Identification of farmers' needs for agro-meteorological forecasts - an Austrian survey

Marlene Palka, Institute of Agronomy, BOKU, marlene.palka@boku.ac.at

Ahmad M. Manschadi, Institute of Agronomy, BOKU
Josef Eitzinger, Institute of Meteorology and Climatology, BOKU

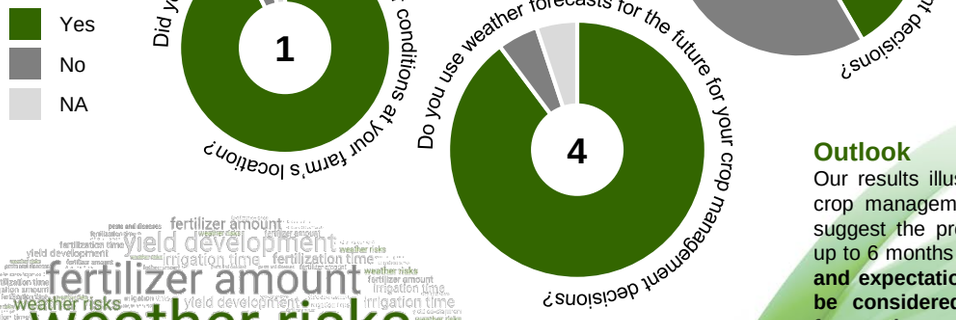
Universität für Bodenkultur Wien
Department für Nutzpflanzenwissenschaften

Introduction

Current **crop management practices** are largely based on empirical approaches representing crop demands in **average growing seasons**. While these average management practices have been relatively successful in the past, increased climate variability and rapidly changing socio-economic conditions demand a more **season-specific crop management**. We present a survey study that is part of the ACRP project "AGROFORECAST" with the overall aim of **developing agrometeorological forecasting systems for supporting crop management in the face of increasing climate variability**. Agro-meteorological forecasts offer the potential to anticipate variations in crop production conditions early enough to adjust and optimise management decisions for the expected growing environment.

Material and Methods

Following Dillman et al., 2014, Mailier et al., 2006 and WMO, 2000, an **online questionnaire with 32 main questions** and related sub-questions was developed and distribute using the online survey tool "LimeSurvey".
The full questionnaire took approx. 20 minutes to complete. In total 232 were collected, of which **137 were used for analysis.**
The remaining 95 responses were excluded due to poor data quality.



5

6

Results

The majority of respondents came from conventional cropping farms in Lower Austria and Styria growing winter grains, oil seeds, and corn as their main crops. Although **93% of the respondents experienced changes in weather conditions at their farm** (Figure 1), **only 61% changed their crop management accordingly** (Figure 2). In order to understand which kind of weather data farmers user for their crop management, survey participants were asked whether they consider weather reports from the past and weather forecasts for the future for management decisions. **Respondents rather considered weather forecasts** (90%, Figure 4) than weather reports (41%, Figure 3) and prefer **shorter forecasting periods for** their decision making. Those farmer, who did not use weather data most often mentioned that **personal records and experience are sufficient enough** (55%). Other reasons mentioned where no access (16%), unintelligible content (10%), no time to use it (4%) or that current weather information is not useful (4%) (Figure 5).
In regard to **agro-meteorological forecasting systems,** most respondents were interested in using tools estimating **weather risks** (72%), **pests and diseases risk** (66%), and **optimal fertilization amount** (58%) **and time** (55%). Farmers were less interested in using agro-meteorological forecast for yield development (48%) and irrigation amount (23%) and time (19%) (Figure 6).

Outlook

Our results illustrate a gap between climate change impacts and crop management adaptation in Austrian crop management and suggest the promotion of agrometeorological forecasting systems up to 6 months to support in-season crop management. **The needs and expectations of farmers as identified with this survey will be considered for the development of agro-meteorological forecasting systems throughout the AGROFORECAST project**.

AGROFORECAST is funded by the Climate and Energy fund and conducted within the "Austrian Climate Research Programme (ACRP)", grant nr. KR18AC0K14640.

powered by klima+ energie fonds

References

Dillman, D. A. et al. (2014). Internet, phone, mail, and mixed mode surveys: The tailored design method, 4th ed. Wiley, NY, USA.
Mailier, P. J. et al. (2006). Quality of Weather Forecasts-Review and recommendations. Royal Meteorological Society, Reading, UK.
WMO (2000). Guidelines on Performance Assessment of Public Weather Services. Word Meteorological Organization, Geneva, Switzerland.