

REPORT ON TRAINING COURSE:
“Standardization of Stem Rust Note Taking and Evaluation of Germplasm”
September 27 – October 7, 2009
Nairobi, Kenya

Number of participants: 30 (complete list in attachment 1)

Organized by CIMMYT in collaboration with KARI, ICARDA Cornell University and BGRI
Logistics & coordination: Dorothy Nanzala, Davinder Singh, Peter Njau, Petr Kosina

Lectures were given by:

- | | | | |
|--------------------|-------------------|-------------------|-----------------|
| ○ Bob McIntosh | ○ Gordon Cisar | ○ M. Gethi | ○ Ravi Singh |
| ○ Brian Steffenson | ○ Harbans Bariana | ○ M. Rouse | ○ Ruth Wanyera |
| ○ David Marshall | ○ Karim Ammar | ○ Peter Njau | ○ Zak Pretorius |
| ○ Davinder Singh | ○ Kumarse Nazari | ○ Sridhar Bhavani | |

In order to address the threat from the spreading Ug99 race of wheat stem rust, members of the Borlaug Global Rust Initiative (BGRI), including CIMMYT, the International Center for Agricultural Research in the Dry Areas (ICARDA), the Kenya Agricultural Research Institute (KARI) at Njoro, and Cornell University, organized this hands-on training course during the peak note-taking period for the 2009 main season stem rust nursery at KARI-Njoro.

The objective of coordinated international efforts to address the threat of Ug99 and other virulent stem rust races will be facilitated greatly by standardized methods of recording, reporting, and interpreting stem rust observations. The intention of this course was to bring together experienced rust scientists from countries at immediate risk of Ug99 epidemic with rust scientists from Australia, Canada, CIMMYT, ICARDA, RSA and the United States to come to a clear understanding on how to record, interpret, and report stem rust observations on adult plants. In addition scientists had the opportunity to evaluate wheat germplasm sent from many countries (including their own), CIMMYT, and ICARDA for resistance to Ug99 in KARI fields at Njoro. Participants were also updated and commented on recent developments in efforts to agree on standardized stem rust nomenclature. Complete itinerary of the course is in attachment 2.

Course was targeted for senior plant pathologist and wheat breeders from countries already and /or potentially affected by the new strain of stem rust (*Puccinia graminis*) Ug99.

List of countries invited to nominate DRRW sponsored participant(s) for the course:

Afghanistan (no nomination); Bangladesh (1); China (2); Egypt (1); Eritrea (1); Ethiopia (2); India (3); Iran (2); Iraq (1); Kazakhstan (1); Kenya (4); Morocco (1); Nepal (1); Pakistan (1-through CIMMYT); Sudan (cancelled participation); Syria (didn't arrive); Tanzania (no nomination); Tunisia (1); Turkey (1); Uganda (1); Uzbekistan (cancelled participation); Yemen(1)

Self-sponsored participants: India (1); Iraq (2); Afghanistan (2)

Summary of evaluation questionnaire for the course

Evaluation forms were received from 25 participants (out of 30)

- 12% of respondents (3 of 25) indicated that they had participated in a similar course in the past (in any country).

Brief summary of numerical responses:

Respondents ranked the overall course as excellent and as meeting its objectives well. They found the course balance (between theory and exercises and between various topics) to be very good. Respondents felt that the teaching methods were excellent and complimented by very relevant learning materials. They indicated that the amount of new information provided was average, but that the content was very relevant to their work and that the course generated a good amount of new interest.

Respondents noted that there was a good level of communication, both between presenters and participants and among participants.

Respondents indicated that the overall length of the course (in relation to its content) was slightly too long with slightly too many participants.

96% of the respondents feel confident enough to share what they have learned from the training course and 100% of them are willing to take on the role of resource person in their own countries. All respondents indicated that they will be able to use this new knowledge and that they would recommend this course to other people.

Respondents were also satisfied with the accommodation, food, and transportation. They rated the communication with the course coordinator as excellent. On average, the respondents indicated that the allotted time for studying or relaxing was just enough, but that a slightly higher per diem rate would be welcomed. The respondents rated the overall organization and coordination as good.

Summary of written responses

What other topics should be added?

The most frequently mentioned request from respondents was for **more genetic-based classes and lab training**. Indicated topics include nomenclature, race analysis, breeding genetics, gene identification, pathogen tagging and characterization, and gene postulation. A second mentioned request was for adding more classes on **rust subjects not covered by the course**. Suggested topics included climatology aspects in relation to rust epidemiology, field layout's effects on stem rust, and variants of Ug99. Respondents also requested that more time be devoted to trainees' country experiences/situations as well as adding a class on transferring information in their home countries.

What topics should be left out?

Only two respondents suggested specific topics be left out. The first indicated that the course should omit life cycle and pathogen related topics; the second expressed less time should be devoted to scoring field plots.

What are the constraints to using the new knowledge and skills at your work at the current institution?

Of the three participants who responded, all voiced that a lack of appropriate facilities and laboratories would act as the major constraint to applying the new knowledge of the course.

Would you recommend this course to other people? Why?

Every respondent indicated that they would recommend this course to others. The majority of respondents indicated they would recommend this course to **train for emerging problems and threats facing wheat**

production. Respondents feel the course helps increase human resources to combat threatened wheat production. Three respondents specifically refer to Ug99 with two highlighting the need for awareness of the its “imminent threat” and for equipping scientists with the tools to tackle the Ug99 challenge. A second common reason for course recommendation was to **increases scientist to scientist communication.** These respondents would recommend the course because it provides a forum for scientists to share new ideas and information on various topics. Others noted they would recommend the course to **involve and benefit individual countries.** One would recommend the course to others so that they may return to their home countries to share their acquired knowledge. Another person would specifically recommend the course to Southern European scientists to increase involvement from and within these countries.

What were the biggest strengths of the stem rust note taking and germplasm evaluation course?

The majority of responses cited the most useful aspects of the course were **both its field exercises and high quality lecturers.** Respondents valued the practical experience and field screening methodologies, especially standardization of stem rust scoring. Repeatedly, respondents mentioned the quality of lectures and diverse background of lecturers. In particular, three people cited Bob McIntosh as one of the most useful aspects of the course.

In terms of content, respondents appreciated the **interesting and diverse topics** covered. Frequently mentioned was the relevance of material and real-life applications. The organization and structure of the course was also praised, as were the exercises. The respondents also enjoyed the electronic availability of course material and notes.

What were the weaknesses of the course?

The primary concern of the survey was the **time spent visiting farmer fields.** Specifically, many respondents indicated the full day trip visit was time consuming and lengthy, and that the course could be strengthened by visiting a closer wheat growing area. Another voiced concern was the **lack of lab based race analysis.** These respondents felt the theory was well presented but little time was allowed for practical lab experience. Along the same lines, one respondent cited that the ratio of practical work to lectures was too low. A few respondents noted that there was some **redundancy in topics and lectures.** Finally, two respondents cited the changing schedule as a weakness.

Additional comments:

Two respondents suggested organizing a similar training course for stripe rust. Another respondent thinks that providing a summary of each lecture’s key points would help participants visualize and organize the most important information from each class. One person proposed training technicians, who will be directly utilizing the new information from the course, instead of managers. A suggestion was also made to include more countries, including Russia and Central Asian countries.

Detailed evaluation

What did you think of the course?

Course aspect	Average rating	
	Verbal	Numerical
Overall course rating	Excellent	4.6 (on a 5 point scale)
Meeting course objectives	Well	4.4 (5)
The balance between theory and exercises	Very good	2.6 (3)
The balance between different topics	Very good	2.6 (3)
The suitability of teaching methods used	Excellent	4.6 (5)
The relevance of provided learning materials and books	Very good	2.6 (3)
The amount of new information provided by the course	Average	3.7 (5)
The relevance of course content to participants' work/institution	Very relevant	3.6 (4)
The course length in relation to content	Slightly too long	3.6 (5, ranging from too long to too short)
The number of participants	Slightly too many	3.5 (5, ranging from too many to too few)
The communication between presenters and participants	Good	4.3 (5)
The interaction with other participants	Good	4.4 (5)
New interest generated in the participants	Good	4.3 (5)

Impact

	<i>% answering "Yes"</i>
Do you feel confident enough to share what you have learned with peers in your country?	96% (of 25 responses)
Following this course, are you willing to take the role of resource person in future in-country courses?	100% (of 25 responses)
Will you be able to use new knowledge and skills at your work (at current institution)?	100% (of 25 responses)
Would you recommend a course like this to other people?	100% (of 25 responses)

Logistics and administration

Aspect	Verbal	Numerical
Accommodation	Good	4.5 (on a 5 point scale)
Food	Good	4.4 (5)
Transportation	Good	4.1 (5)
Communication with course coordinator	Excellent	4.6 (5)
Enough time to oneself (study/relax)	Just enough	2
Level of per diems	Slightly not enough	1.6
Organization and coordination	Good	4.2 (5)

Attachment 1: List of participants of the course on 'Stem Rust Note Taking and Evaluation of Germplasm'
September 28 – October 7, 2009

Njoro Station of Kenya Agriculture Research Institute (KARI)

				
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Attachment 2 – Course itinerary

Date and Time	Content	Resource Persons
Sunday 27th Sept		
9:30 – 12:00	Bus leaves for Nakuru	
12:00 – 1:00	Check in Merica Hotel	
13:00 – 15:00	Buffet Lunch at Merica Hotel	
15:00 – 17:00	Registration/Submission of claims	Dorothy Nanzala
18:00 – 20:00	Cocktail group mixing – Merica Hotel	
Monday 28th Sept		
8:15	Bus leave for Njoro station (all to assemble at reception)	
9:00 – 9:15	Workshop opening	Kari Director
9:15 – 9:30	Overview of KARI Njoro station	P. Njau
9:30 – 10:00	Rust Screening facilities at Njoro	Davinder Singh
10:00 – 10:15	Group photo	
10:15 – 10:45	Tea	
10:45 – 11:30	Setting up the scene – Stem rust and Ug99 in general and global initiative	R. Singh
11:30 – 12:00	DRRW Project	G. Cisar
12:00 – 12:30	Overview of wheat research at CIMMYT and ICARDA	P. Kosina/ H. Braun
12:30 – 13:00	KARIN Njoro facilities tour	
13:00 – 14:00	Lunch	
14:00 – 16:00	Field visit – Screening nurseries (3 groups)	
16:00 – 16:30	Tea/Group discussion	
16:30	Bus leaves for Merica	
17:30	Payment of claims and per diems	Dorothy Nanzala
Tuesday 29th Sept		
8:15	Bus leave for Njoro station	
9:00 – 10:00	Stem rust epidemiology	D. Marshall
10:00 – 10:30	Discussion/Questions	
10:30 – 11:00	Tea	

11:00 – 12:00	Race-analysis and nomenclature	Z. Pretorious
12:00 – 12:30	Discussion/Questions	
16:00 – 17:00	Ug99 nomenclature and scoring scales	S. Bhavani
13:00 – 14:00	Lunch	
14:00 – 17:00	Field exercises (3 groups) – tea in field	
17:00	Bus leaves for Merica	
Wednesday 30th Sept		
8:15	Bus leave for Njoro station	
9:00 – 10:30	Cereal Rust Surveillance & Monitoring Systems - GPS and Survey Tools	Dave Hodson
10:30 – 11:00	Tea	
11:00 – 13:00	GIS exercises	Dave Hodson
13:00 – 14:00	Lunch	
14:00 – 15:30	Resistance gene identification: the basis of genetic analysis	B. McIntosh
15:30 – 16:00	Tea	
16:00 – 17:00	Group questions	B. McIntosh
17:00	Bus leaves for Merica	
Thursday 1st Oct		
8:15	Bus leave for Njoro station	
9:00 – 10:30	Trap nurseries and their use in pathogen monitoring	K. Nazari
10:30 – 11:00	Tea	
11:00 – 13:00	Field screening methodologies and slow rusting to stem rust-evaluations	S. Bhavani and D. Singh
13:00 – 14:00	Lunch	
14:00 – 15:00	Field exercises	
15:30 – 17:00	Stem rust research in barley in field	B. Steffenson
17:00	Bus leaves for Merica	
Friday 2nd Oct		
8:15	Bus leave for Njoro station	
9:00 – 10:00	Genetics and breeding for resistance	R. Singh
10:00 – 11:00	Standard Scales for recording seedling infection types and field disease severity/reactions	H. Bariana

11:00 – 11:30	Tea	
11:30 – 13:00	Stem rust research in durums	K. Ammar
13:00 – 14:00	Lunch	
14:00 – 17:00	Field exercise	
17:00	Bus leaves for Merica	
19:00	Group dinner	CIMMYT and KARI
Saturday 3rd Oct	Weekend – trip to Crater in the afternoon	
Sunday 4th Oct	Weekend - Safari to lake Nakuru	
Monday 5th Oct		
7:30	Bus leave for Farmers fields visit in Eldoret	
12:00 – 15:00	Farmer field visit	
15:30	Return to Merica hotel	
Tuesday 6th Oct		
8:15	Bus leave for Njoro station	
9:00 – 10:30	Use of fungicides in managing stem rust	R. Wanyera
10:30 – 11:30	Artificial inoculation in the field / Seedling screening & greenhouse facilities	R. Wanyera / M. Rouse
11:30 – 12:00	Tea	
12:30 – 13:00	Workshop conclusion	M. Gethi and B. McIntosh
13:00	Lunch	
14:00	Bus leaves for Merica	
Wednesday 7th Oct		
10:00	Return to Nairobi and Airport transfer	

Standardization of Stem Rust Note Taking and Evaluation of Germplasm, 2009

At the end of this course, participants will have completed a comprehensive overview of the nature of scoring stem rust and germplasm evaluation, and be equipped with information and skills to more effectively evaluate wheat for resistance to stem rust.

Aims

- 1) Participants will be exposed to practical, useful and stimulating educational experiences that will enable them to acquire sufficient understanding and knowledge to
 - a) Record, interpret, and report stem rust observations on adult plants
 - b) Evaluate wheat germplasm from many countries for stem rust resistance
 - c) Comment on recent developments in efforts to agree on standardized stem rust nomenclature
 - d) Make a significant improvement on standardizing practices for evaluating wheat for stem rust in their home countries

- 2) Participants will be encouraged to develop attitudes relevant to note taking and germplasm evaluation, such as
 - a) Appreciation of the need for standardized methods of recording, reporting, and interpreting stem rust observations
 - b) Necessity of international communication and cooperation to combat stem rust

Educational Objectives

- 1) Knowledge with Understanding
Trainees should be able to demonstrate knowledge and understanding related to:
 - a) Standardizing methods of recording, reporting, and interpreting stem rust observations
 - b) Standard scales for recording seedling infection types and field disease severity
 - c) Race analysis and stem rust nomenclature
 - d) Field screening methodologies
 - e) Stem rust research and epidemiology
 - f) Resistance gene identification
 - g) Use of fungicides and pathogen management
 - h) Slow rusting to stem rusting evaluations
 - i) Race-specific resistance genes and their expression in seedling and in field
 - j) Trap nurseries and their use in pathogen management
 - k) Stem rust research in durum and barely

- 2) Handling Information and Problem Solving
Trainees should be able to:
 - a) Understand standardized note taking methods and recent developments
 - b) Use information to practice effective note taking
 - c) Discuss and disseminate information regarding standard scales for note taking

- 3) Practical Skills
Trainees should be exposed to hands-on tools to:
 - a) Recognize and report stem rust using a standard scale
 - b) Interpret stem rust observations
 - c) Use lab and field methodologies to identify and score stem rust

Stem Rust Note Taking and Evaluation of Germplasm training course

General Evaluation

Nairobi, Kenya, 27 September - 7 October 2009

Your help in completing this questionnaire is appreciated. The information that you provide will be useful in planning future events like this and will help course organizers improve their materials and presentations.

Name (not obligatory): _____

Did you ever participate in **course similar like this** (at any country)? Yes No

If yes, could you please specify country and organization of the most recent course:

A. What did you think of the course?

In general, I would rate the course as: Excellent Good Average Poor Very poor

How well the course met its objectives: Very well Well Somehow Rather not Didn't at all

Balance between theory and exercises: Very good Satisfactory Unsatisfactory

Balance between different topics: Very good Satisfactory Unsatisfactory

Suitability of teaching methods used (e.g. presentations, practical exercises, discussions, etc.):
 Excellent Good Average Poor Not Suitable

Relevance of provided learning materials: Very good Satisfactory Unsatisfactory

Amount of new information provided during the module (a lot of new inf.) 5 4 3 2 1 (little new inf.)

Relevance of content to your work/institution: Very relevant Relevant Somehow Irrelevant

Overall length of the course in relation to content: (too long) 5 4 3 2 1 (too short)

Number of participants: (too many) 5 4 3 2 1 (too few)

Communication: presenters vs. participants Excellent Good Average Poor Very Poor

Interactions with other participants: Excellent Good Average Poor Very Poor

Degree of interest generated by the course: (a lot of new interest) 5 4 3 2 1 (no new interest)

B. What other topics should be added?

C. What topics should be left out?

D. Impact

Do you feel confident enough to share what you have learned with peers in your country/company? Yes No

Following this course, would you be willing to take role of resource person in future courses? Yes No

Will you be able to use new knowledge and skills at your work (at current institution)? Yes No

If not, what are the constraints? _____

Would you recommend course like this to other people? Yes No

Why yes/not? _____

E. Strengths & weaknesses

Please list what you consider to be 3 strengths and 3 weaknesses of the course

Strengths – most useful aspects of the course

1.
2.
3.

Weaknesses – least useful aspects of the course

1.
2.
3.

F. Logistics and administration

Was the accommodation satisfactory? Excellent Good Average Poor Very poor

Was the food satisfactory? Excellent Good Average Poor Very poor

Was the transport satisfactory? Excellent Good Average Poor Very poor

Communication - course coordinator vs. participants: Excellent Good Average Poor Very Poor

Did you have enough time for self study / relax? Moore than needed Just Enough Not enough

Is the level of Per diems (US\$ 30day) adequate? Need less [.....] It's just OK More is needed [.....]

How was the overall logistical organization and coordination? Excellent Good Average Poor Very poor

G. Additional Comments

Please write any comments or suggestions you may have.

What to improve/change; what would be more relevant for your country/institution; etc.
