

OAT RUST FORUM (ORF) 2015 - FEB. 17-18, 2015 **SUMMARY REPORT**

Oat rust resistance is a fundamental need in the oats industry worldwide. Oat scientists have been working on this topic for many years and a rich "toolkit" for resistance breeding is available. The time is right for the community to efficiently connect these tools in a well-coordinated approach to ensure that host resistance can be managed to stay ahead of pathogen evolution over time.

A FORUM with key representatives from the oat research and stakeholder community was convened by the University of Minnesota Stakman Borlaug Center (SBC) on FEBRUARY 17-18, 2015 in ST. PAUL, MINNESOTA, to develop a strategy for a community-wide approach for managing oat resistance to rust (crown and stem), and to set clear direction for funding agencies on how this effort should be supported.

The forum focused on 1) An assessment of current capabilities; 2) Gap analysis of capabilities and possible "build-up" strategies; 3) Discussion of an ideal capability network/platform; 4) Possible strategies for funding; and 5) Short-term governance and communication.

From the discussion, a number of NEEDS were identified:

- Timely coordination between oat researchers to ensure efficient use of limited resources. This should include the sharing of germplasm and data, coordinated research planning, establishment of industry-wide protocols/approaches for oat rust testing, a standard pathogen nomenclature, and a standard differential set.
- Expanded research capacity for oat, including filling vacant research positions and financially supporting researchers new to the field.
- Genomics tools for oat, including high quality genome sequence, gene discovery and annotation tools, and transformation systems, to speed improvement.
- Tools for marker assisted selection (MAS), developed through a process involving community discussion and prioritization of gene mapping strategies, creation of appropriate populations, development of supporting database resources, and establishment of appropriate centralized MAS resources and/or partnerships with private industries positioned to provide MAS support.
- Development of genomics tools for pathogens, including high quality genome sequences, gene silencing methodologies, effector libraries, and race diagnostic tools.

Among key biological questions to be answered is to understand pathogen variability on a geographic scale.

- Building community consensus about gene deployment strategies, taking into account pathogen population biology (e.g., race structure, sources of pathogen variability), considering both ‘effector management’ and ‘resistance durability’.
- Identifying alternate pathogen hosts and assessment of their significance in enabling pathogen diversity.
- Establishment of a redundant, community-wide infrastructure resource to ensure the safe, long-term storage of oat rust isolates and their continued availability to the research community.
- Building research capacity, student training, and extension programming to support oat rust resistance management efforts by engaging oat growers.
- Integration of improved disease resistance into a systems level approach that considers agronomic traits and production practices.
- Leveraging of bio-economic and geo-spatial modeling to inform oat rust research priorities and approaches.

The FORUM participants concluded that sources for funding will be explored and pursued to meet these identified needs. It was agreed that ORF 2015 will transform into a community-wide public/private “Oat Rust Initiative” with structured leadership and governance: this will be the foundation to attract and coordinate funding and develop and support research activities. For the immediate future, the Stakman Borlaug Center will coordinate efforts to secure funding, and continue to facilitate communication among the FORUM participants and with the broader oat community, including regular updates on progress.

ORF2015 ATTENDEES:

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Marty Carson, USDA-MN

James Chong, AAF-Canada

José Costa, USDA-DC

***Ruth Dill-Macky, UMN**

***Gabe Gusmini, PepsiCo**

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