University of Natural Resources
and Life Sciences, Vienna
Department of Crop Sciences
Division of Agronomy

COMBIRISK – Annual Report

WP1: Establishing data base on crop responses and damages to adverse weather conditions over Austria

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WP1 – Objectives

- Establishment of **data base**
  - Empirical & Simulation data sets
  - Region: Austria
  - Crops: arable & orchards
  - Crop damages & responses to adverse weather conditions:

    Abiotic – direct weather effects

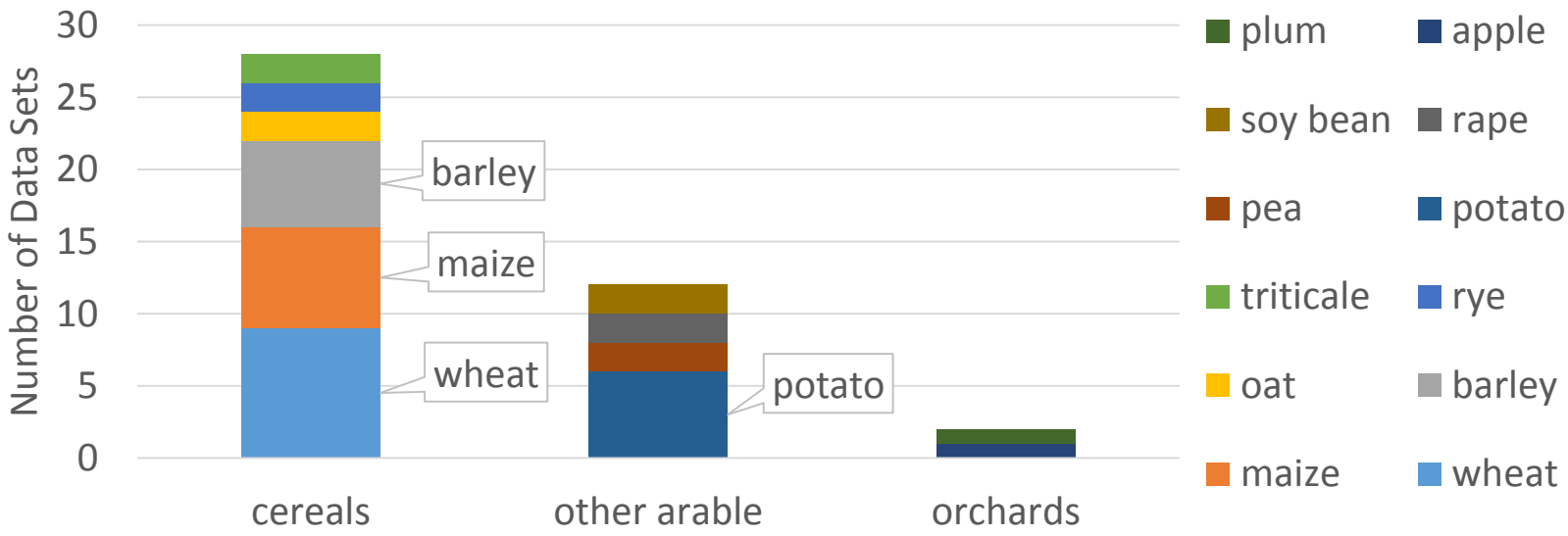
    Biotic – pest/disease favoring weather

- Literature survey: comparisons in other European regions
- Dissemination of results (presentations, publications, harmonized data base interface)

WP1 – Activities

- Data Base Establishment: **total 51 Data Sets**
  - 34 Crop Data Sets

Stresses: 12 biotic, 6 abiotic

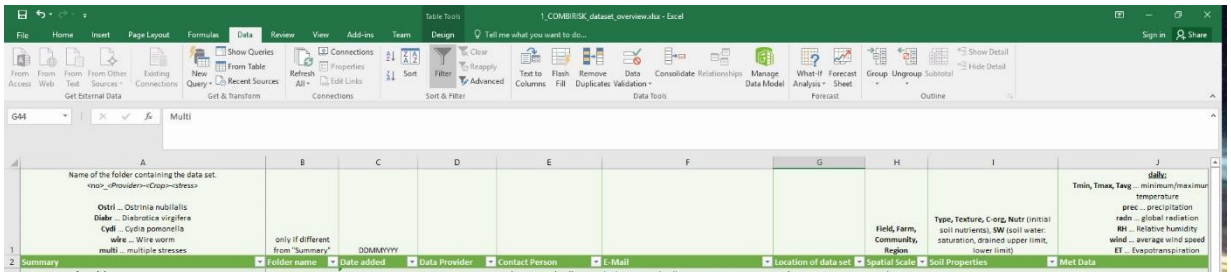


- 18 Meteorological Data Sets (not online)
  - 500-1000m resolution
  - Field capacity, precipitation, global radiation, temperature, …

WP1 – Activities

- **Where** to find the data sets:
  - ftp.boku.ac.at

- **How** to find a specific data set: 1_COMBIRISK_dataset_overview.xlsx



WP1 – Activities: Wheat Modeling

- Crop Model: APSIM – **A**gricultural **P**roduction **S**ystems s**IM**ulator

- Wheat Field Experiment 2013/14

Marchfeld (Groß-Enzersdorf)

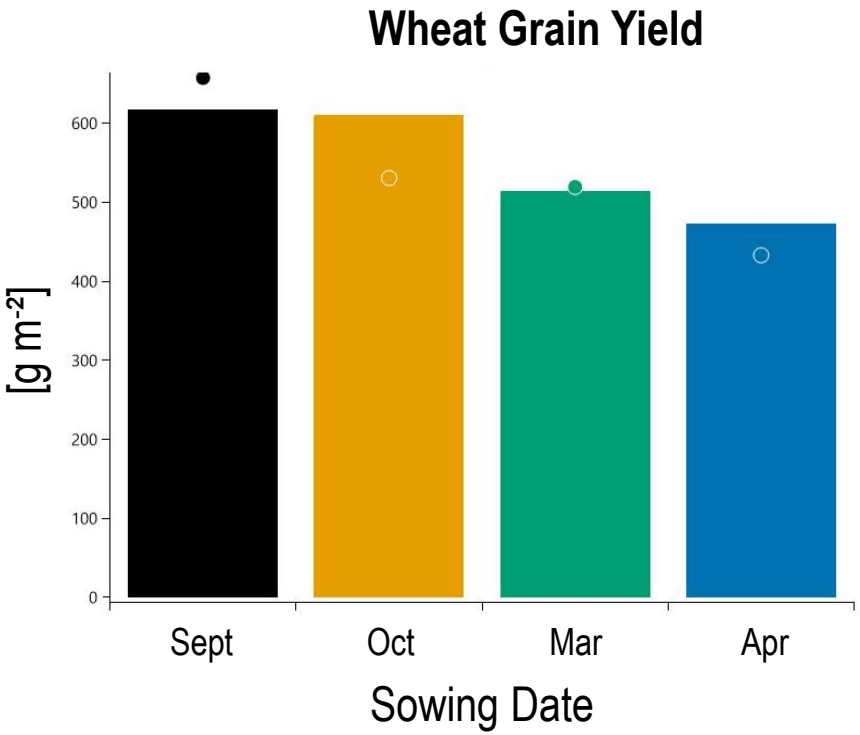
2 wheat genotypes:
Facultative: *Xenos*
Winter: *Capo*

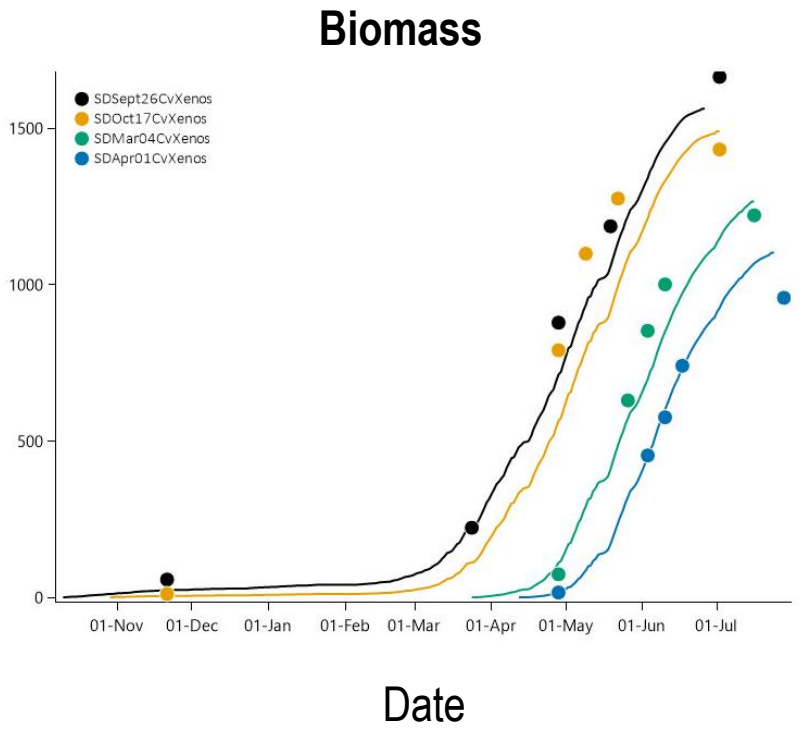
5 Sowing dates:

1	26. Sep. 2013
2	17. Oct. 2013
3	7. Nov. 2013
4	4. Mar. 2014
5	1. Apr. 2014

WP1 – Activities: Wheat Modeling

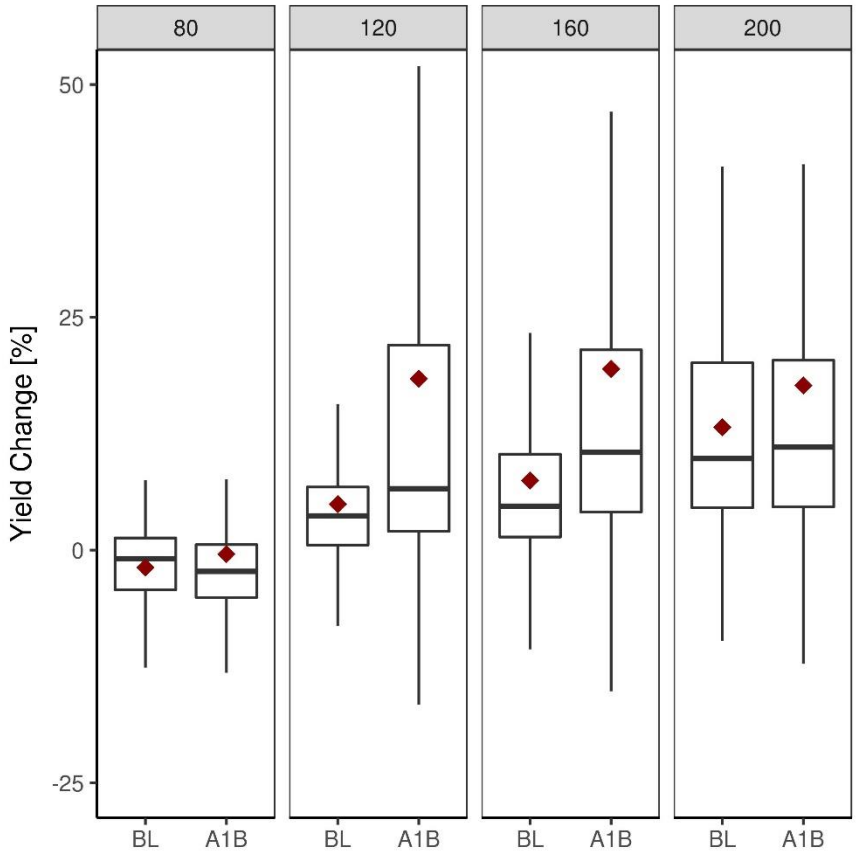
- Wheat Cultivar *Xenos* – Simulation Results





WP1 – Activities: Wheat Modeling

- 2 Parameterization levels
  - „low“: few parameters considered
  - „high“: improved simulation of leaf canopy development
    - Specific Leaf Area [cm/g]
    - Leaf biomass
    - Leaf area index
- Climate Change Scenarios
- MACSUR Conference
- Publication



Relative yield differences between „low“ and „high“ level parameterization

WP1 – Activities: Maize Experiment 2016 & 2017

- 5 Nitrogen Fertilization Treatments
  - 0, 40, 80, 120, 160 kg N / ha

July 20, 2016

- Weekly phenology
- Crop Biomass and
- Soil N_{min} & soil water sampling
  - at 5 dates
  - Plant tissue N-concentration
- Field Spectrometer

- → Data Set for Parameterization