

ORAL CONTRIBUTIONS – CONTRIBUTIONS ORALES – VORTRÄGE

SESSION 1: OPENING SESSION:

CHALLENGING THE YIELD GAP OF SUGAR BEET / REALISER LE POTENTIEL DE RENDEMENT DE LA BETTERAVE SUCRIERE / DAS ERTRAGSPOTENTIAL DER ZUCKERRÜBE NUTZEN

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YIELD GAPS OF OUR MAJOR FOOD CROPS: WHAT DO THEY MEAN AND IMPLY?

ABSTRACT

Yield gap analysis has been a well know notion in crop science since the late 1980s, but it has become popular only recently. Yield gaps are defined as the difference between actual farmers' yields and potential yield. Potential yields assume optimal crop growth achieved by competent crop and soil management that avoids yield limitation and reduction from nutrient deficiencies, weeds, pests and diseases. Potential yields are location-specific and depend on crop genetics, solar radiation, temperature and water supply during crop growth and they can be calculated for both rainfed (water-limited potential) and irrigation conditions.

Yield gap analysis is generally regarded a helpful starting point for mapping the opportunities for sustainable intensification of agricultural systems, i.e. where can we produce how much (more) food on existing cropland. In the global yield gap atlas project (GYGA – www.yieldgap.org) we aim to map yield gaps of all important food crops in every food producing country. A global protocol has been developed to map the yield gaps in an agronomically robust and reproducible manner. The global protocol is always applied with local data and local experts are involved in the evaluation of modelling and yield gap analysis results. It has now been applied for cereal crops to 25 countries and another ca. 25 countries are on their way, thus creating a unique database.

In this presentation examples of yield gaps will be presented and the implications of it for global food security now and in future will be estimated. After estimation of yield gaps, the causes of yield gaps can be investigated and yield gaps can be translated into input gaps. Yield gap closure is never an aim in itself – yields will need to be balanced with resource use efficiency and environmental and economic objectives.

The presentation will start with cereals crops and then proceed with opportunities and examples to apply the same concepts to sugar crops.