



YIPEEO: Yield Prediction and Estimation using Earth Observation

Workshop report v1.0
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This document provides the Workshop report of the project YIPEEO (D8.4).

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There are no acronyms in this document

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Executive summary

This document constitutes the D8.4 Workshop report as a result of task 8 described in the proposal of the ESA YIPEEO project. The aim of this document is to describe the workshop process and to evaluate the yield prediction questionnaires completed by workshop participants.

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1 Report

Within the YIPEEO project, a meeting with users, stakeholders, and potential users of yield forecasts was organized (the audience consisted mainly of farmers and government representatives). The meeting occurred in the Czech Republic (Větrný Jeníkov village) on 29 February 2024. A total of 7 lectures were presented to the audience, the content of which was to gradually guide the audience through the current topic of climate change, its impacts on agriculture, and possible adaptation and mitigation methods.

The lectures after the break included specific information on the possibilities of using the outputs of the Yipeeo project (most of which were presented by our colleague and team member Vojtěch Lukas). During the introductory lecture, the possibilities of climate-friendly conventional agriculture were presented. This was followed by practical information on the concrete steps needed to establish regenerative agriculture. The presentation continued with practical experiences with agroforestry. The last presentation described aspects of precision agriculture, introducing the different types of yield prediction, the satellite data we use in the Yipeeo project and their possible use in practice.

The workshop program (invitation) could be found in attachments (Annex 1).

Part of the workshop was also to get feedback from the audience through a questionnaire, which we asked the participants to fill in. The content of the questionnaire included questions how different types of forecasts (including, but not limited to, yield forecasts) are used. The questionnaire with real results could be found in attachments (Annex 2).

120 participants attended the workshop, of which 57 completed and returned the questionnaire (33 farmers and 24 deputies from the state administrative).

The questionnaire results show that the workshop participants mostly use classical meteorological forecasts, followed by drought forecast; the yield forecast is not used (there is only one vote for this type of forecast) which could be caused by the fact there is no generally accepted yield forecast portal or database (Fig. 1). The maximal interest in specific forecasts is for the precipitation forecast the first (with the maximal interest), followed by the temperature forecast; the interest in yield forecast is mostly zero or minor interest with 19 and 18 votes respectively (same for the deputies from the agriculture sector and also from the state administration) (Fig. 2). It means there is not even the interest (nor the usage of yield forecast mentioned before) and the reasons was mentioned by few of the visitors – they are not sure there is possibility to predict the yield properly because of the fact there are so many effects which influence the final yield during the vegetation period.

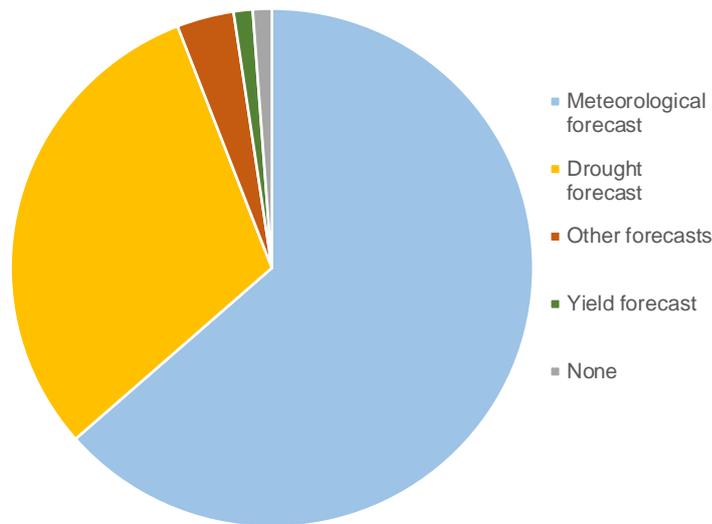


Figure 1: Different types of forecasts are used most often.

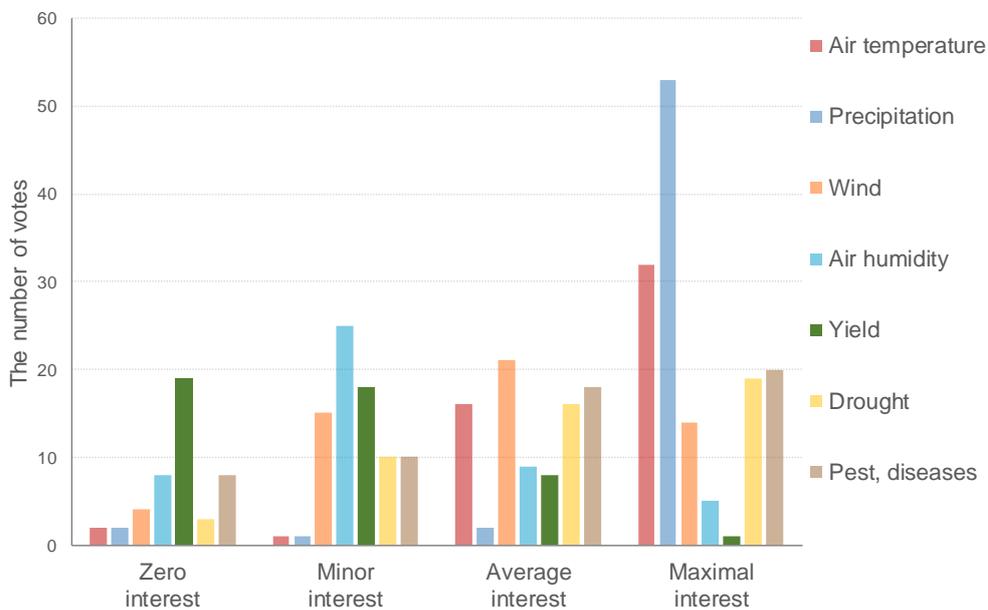


Figure 2: The rate of interest for given forecasts.

According to the yield forecast, it seems there is no or very low interest in this type of prediction. Nevertheless, when we asked the visitors if they would use the yield forecast if they knew that there is an available and reliable one for selected crops, there were most answers with “Yes”, fewer with “I do not know” reaction, and only a minimum with “No” answer (Fig. 3). It means there is still some interest or sense in using yield forecast and what also needs to be taken into account is the fact who are the visitors. The listeners were mostly farmers and

also the deputies from state administration who are well motivated to try new things (according to the fact they visit this type of workshop) but still pessimistic with the new methods, which can describe the nature and/or agriculture processes.

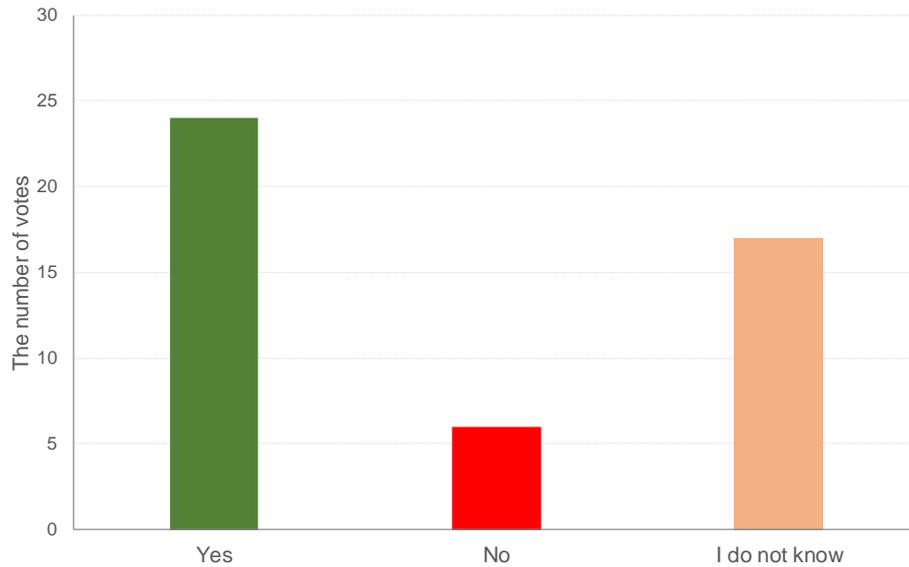


Figure 3: Number of answers to the question: “Would you use the yield forecast if you knew that there is an available and reliable one for selected crops?”

Other results showed that the next most frequently used forecast is pests, diseases, or various abiotic or biotic risks, followed by drought and wind forecasts. Most respondents rely on forecasts based on 3 or more models, from which they draw separate conclusions about projected future weather while using 3 or more sources from which to draw. Respondents further indicated that they most often view the forecast via a mobile phone and also via a computer (laptop) screen in the office or at home. The vast majority are interested in the forecast at the cadastral level.

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2 Attachments

2.1 Official invitation/programme of the workshop.



Global Change Research Institute CAS & Mendel University in Brno

together with

Agrarian Chamber of the Czech Republic & State Land Office

are inviting you to a workshop

Agrometeorological challenges of today and of the future

INTERSUCHO and AGRORISK stakeholder workshop

Thursday 29. February 2024, 8:30–14:00

KD Větrný Jeníkov (Větrný Jeníkov č. p. 198)

Workshop agenda:

08:30–09:30 *Registration and discussion*

09:30–10:00 *Opening – welcome by the organizers and guests of honor*

10:00–10:25 Climate change – development and impacts

(prof. Zdeněk Žalud)

10:25–10:50 How was the weather in 2023, and what about the winter season?

(Mgr. Pavel Zahradníček)

10:50–11:15 What might be the role of agriculture and forestry in dealing with causes of climate change (prof. Miroslav Trnka)

Coffee break

11:30–11:50 Climate-friendly conventional agriculture?

(doc. Vladimír Smutný)

11:50–12:10 Practical aspects of the transition to regenerative agriculture

(Ing. Karel Klem)

12:10–12:30 Agroforestry – production trees in the agricultural landscape?

(Jiří Michalisko)

12:30–12:50 Farming on unevenly productive land using precision farming methods

(doc. Vojtěch Lukas, YIPEEO project)

13:00 *Lunch + END OF WORKSHOP*

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2.2 Questionnaire with answers.

Which forecast do you use most often in your work? (please select one or more options)

- a) Meteorological - 54
- b) Yield forecast - 1
- c) Drought forecast - 26
- d) Other - 3
- e) None - 0

What elements of the forecast are you most interested in? (Mark the level of interest for each element with a cross so that 0 means zero interest and 3 means maximum interest).

	0	1	2	3
Air temperature	2	1	16	32
Precipitation	2	1	2	53
Wind	4	15	21	14
Air humidity	8	25	9	5
Yield	19	18	8	1
Drought	3	10	16	19
Pests, diseases	8	10	18	20

When using the forecast, I proceed as follows:

- a) I prefer only one prediction model = 7
- b) I prefer multiple prediction models from which I conclude independently = 33
- c) I prefer the Agrorisk.cz solution, where I get the best estimate based on multiple models = 16

I rely on:

- a) 1 source = 10
- b) 2 sources = 17
- c) 3 and more of different sources = 27

Can you please tell us which forecasting sources you use most often? Which ones do you rely on the most?

Intersucho.cz = 20

CHMI.cz = 18

YR.no = 15

Agrorisk.cz = 8

Windy.com = 8

Aladin = 8

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Meteoblue = 5

Meteoradar = 5

Ceska televize = 4

Ventusky.cz = 2

Seznam.cz = 1

Monitoring UKZUZ = 1

Wetteronline.de = 1

Weather Pro = 1

Own experiences 😊 = 1

When getting forecast information, I am most interested in the following areas:

- a) Cadastre level (the area near the place of interest) = 40
- b) District level = 18
- c) Region level = 12
- d) Czech Republic = 11
- e) Middle Europe = 5
- f) Area larger than Central Europe = 2

When viewing forecasts, I most often use:

- a) Computer/laptop screen in the office/home = 17
- b) The phone screen = 15
- c) Both = 24
- d) None of these options (I follow the forecast, e.g., in mainstream media - TV, radio)

Do you use a YIELD PREDICTION? If YES, what source do you use?

- ...NO – the majority of all
- ...YES – 3
- I (AGRORISK.cz)
- I (intersucho.cz)
- I (vynosy-plodin.cz)

Do you use a YIELD PREDICTION? If YES, why is it interesting to you?

- ...NO – the majority of all
- ...YES - 5
- I (harvest assumption)

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I (complexness)

I (strategy)

I (cow feed base)

I (intensity of agrotechnics - adaptation, comparison of results in a wider context)

Do you use a YIELD PREDICTION? If NOT, what is the reason?

- a) Yield prediction is not available 1
- b) I'm not interested 4
- c) I don't use this type of prediction 22
- d) It doesn't help me in any way 18
- e) Different reasons 6

Would you use it if you knew that there was an available and reliable yield prediction for selected crops?

- a) Yes 24
- b) No 6
- c) I do not know 17