



Identification, Characterization and Combination of Novel Resistance Genes Against Rust in Wheat

29 August 2024

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Q&A session

Presenter: Rimsha Ashraf (Swedish University of Agricultural Sciences, SE)

The webinar recording is available on the IWGSC YouTube channel at: https://youtu.be/sUa_K3KexBk

Q: It seems you mainly tested resistance at the seedling stage, could you confirm the resistant phenotypes at the adult stage?

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Q: Higher level of zinc can you please share the ppm? And was it genetically higher or was as a result of some applications?

Timestamp: 39'55"

Answer of second part is its genetically higher after alien introgression within wheat genome.

Q: I'm curious to know if you've incorporated any Pakistani wheat varieties into your study. Did you encounter any resistance sources during your research? Furthermore, do your findings suggest that the identified resistant genes could provide protection against the Pakistani strains of rust?

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Q: Did you have KASP markers for both Yr genes from SLU126? Why then did you lose the resistance? Can it be due to segregating suppressor genes in the backcross parents?

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Q: Rye seems fine, but did you check for any potential linkage drag?

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Q: Was there any assessment of possible pleiotropic effects when combining Sr and Yr resistance genes?

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Q: What are the disadvantages of transferred gene on quality and overall acceptance of genotypes?

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Several varieties are available in markets. Please don't confuse with GMO and resistance breeding.

Q: clarification on CSph1 mutant genotype? i don't understand how it was developed.

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Q: Would you advise on effective strategies/methodologies for combining resistance genes for the 3 rusts in wheat(a single genotype)?

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Q: For the GBS align to Rye genome, which one you use?

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Q: Is it reliable to evaluate disease response on mere phenotypic basis.? Are there any Biochemical test/PR-marker genes expression analysis/Histopathology etc.?

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NO, its not reliable since we need to compare phenotype and genotype to get the exact position of gene and it should also give long last resistance. The matter of fact to be resistance with field is challenging due to emergence of new races as it occurs in case of Ug99.

Q: How does the integration of novel yr and sr genes into wheat breeding programs impact yield and overall plant health? What are the current challenges in identifying yr and sr resistance genes in wheat and how does your research address these challenges?

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Q: Why did you take different genotypes for making crosses during gene pyramiding?

Because of high agronomic performances of Linkert (USA), navruz (Tajikstan)and SLU-Elite (Sweden)cultivars. Since, these are commercial cultivars from different countries so, have own set of characteristics which are useful during population development.

Q: my question is you test wheat lines against stripe rust in favorable conditions (2-15 C)

its plus minus 2 on top of this temperature since, its seedling resistance and for this we need to give optimum conditions to record infection under specific chambers, you can find full protocol in my article.

Q: Can you plz share any information about rust resistance in Pakistani wheat varieties used in your study.

No, did not use any of Pakistani wheat variety, its only Swedish varieties.

Q: Did you check the grain quality of wheat lines you developed by rye introgression?

Its good idea to think about it for future projects but some sister lines give promising results in terms of quality.

Q: Do you have a chance to evaluate wheat lines in terms of slow rusting resistance against stripe rust?

these are seedling and slow rusting resistance genes

Q: What is status of Yr10 gene effectiveness against European races of stripe rust

I can't give you the clear picture but our lines have Yr10, since we use different races not only European so it should be effected against European Yr races.