prediction model

- Calibrate / validate model for 3 production seasons

- Evaluate model performance

Challenges

- Data availability and quality

- Farmer collaboration for recording field data.

What will your project do?/ Objective and Hypothesis

Objective

- Improve prediction for harvest dates and quantities for a canning facility

Hypothesis

- It is possible to build a stochastic/statistical/empirical/data-driven **prediction model** based on a set of existing and new data:
  - Remote Sensing (EO)
  - Climate / weather data
  - IoT sensor data and other field observations
  - Farm management (irrigations, fertilization etc.)
  - Production historical data

What is your project contributing to? Potential impact

- **Economic Impact**

  Reduce cost and improve profitability across fruit canning industry supply chain:
  - Farmers
  - Producer organization/Cooperatives
  - Canning facilities
  - Traders and Retailers.

  The fruit & vegetable industry market as whole has a size of 208 b $ employing more than 800,000 people worldwide.

- **Environmental impact**

  More efficient production - use of less resources

  Lower land consumption and degradation, less nitrogen use, better water quality, less water waste, better soil health.

  Lower CO_2 emissions.

- **Societal impact**

  Increasing the profitability
    - generate higher sustainable income for farmers
    - more stable jobs in the factories
    - more social security
    - improved living standards
    - Cooperation among farmers will be fostered

The selected approach / Research approach & activities

1. Develop initial prediction model(s) from historical data

2. Install IoT sensors for site data collection

3. Iterate for 3 growing seasons, data collection and model(s) development, evaluation and comparison

4. Integrate prediction model with FMIS platform and production planning

Cooperation with Stakeholders / value chain

- **A major Peach Canning Business as project partner**
  - **ALMME** is a joint venture of 3 Fruit cooperatives in Greece with more that 2000 farmers.

- **The project is also supported by:**
  - The association of Greek Canning industries:
    - 26 manufacturing enterprises on clingstone peach
    - 350 - €400mil business
  - A Spanish consulting company addressing the Spanish fruit producers
  - A German marketing producer cooperative for flowers & plants and fruit & vegetables with global procurement.

Dissemination and outreach

- **Strategy**

  - Identification of exploitable assets

  - Market study based and the insights generated by the project

  - Business and sustainability plan

  - Collaboration with all farmers, producers, SMEs and other stakeholders

- **Activities**

  - Foster awareness and visibility. Branding, Material.
  - Market research: Transfer to other industries, crops and geographies (Spain, South Africa etc.).
  - Attendance to Agriculture/Agri-Tech business and industry events. Get stakeholders' engagement to outreach potential customers (Fruit producer organizations / Processing facilities).
  - Dissemination of the benefits to the stakeholders; Communication to the scientific community (publications). To general audiences via mass-media.

Partners / funders (who are they?)

Agrostis SA (GR)

  Coordinator. FMIS provider. Platform and Model integrations

Geocledian GmbH (DE)

  EO data analysis, Model development and evaluation

Sigrow B.V. (NL)

  IoT sensors and platform installation, monitoring and integration

ALMME SA (GR)

  Production facility, data provider. Platform and model integration and evaluation

Agricultural Univ. of Athens (GR)

  Model development and evaluation, Platform design and integration

LET'S KEEP IN TOUCH!

Please feel always free to reach out to us.

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Thank you for your attention!