

## Practice PF n° 13

# SITE SPECIFIC YIELD DETERMINATION IN POTATOES TO UNDERSTAND LOCAL NUTRIENT NEEDS AND SURPLUSES IN CROP RESIDUES

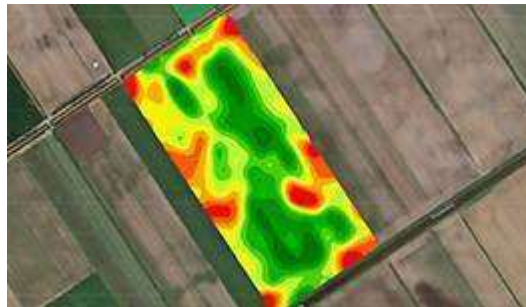
## Introduction

**Category:** Good Practice (GP)

### Practice identity card

*#yield monitoring, variable rate fertilisation*

*#PF, Food, Potatoes, GP, The Netherlands*



### Short description

→ When reviewing the yield quantity for their potato crop, farmers usually calculate the average amount of yield per hectare of a certain field, in some cases even over multiple fields. However, the variation in crop yield within fields can be relatively large. Knowing on what spots in the field crop yields are relatively low can give insights in the optimal fertilization strategy for the upcoming year. When considering the availability of nutrients out of crop residue degradation in the following year, a lower crop yield in this year will indicate less nutrients being available in the crop residues. But a lower crop yield might also indicate a structural lower nutrient content in the soil, indicating the need for more a specific soil analysis on that location. So, insight in the crop yield over a field is the first piece of a puzzle to create the fertilization strategy of the following year. Besides, it can give insight in the profitability of less productive parts of a field. If crop yields are substantially lower in a certain part of a field, crops with high input costs might not be profitable in this site. Quantifying this data might even result in growing different crops in certain locations as the high input crop (for instance potatoes) is not profitable.

## Implementation process

**Which practice is considered as the standard in this region?** Averaging the crop yield per hectare and not linking it to the fertilization strategy of the next year and crop.

**What was the on-farm issue/challenge/opportunity that led to the implementation of the practice?** The variation in crop yield at different locations in the field can be substantial. Some parts of a field can be more fertile, have a different soil type, might be covered in shade because of trees next to a field, etc. However, the inconsistencies are hardly considered when managing and fertilizing agricultural fields. By monitoring crop yield variation within a field, farmers can gain insight in the variation of a field and take this into account the following year.

**How long did it take to implement the practice and which are the measures needed to monitor:** Installing the system requires time. As it is technologically advanced soft- and hardware, users need time to install this and learn how to manage this. Depending on the user, this can vary from a couple of hours to multiple working days.

## Logistics

- **Logistic aspects to consider:** No
- **Other specific tools involved/included:** For each crop, the harvesting machine has to be equipped with a specific yield monitoring system. Additionally, the data has to be processed with specific software. If not available yet variable rate fertilizer technology also has to be acquired.
- **Additional requirements for application:** No
- **Skill/education level required:** rather high

## Agronomical traits

- **Can the practice be applied to a multitude of cultivation techniques?** In theory each crop that is harvested, can be measured
- **Targeted crop categories:** food
- **Influence on soil quality:** No
- **Suitable soil types:** peaty, sandy, clay, chalky, loamy, silty
- **Expected effect on crop yield:** increase
- **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
- **Which costs may decrease due to the practice?** none
- **Expected long-term/indirect economic benefits of the practice:** By knowing the profitability of different parts of the fields, the input costs can be adapted accordingly. Although models might be available to predict the crop yields, they are not yet at the level to incorporate differences in soil quality on field level
- **Expected effect on the leaching of nutrients:** N, P & K: no change in the short term, although on the long term the fertilization strategy can be based on the production of each location of the field. This would mean that available nutrients would be used more precisely, minimizing leaching.

## Administrative context

- **Does the practice qualify for subsidies?** No
- **Status of the legal framework that regulates the practice:** there is hardly any
- **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?** No
- **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?** No
- **May the practice improve the farmer's self-image?** No

## Contact

**Name of the FIN (Fertilization Innovation Network) partner submitting the information:**

Wageningen Research

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**Eu member state:** The Netherlands

## Find out more

### Source of information

<https://www.proeftuinprecisielandbouw.nl/wegen-plus-rekenen-geeft-zicht-op-plaatsspecifiek-rendement-van-teelt-en-bouwplan/>

<https://www.akkerwijzer.nl/artikel/128055-fotoreportage-plaatsspecifieke-opbrengstmeting-brengt-slechtere-stukken-in-beeld/>