

Appendix F

DRRW Project Impact Metrics

Phase II Year 2

Breeding and seed delivery

97 high yielding lines that carry near-immune to moderately resistant adult-plant resistance responses for distribution to national programs in 2012 and 2013.

342,598 tons of seed for rust-resistant wheat candidate varieties were available for planting in eight at-risk countries. A further ~324,000 tons were produced for Iran.

Women were ~20 percent of participants in project-sponsored village-level farmer field days in Ethiopia, a 100% increase from field days held prior to the project.

Pre-breeding

>35 plant genes identified as sources of resistance to TTKSK (Ug99) *Sr2, Sr12, Sr13, Sr15, Sr22, Sr25, Sr26, Sr28, Sr32, Sr33, Sr35, Sr37, Sr39, Sr40, Sr42, Sr43, Sr44, Sr45, Sr46, Sr47, Sr50, Sr51, Sr52, Sr53, Sr55, Sr56, Sr57, Lr46, SrWeb/Gabo56, Sr1662, SrTr129, SrTm4, SrAt6D, SrAt7D, SrSha7, SrC, SrNini, SrND643*; consistent QTL on chromosomes 1A, 1B, 2B, 3D, 4A, 5B, 6B, 7A, 7B; *Sr55, Sr56, Sr57* and *Lr46* were validated to confer APR to Ug99 and other stem rust populations, joining *Sr2* for APR resistance.

25 resistance genes in wheat breeders' toolbox: *Sr2, Sr13, Sr15, Sr22, Sr25, Sr26, Sr28, Sr32, Sr33, Sr35, Sr39, Sr40, Sr42, Sr45, Sr47, Sr50, Sr53, Sr55, Sr56, Sr57, Lr46, SrWeb/Gabo56, SrAt6D, SrAt7D, SrND643*.

15 optimized markers providing robust diagnostics for resistant germplasm: *Sr2, Sr13, Sr22, Sr25, Sr26, Sr28, Sr33, Sr35, Sr39, Sr45, Sr47, Sr50, Sr53, Sr55, Sr57*.

Surveillance

20 national focal points regularly contributing surveillance data to international focal point, covering about 20% of total world wheat area. A further 4 SAARC countries are contributing surveillance data to the SAARC-specific web-based Tool Box

36 rust disease samples race-typed by international laboratories. A further 79 race-typed by laboratories in Ethiopia and Turkey marking a significant shift to in-country capacity.

86 isolates of Pgt were shared by four international labs for sequencing. 50 isolates were sequenced to 20X.

14 institutions using seed distributed by ICARDA for trap nurseries

2 institutions received seed for differential sets: Directorate for Wheat Research, India and EIAR, Ethiopia.

Advocacy

Co-funding raised by partners engaged in the Borlaug Global Rust Initiative: See Appendix E: Other Funding to Subcontractors for Wheat and Rust Research.

112 self-funded participants at the 2012 BGRI technical workshop (47 percent of total), down from 175 self-funded at the 2011 meeting (63 percent)

East African screening facilities

65,894 lines screened in international screening nurseries in Kenya and Ethiopia (main and off seasons): **53,500** entries in Kenya and **12,394** entries in Ethiopia for a total of **225,000 lines screened** in international screening nurseries in Kenya and Ethiopia since 2006 (200,000 in Kenya and 25,000 accessions in Ethiopia).

10 seasons at international screening nurseries (*main- and off-season for five Phase I and II project years*) yielded reliable data, differentiating resistant and susceptible cultivars.

Programs from 32 countries are screening cereal germplasm in the East African rust nurseries:

USA: USDA, NDSU, Cornell University

Canada: Agriculture and Agri-food Canada, University of Alberta

Mexico: CIMMYT (irrigated bread wheat and rain-fed programs)

Australia: University of Sydney, CSIRO

South America: Argentina, Uruguay, Paraguay, Brazil

Africa: Kenya, Ethiopia, South Africa, Uganda, Egypt, Morocco

Asia: India, China, Nepal, Bangladesh, Pakistan, Afghanistan, Bhutan

Middle East: ICARDA, Iran, Iraq

EU countries: Sweden, Switzerland, France

Others: Tajikistan, Kazakhstan, Uzbekistan, Turkey, Israel

589 lines for which genes/genetic basis of resistance was postulated in collaboration with national programs partners and the international screening nursery.

Human capacity

59 Ethiopian and Kenyan wheat breeders and pathologists who participate in international training and apply skills learned to their own research programs

41 SAARC country wheat breeders and pathologists participated in international training and apply skills learned to their own research programs

58 percent increase in number of women participants in the annual BGRI meeting: 60 in 2012 up from 38 in 2011

Ug99-resistant wheat varieties released or in advanced tests

