

Wheat Initiative EWG on Breeding Methods

Workshop on Hybrid Wheat



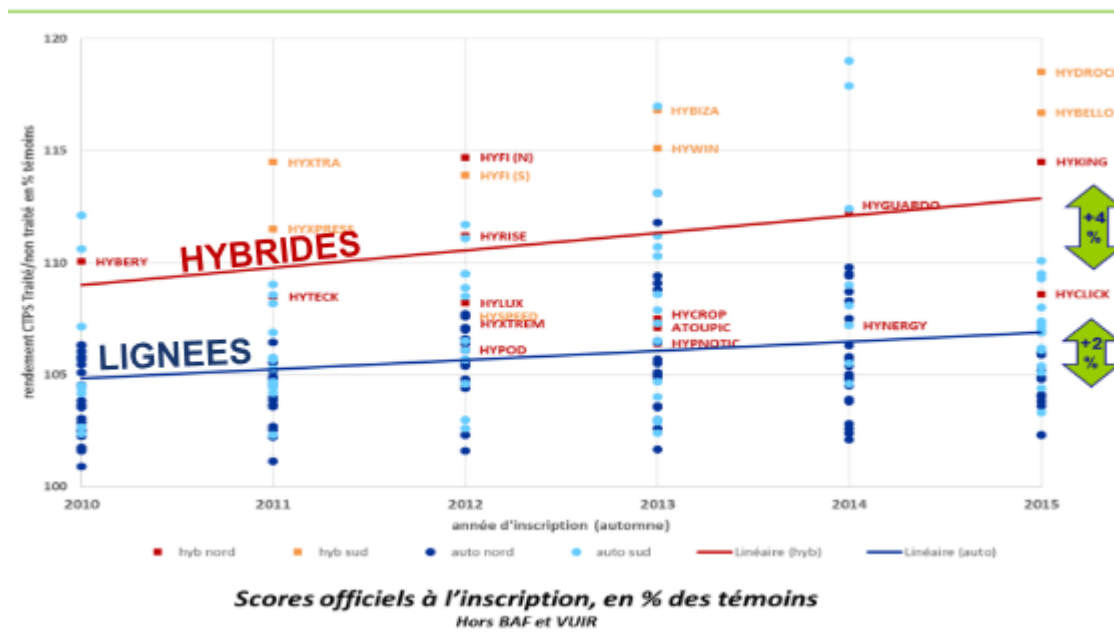
KEY FACTS

Date: **6 February 2019, 9 am – 5.30 pm**
 Location: **University of Hohenheim, Stuttgart, Germany**
 Room: we are in the **Aula** of the castle, where you can read “Schloss Mittelbau”, 4.11, see the map
 Additional: 7 February 8-12 am, internal meeting of the Expert Working Group “Breeding methods” from the International Wheat Initiative

BACKGROUND

Since the first maize in 1908, hybrids varieties have been developed in many crops, mostly cross-pollinated, and have proved many advantages over former population or synthetic varieties in terms of hybrid vigor, crop homogeneity, yield stability...

In wheat, hybrid varieties are also developed in the last decades, and for example 19 hybrid varieties have been registered in France in 2011-2015, and showed a 4% overyielding over pure line varieties in official registration trials. However this yield surplus is often too weak to compensate the cost of seeds.



(From <http://www.saaten-union.fr/data/documents/saaten-union.fr/Faire%20face%20avec%20la%20g%C3%A9n%C3%A9tique%20SU%20vf.pdf>)

Considering the potential of hybrid wheat to better adapt climate change and stimulate investment in research (10 times less in wheat than in maize worldwide), several challenges need to be addressed by public and private research, among others:

- How to exploit/create heterotic groups
- How to produce cheaper hybrid seeds using CMS or other systems, enhancing cross pollinations...
- How to adapt breeding schemes to hybrid wheat, is copying maize schemes enough, place of genomic prediction...
- Which economic model to better exploit genetic diversity in a context of hybrid varieties: how to protect innovation, funding conservation and pre-breeding activities...

AIM

This workshop aims to gather actors from public and private sector already involved or planning to develop hybrid programs to discuss these challenges, identify lock-in in knowledges and possibly organize future cooperative programmes on hybrid wheat breeding.

Link https://docs.google.com/forms/d/e/1FAIpQLSdV_8_lhau3nTZU1mxR50lpJ0EtV9a03K9rXKAwouoA69KfHg/viewform?c=0&w=1 to register:

Agenda (subject to change)

Wednesday, 6 February 2019	
Morning	<p>Welcome 09h00 Scene setting and the aims of the workshop (Chris Burt / Chris Tapsell)</p> <p>Hybrid wheat in practice</p> <ul style="list-style-type: none"> • 09h15 Long-term experiences with hybrid wheat from the initiation in the 1970's up to day. (Volker Lein, Saaten-Union) • 9h40 TBC • 10h05 TBC <p>Heterosis in wheat</p> <ul style="list-style-type: none"> • 10h30 Heterosis for grain yield and other traits in Central European Germplasm. (Patrick Thorwarth, University of Hohenheim)
	Coffee break 10h55 – 11h10
Morning cont'	<p>Heterosis in wheat (cont')</p> <ul style="list-style-type: none"> • 11h10 Heterosis and the need for hybrid wheat from a U.S. perspective (Stephen Baenzinger, University of Nebraska) • 11h35 Heterosis and perspectives for hybrid durum wheat (Friedrich Longin, University of Hohenheim) • 12h00 Genetic distance and hybrid wheat breeding: how diverse should we get? (Philipp Boeven, Limagrain) <p>CMS systems and sterility restoration</p> <ul style="list-style-type: none"> • 12h25 Mapping for restorer genes in the CMS-timophevii background (Manuel Geyer, Bayerische Landesanstalt für Landwirtschaft, Freising) • 12h40 Characterization and resequencing of the RFL-PPR gene family as a source of markers and candidate genes for Rf genes in wheat (Nils Stein, IPK Gatersleben)
Lunch 13h00 – 14h00	
Afternoon	<p>CMS systems and sterility restoration (cont')</p> <ul style="list-style-type: none"> • 14h00 CMS hybrid breeding at CIMMYT (Bhoja Raj Basnet, CIMMYT) • 14h25 TBC <p>What can we learn from other cereals?</p> <ul style="list-style-type: none"> • 14h50 Hybrid barley (Gunther Stiewe, Head Cereal Seeds Development Syngenta) • 15h15 Hybrid rye (Thomas Miedaner, University of Hohenheim)

Coffee break 15h40-16h00

Floral biology

- 16h00 Genetic architecture of anther extrusion in wheat and its implications for hybrid wheat production (Tobias Würschum, University of Hohenheim)

Breeding schemes

- 16h25 Reciprocal recurrent genomic selection – an attractive tool to leverage hybrid wheat breeding (Jochen Reif, IPK Gatersleben)

Summing up and general discussion

- 16h50-17h30 What are the areas for research and what are the next steps? (Chris Burt / Chris Tapsell)

Venue

How to get to Hohenheim

<https://www.uni-hohenheim.de/en/directions>

Some Hotels to book yourself

How to come to Hohenheim

<https://www.uni-hohenheim.de/en/directions>

Campus Plan

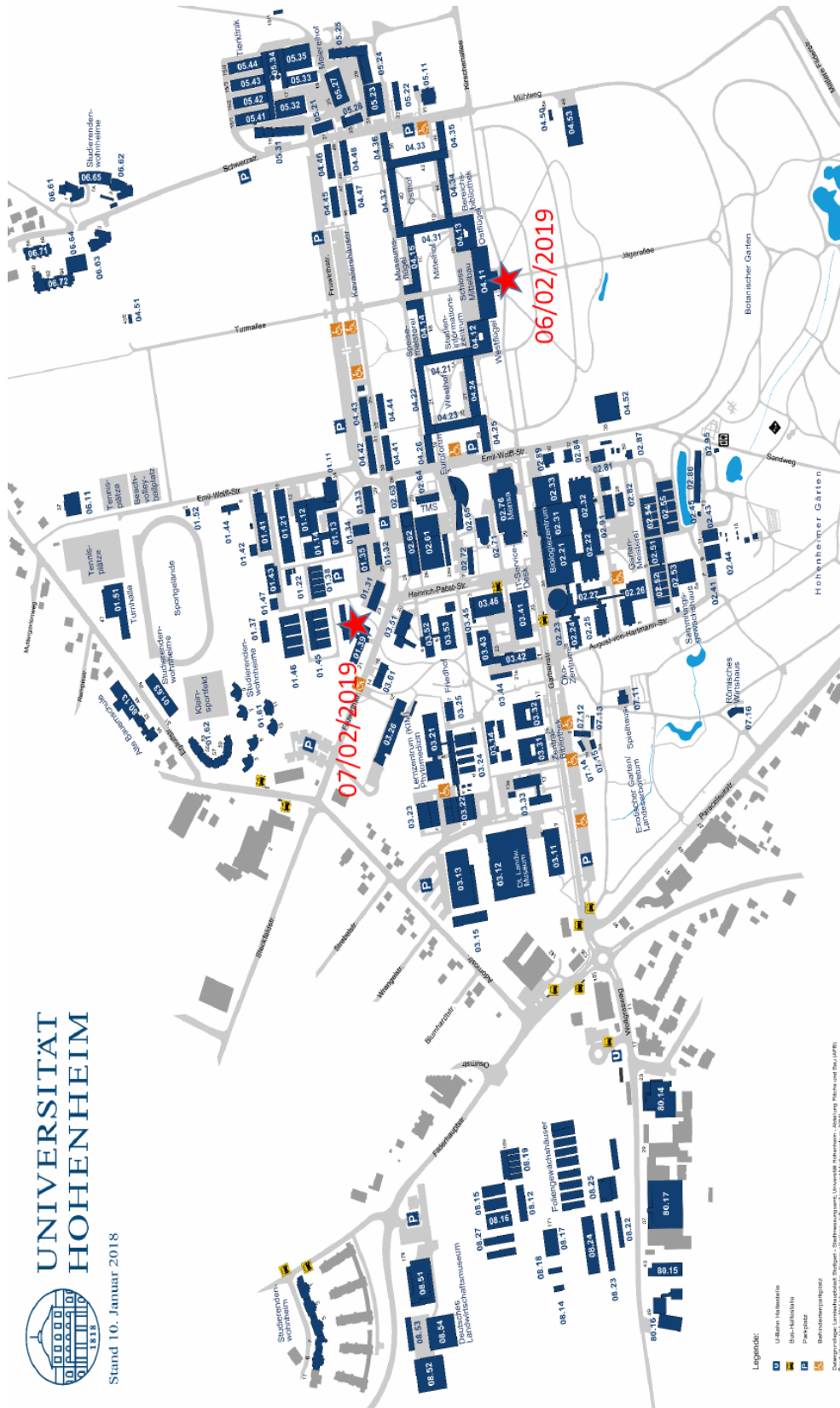
How to come to Hohenheim

<https://www.uni-hohenheim.de/en/directions>

Wheat Initiative EWG on Breeding Methods Workshop on Hybrid Wheat



UNIVERSITÄT HOHENHEIM - MAP



Stand 10. Januar 2018