

Practice PF n° 15

VARIABLE RATE FERTILIZER APPLICATION BASED ON NDVI MAPS CREATED WITH SATIVUM APP IN GRAIN CROPS

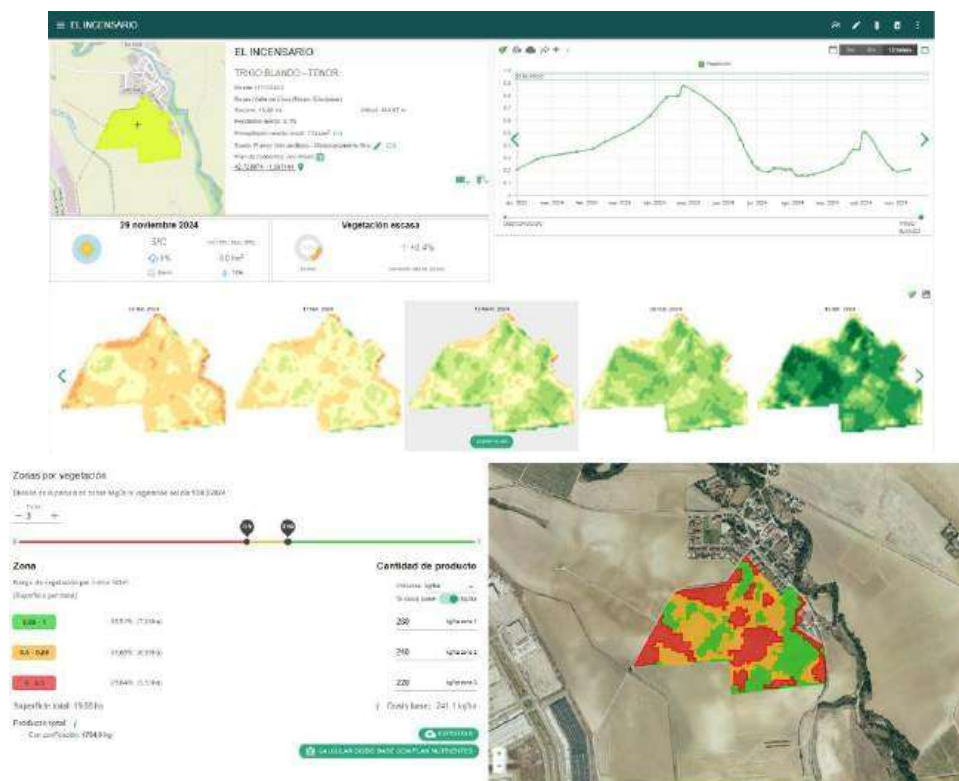
Introduction

Category: Good Practice (GP)

Practice identity card

#satellite imagery, variable rate fertilization, NDVI maps

#PF, Food, oil grains, GP, Spain



Short description

➔ SATIVUM is the free digital tool chosen by the Spanish Government as the reference farmer's digital book. It was designated as the reference tool in 2024, and it is being developed to have a wide range of functionalities. It allows farmers to register their plots, machinery, agricultural practices, create fertilization plans and follow crop development via satellite imagery. Although the tool it is only

focusing on grain crops but also horticultural crops or fruit trees, aspects related to fertilization are most applicable for grain crops.

- SATIVUM allows farmers to create fertilization plans based on different parameters such as crop needs, previous crops, potential yield, soil analysis, type of fertilizer, etc. Based on this information, SATIVUM makes a fertilization plan and suggestions on how to make fertilizer applications.
- If farmers have variable rate technology, SATIVUM has the option of creating a variable rate map based on satellite imagery. SATIVUM analyses these satellite images and creates NDVI maps that can be used to generate task maps for variable rate fertilizer application (VRFA). SATIVUM allows to create up to 7 different fertilization zones. Farmers only need to decide what is the most suitable dose to be applied in each zone.

Implementation process

Which practice is considered as the standard in this region? The standard in Spain is to spread N fertilizer with a uniform dose on the entire plot

What was the on-farm issue/challenge/opportunity that led to the implementation of the practice? The challenge is to manage nutrients in a more efficient and sustainable way, and to reduce water and soil contamination. In addition, some farmers have equipment allowing variable rate applications but not using it. This tool helps to create variable rate application maps.

How long did it take to implement the practice and which are the measures needed to monitor: By the moment there are very few farmers doing this. Many of them have the necessary tools to do it, but it is easier to work the conventional way.

Logistics

- **Logistic aspects to consider:** No
- **Other specific tools involved/included:** Farmers need variable rate fertilizer technology; GPS system and they will probably need to pay for some licenses. Registration in SATIVUM is free.
- **Additional requirements for application:** No
- **Skill/education level required:** rather high

Agronomical traits

- **Can the practice be applied to a multitude of cultivation techniques?** Conventional farming
- **Targeted crop categories:** food, oil
- **Influence on soil quality:** This practice can lead to an increase on SQ as it is expected to reduce N losses. VRFA allows to place N fertilizer in a more efficient way.
- **Suitable soil types:** peaty, sandy, clay, loamy, chalky, silty
- **Expected effect on crop yield:** similar
- **Expected effect on crop yield variation:** similar
- **Expected effect on crop quality:** similar
- **Expected effect on crop quality variation:** similar
- **Which costs may increase due to the practice?** equipment, internet / data subscription costs, Skilled labor
- **Which costs may decrease due to the practice?** fertilizers
- **Expected long-term/indirect economic benefits of the practice:** On the long term, this practice might lead to increased crop yields and/or less fertilizer used which results in higher revenue and

profitability for farmers.

- **Expected effect on the leaching of nutrients:** Nitrogen: decrease
 - Phosphorus: none
 - Potassium: none

Administrative context

- **Does the practice qualify for subsidies?** No
- **Are there any policy barriers complicating the practice's application?** No
- **Does the practice involve the use of hazardous substances?** No
- **Is the practice supported by Eco-schemes?** No
- **Are there any gaseous emissions to be considered upon application of the practice?** yes: nitrous oxide, yes: ammonia
- **Greenhouse gas (GHG) reduction potential of the practice:** little or none
- **Expected effects from the practice on the time occupation of the farmer?** moderate increase
- **May the practice contribute to a better public image of agriculture?** Yes, as the practice will lead to a reduction of N losses and water contamination.
- **May the practice improve the farmer's self-image?** Yes, using advanced digital tools enhances farmers' self-image.

Contact

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Eu member state: Spain

Find out more

Source of information SATIVUM website (<https://www.sativum.es/>)