

Development of *Pgt* race Ug99 resistant wheat cultivars in Iran: achievements and prospects

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- Wheat area: 6.5 mha, 2.4 irrigated, 4.1 rain fed.
- Production: 12-15 m tons depending on the drought/humidity of the season
- Among rusts, Yellow rust >> more prevalent especially in humid seasons
- Up to 1.5 million tons wheat grain loss in 1993 (Torabi, et al. 1995).
- Development of new cultivars specially in irrigated wheat >>> some how controlled.
- Leaf and stem rust potential threats especially in northern Caspian sea shore where humidity and temperature are favorable.

History of stem rust in Iran:

1947: The First Report of wheat SR in Iran

1966-68: Reported from North of Iran

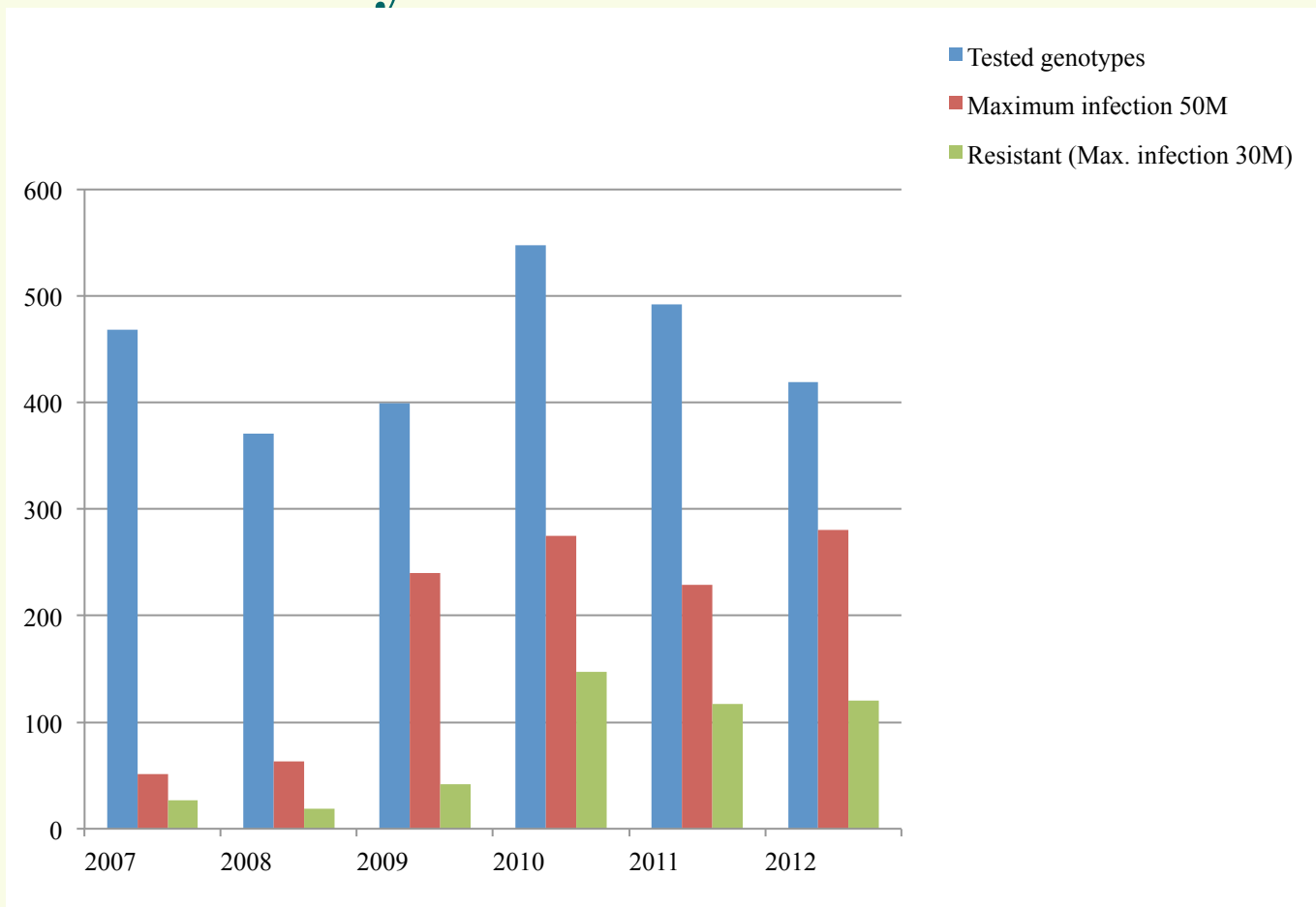
1976: Epidemic of SR in South of Iran

2007: *Sr31*-virulence in Iran (Nazari et al. 2008)

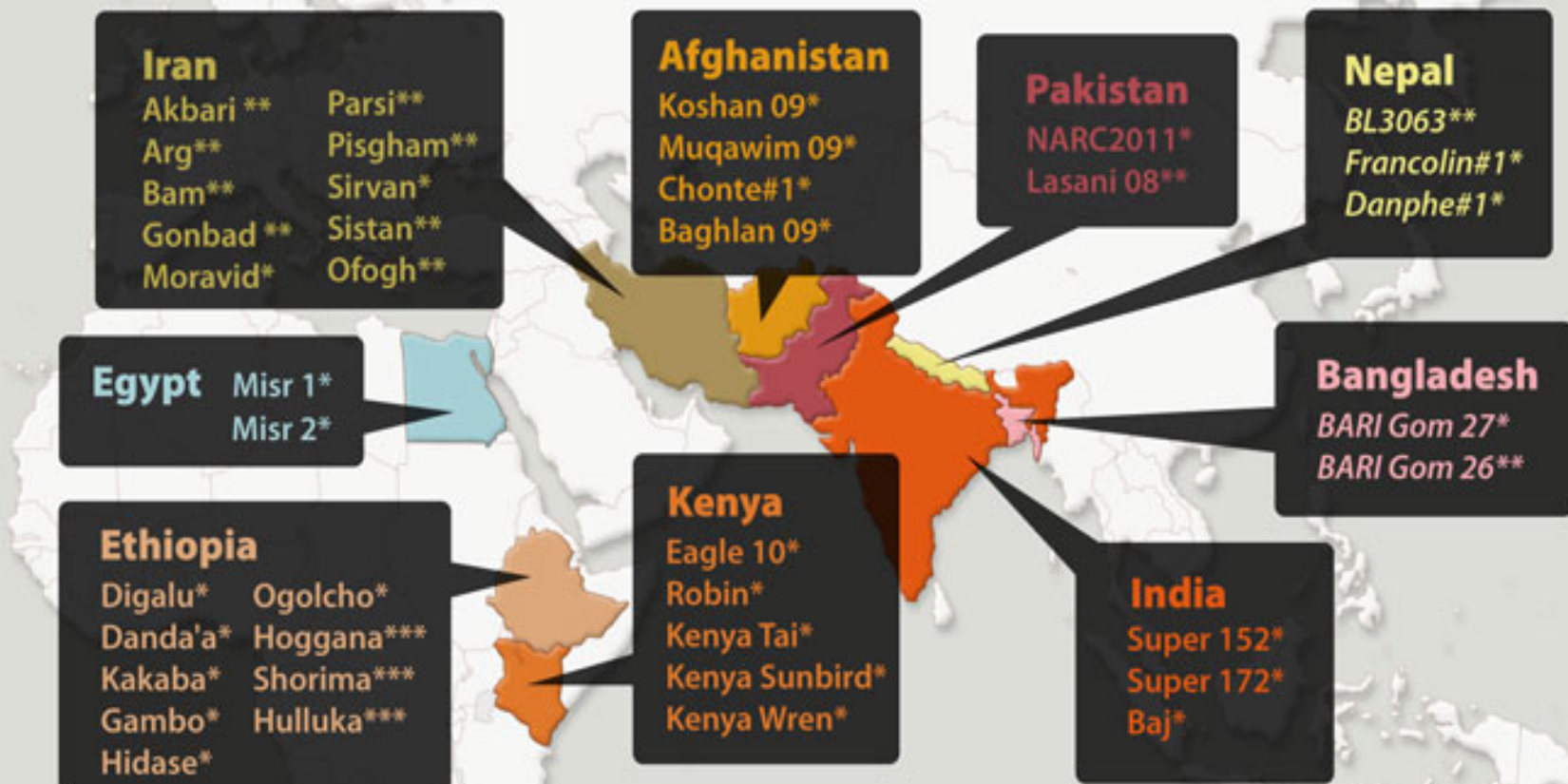
- Since then, **no considerable stem rust** has been observed/reported, but considered as an important challenge for ongoing wheat breeding programs.

- Evaluation of circulating germplasm to this new virulence, where disease was prevalent
- This opportunity provided through BGRI formation and CIMMYT support and Kenyan ARI (KARI)
- Evaluation of germplasm in Kenya for APR against Ug99 virulence from 2007 onward
- Seedling assessment: In green house inside the country

Status of Iranian evaluated wheat germplasm in Kenya from 2007 till 2012



Ug99-resistant wheat varieties released or in advanced tests



* Materials from CIMMYT breeding program

** Materials from National Programs

*** Materials from ICARDA breeding program

Source: BGRI, John Bakum personal communications

- A national stem rust management research program
- Hybridization and gene pyramiding strategy.
- The first generation of breeding lines developed from crosses of Parsi, Sivand and Morvarid
- Molecular tracking of the genes is also under progress to characterize resistant varieties.
- Pathological evaluations: pathotype identification, trap nursery monitoring, seedling and adult plant resistance evaluations in green house

- Other concerning challenges:
- Low investment of government, no private sector
- Complication of drought and moisture stress cycles >> affecting the goals
- Adoption of new varieties >> farmers will, Attila and Sardari
- Variation in virulence for Yr in different corners of the country , complicated epidemiology
- Neighboring countries epidemics and inoculums transfer>>
- Using of rich genetic resources>> lack of an effective pre-breeding program



THANK YOU

Seed and Plant Improvement Institute
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