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REPORT ON
INTERNATIONAL MASTER CLASS
ON
SOILBORNE PATHOGENS OF WHEAT

HENAN AGRICULTURAL UNIVERSITY, ZHENGZHOU, PR CHINA

9-20 MAY 2005

Introduction

This Master Class was conceived at a previous Master Class held on the same subject in Turkey in 2003. Two Chinese participants who were meant to attend that Class could not travel at the last minute because of SARS in China, but there had already been a feeling that China might merit its own special Master Class on the subject. This was because China is the largest wheat-producing nation in the world, and is relatively poorly trained in relation to soilborne diseases which are hard to detect and research.

The present Master Class was therefore organised for Chinese participants only. The specification was that participants:

- should be able to speak English quite well
- should be trained to Masters level or PhD
- should come from as many of the major wheat-growing provinces of China as possible
- should include some breeding and extension people as well as plant pathologists (as these disciplines would be important in application of results)

The Class was held at Henan Agricultural University in Zhengzhou. Henan is the largest wheat-producing province in China, and is central among the other wheat-growing provinces from which the participants were coming. Zhengzhou also has good access by rail (it has the largest rail junction in China, between major North-South and East-West lines), which was helpful because the participants came by train. Zhengzhou is also home to China's National Engineering Research Centre for Wheat (the home of at least one ACIAR project).

Administrative organisation

An Australian and a Chinese Organising Committee were set up early on, and kept in regular contact with each other especially in the later months. The Australian committee was Dr Maarten Ryder (scientific director of the Master Class), Dr Albert Rovira (Co-ordinator of the South Australian Program, which was the lead program for this Class) and Dr Paul Ferrar (Director of Master Classes).

The Chinese committee was:

Professor Tang Wenhua (China Agricultural University, Beijing; main Chinese instigator of the Master Class)

Professor Li Honglian (Department of Plant Pathology, Henan Agricultural University; experienced wheat pathologist and organiser of local arrangements in Zhengzhou)

Professor Ma Ping (Institute of Plant Protection, Hebei Academy of Agriculture and Forest Sciences; leading plant pathologist in a neighbouring province, and a good organiser and English speaker).

The two committees met face to face in Adelaide in late 2004, when the Chinese delegation visited on an ACIAR-funded trip. Some preliminary and broad discussion was held on the parameters of the Class.

Dr Maarten Ryder had intended to visit the China location in March 2005, but was prevented by events within CSIRO that kept him at home.

All participants and teaching staff lived and ate together in the Tao Li Yuan Hotel, a well-run and modern hotel on the campus of Henan Agricultural University. Lectures were held in a nearby lecture hall (about 5 minutes walk away) and practical classes were held in two laboratories of the Department of Plant Pathology (about 10 minutes walk from the hotel). Little time was thus wasted in moving from venue to venue, and the arrangements were very convenient. The only problem was on one day of very heavy rainfall, when all the streets between the venues were flooded with up to 100 mm of flowing water.

Chinese participants involved

The list of Chinese participants is given in Attachment 2. Participants came from 14 Provinces as follows (see Figure 1):

Qinghai, Inner Mongolia, Henan (3 participants), Jiangsu, Gansu (2 participants), Hebei (2 participants), Shandong (4 participants), Shaanxi, Shanxi, Hubei, Anhui, Heilongjiang, Beijing, Jilin

Figure 1. Provinces / regions of China represented at the Master class.



All major wheat-growing provinces of China were thus represented.

It had been intended that the Class would have a maximum of 20 participants with no more than 3 from any one Province. However, an extra senior person from Shandong turned up at the start believing that he had been given a place, and he was allowed to stay. The budget was sufficient to cover him.

There was a good gender balance – 8 female participants and 13 male participants.

Chinese experts involved

It was agreed early on with the Chinese Organising Committee that teaching in the Master Class would be by a combination of Australian and Chinese experts. This was to acknowledge the fact that China has some very good expertise in soilborne crop diseases and also because there were some diseases on which none of the Australians had enough experience to teach the subject. The Chinese experts who participated were:

Prof Dr Peng Deliang (Nematology Laboratory, Institute of Plant Protection, Chinese Academy of Agricultural Sciences) (assisted with nematology)

Professor Chen Jianping (President of Zhejiang Academy of Agricultural Sciences) (soilborne viruses)

Professor Zhang Xiaofeng (Director of Institute of Plant Protection, Hebei Academy of Agricultural and Forestry Sciences) (Chemical control of wheat soil borne diseases in China – lecture delivered by Dr Ma Ping).

Professor Li Honglian (Henan Agricultural University) (Sharp eyespot of wheat)

Professor Shang Hongsheng (Northwest Sci-Tech University of Agriculture and Forestry) (Fusarium head blight and pink snow mould)

Dr Yang Hetong (Biology Research Institute of Shandong Academy of Science) (biological control; also helped a lot with interpreting)

Professor Wang Xiaoming (Institute of Crop Science, Chinese Academy of Agricultural Sciences) (stalk rot of corn)

Talks were also given by Professor Tang Wenhua (CAU), Professor Yin Jun of the National Engineering Research Centre for Wheat, and representatives of the Henan Plant Protection and Quarantine Station, Syngenta and Bayer – all of whom were also donors to the Master Class.

Australian experts involved

Australians participating in the Master Class were as follows:

Dr Maarten Ryder – CSIRO Land and Water, Adelaide. Overall Scientific Director of the Master Class.

Dr Albert Rovira – Coordinator of South Australian Program of the Crawford Fund. Also lectured and provided many words of wisdom.

Professor Lester Burgess – University of Sydney.

Dr Hugh Wallwork – South Australian Research & Development Institute, Adelaide.

Dr Ian Riley – South Australian Research & Development Institute, Adelaide.

Dr Paul Ferrar – Crawford Fund Master Class Director (administrative role only).

It had earlier been intended that Dr Kathy Ophel-Keller of SARDI would also attend the Master Class as a teacher, but in the end she was not able to go. Her presentations on molecular aspects of soilborne pathogens and a new test to detect the pathogens in soil were delivered instead by Dr Ian Riley.

Crawford did allocate funds for a young Postdoctoral Fellow from the University of Sydney, Dr Jillian Smith-White, to attend the Master Class, following the success of two such attachments at the Turkey Master Class. However, it was found that she was in the early stages of pregnancy just before the Class and she was advised not to travel for medical reasons.

Other international experts involved

Dr Julie Nicol – CIMMYT nematologist currently based in Turkey. Was local organiser of the previous Master Class on Soilborne Pathogens of Cereals in Turkey in 2003, and her experience with that Class proved very valuable for this one. [Julie is Australian by nationality.] Her air travel was provided by CIMMYT as part of their contribution to the Master Class.

Associate Professor Stephen Neate – North Dakota State University, Fargo, USA. [Stephen is also Australian by nationality.] Stephen was in China immediately before the Class on separate funding, and the Class paid for his return travel from Beijing to Zhengzhou only. Stephen came for about 4 days of the Class towards the end.

Dr He Zhonghu – head of CIMMYT's China Program, based at the Chinese Academy of Agricultural Sciences in Beijing. Because of a busy schedule Dr He was only able to come for the first day, but he presented valuable overview papers on wheat in China – production, locations, statistics, problems, etc., and he described the overall CIMMYT program in China. Dr He is a plant breeder by original training. His travel was provided by CIMMYT as part of their contribution to the Master Class.

Dr Tomohiro Ban – Japan-CIMMYT Fusarium Head Blight Project, CIMMYT, Mexico. Dr Ban was only able to come for a very short time towards the end, but he made a useful contribution in relation to certain diseases and breeding for resistance. His air travel was provided by CIMMYT as part of their contribution to the Master Class.

Funding

Funds were raised both in China and elsewhere. In China support was received from Henan Agricultural University, China Agricultural University, the National Engineering Research Centre for Wheat (Zhengzhou), Henan Plant Protection and Quarantine Station, Henan Society for Plant Pathology, Syngenta China Investment Co Limited, Bayer CropScience (China) and Xinjiang Kangzheng Agri-science and Technology Co Limited.

The ATSE Crawford Fund provided funds from central (Master Class) funds and from the South Australian branch. CIMMYT also provided support, both directly as cash and in providing three members of their staff to attend the Master Class. The Australian Centre for International Agricultural Research (ACIAR) and the Kirkhouse Trust both provided cash, and CSIRO, the University of Sydney and the South Australian Research and Development Institute (SARDI) provided in-kind support through provision of teaching staff.

The Chinese Organising Committee delivered a full financial reconciliation of the funds supplied, together with bank receipts, on the last evening of the Master Class – an impressive achievement on top of all the other tasks that they had with the Class.

Difficulties of money transfer

The Australian and international (CIMMYT, Kirkhouse Trust) funds were transferred to China electronically to an account nominated by Henan Agricultural University at the Agricultural Bank of China. Transfer by cheque would have been possible, but international cheques have a 40-day clearance period in China, and the fine detail of the budget was not finalised in time for that. In hindsight it would have been best to transfer the bulk of the funding by cheque early on, and transfer the balance electronically later when the final total was known.

The funds were transferred by the Commonwealth Bank nearly two weeks before the Master Class was due to start. Over the next three days it had not been received by the nominated account – then the banks (and everything else) closed for an entire week for International Labour Day. A check on Day 1 of the Master Class showed still no money, and this continued for days to the increasing financial embarrassment of the Chinese organisers. It took desperate contacts with both the Australian and Chinese banks to locate the money and get it credited to the Chinese account – well past the eleventh hour. Our thanks are due to Dr Bob Clements for frequent contact with the Commonwealth Bank in Australia to find out code numbers by which the money could be located in China.

It turned out that the following had happened. The Commonwealth Bank was asked to make the transfer in Chinese Yuan, but they said they could not do this. They sent it as Australian dollars, which was promptly rejected and returned by the Chinese bank. On a second try the Chinese bank agreed to accept the money, but did nothing with it. It also turned out that the Commonwealth Bank sends its electronic transfers to the Bank of China, which should then have transferred the funds to the nominated bank. After great difficulty the money was located in the Bank of China, but even then they refused to transfer it immediately. They transferred nothing on the first day, and then instalments of \$10,000 per day thereafter (for a total amount of over \$45,000). No explanation was given for the delay.

This major problem is reported in some detail in the interest of avoiding similar problems in the future.

Master Class program

Full detail of all lectures, practical classes and teachers are shown in the Program in Attachment 1.

Publications

The Australian, international and Chinese teaching staff produced a series of chapters to make up a Training Manual for the Master Class, which was sent electronically for printing in China. The Chinese did a very good job with the production of the Manual, which is good enough to be used as a *de facto* textbook on the subject of soilborne pathogens of wheat in China and how to go about studying them. Subsequently the Chinese team placed the full text of the Manual on the China National Knowledge Infrastructure (CNKI) website in the Library of the University of Science and Technology of China, from where it will be available to all.

In earlier discussions, however, ACIAR and CIMMYT indicated interest in co-publishing a permanent Manual on the subject, with global coverage. It is likely that the Manual from this Master Class will be used as the basis of the new one, and the present authors will contribute the same chapters to the new one.

ACIAR donated 50 copies of Hugh Wallwork's illustrated guide to soilborne pathogens of cereals, co-funded by ACIAR and GRDC. This was well received by the Class participants. CIMMYT also produced a special CD-ROM with a large number of relevant papers copied on to it. Some missing papers from the set of references distributed to the Class were to be copied by CIMMYT on to a second CD-ROM after the Class.

Extra spin-offs from Master Class

The permanent Manual mentioned above will be one valuable spin-off from the Master Class.

During the Class it emerged that there were some recent discoveries of a Cereal Cyst Nematode (CCN; species not yet determined) in areas of China where it had not been known before. Then on the visit to farmers' fields on Day 2 of the Master Class, we discovered some quite heavy infestations in the crops inspected. The Chinese Organising Committee considered that this was revealing a serious threat to wheat for the future, and the situation needed further investigation and maybe lobbying of the Chinese Government for funds to work on the problem.

It was therefore decided to drop some scheduled (relatively casual) visits on the Sunday in the middle of the workshop, and instead send out three nematode survey teams to three surrounding provinces – Shandong, Anhui and Hebei. Professor Tang indicated that a small amount of extra funding might be needed to cover the car hire, and I was happy to offer this on behalf of Crawford, but in the event the existing funds covered the extra.

CCN was found in all three provinces, making infestation then confirmed in four contiguous provinces. This was sufficient for Professor Tang to say that representations could now be made to the Chinese Government. He also informed the plant protection services of the various provinces about the discoveries and their significance. In addition, CIMMYT indicated that it would cooperate with China to help solve the problem.

Master Class participants in relevant provinces decided to set up a national website and network on CCN, and this was already being done as the Class concluded. Dr Julie Nicol has played a role in organizing the CCN network and her involvement will mean that CIMMYT can assist the future development of the network.

A lot of common interest was also found in the fungal pathogen *Pythium*, which was one of the Class topics. The Class also agreed to set up a website and network for *Pythium*, and this too was being done as the Class closed.

Further, a program on *Fusarium* and other pathogens is being established between Prof Burgess at Sydney University and staff of Gansu Agricultural University. This may involve student training in Australia.

These developments beyond the immediate bounds of class teaching are valuable extra benefits from the Master Class, and they show the value of bringing together a group of relative experts on a particular topic and discussing that topic in detail.

Presentation of Master Class certificates

The Class closed with the traditional presentation of certificates at a formal closing ceremony. The Chinese team did an amazing job in producing the certificates. On the Friday mid-morning we made the last editorial corrections to the certificates; on Friday at 5 pm we presented the certificates, which were beautifully printed on parchment paper and fastened into hard card, folding covers. Very elegant, and much appreciated by the participants.

The Class also chose to present two special certificates, mounted in different coloured covers from the other ones. The first was to Professor Tang Wenhua and recognised his lifetime achievement in Chinese and international plant pathology; the other was to Dr Albert Rovira to recognise his lifetime achievement in international soil science and plant pathology. A gathering of expert soil pathologists seemed an appropriate forum in which to recognise these two very distinguished scientists. The presentations were kept secret from them, and they appeared to appreciate the gesture and the surprise.

Australian journalist at Master Class and elsewhere in China

Cathy Reade of Crawford's public awareness program supported Ms Sally White, senior grains writer of Australia's Rural Press to attend part of the Master Class. Sally attended the first few days of the Class (including the field trip to farmers' fields), and then went for seven days to visit a number of ACIAR projects in Hangzhou and Beijing. She then returned to Zhengzhou for a visit to the National Engineering Research Centre for Wheat (location of another ACIAR project), and finally the Master Class again for the last day.

Sally professed herself very pleased with these visits, and said that she obtained stories and photographs that would make a series of articles on her return to Australia.

It will remain for Crawford to see whether or not the articles are a good return on the travel investment.

Feedback from participants

Feedback was sought from participants by circulating a questionnaire with 13 questions, for return by the end of the Class. This proved a very valuable exercise for future planning, since it revealed a number of areas where the content or the balance of the Class was not optimal. A summary and analysis of the answers is given in Attachment 3, and gives useful feedback for any future Master Classes in China.

Comment by Director of Master Class Program (Paul Ferrar)

I believe that this was a very successful Master Class that was greatly appreciated by the Chinese participants – and indeed the Chinese organisers. Professor Tang Wenhua kept describing it as a great event for Chinese plant pathology, and it may have been one of the first to teach plant pathology at such a high level using international experts in addition to the Chinese experts.

Both Organising Committees worked hard on the Program for the Master Class, and we tried to judge what the participants would know and what not, how far lectures should be balanced by practical classes, and how good the participants' skills in English would be (which determined how much could be taught in the time available). In the end we misjudged all those factors to some degree, but I doubt that we could have done better. I feel that the Class still achieved a very great deal.

I should also mention the spin-off benefits of the new Manual, the Cereal Cyst Nematode (CCN) Network, the *Pythium* Network, the proposed national survey for CCN and the work on *Fusarium* in Gansu province. Master Classes cannot necessarily be expected to create such additional initiatives, and I feel that these are very valuable – not only for the networks themselves but also for the demonstration to the participants of what can be done when a group of experts gets together and determines a practical course of action. We gave Professor Tang (who is very experienced in lobbying for funds and official action) good ammunition to take these initiatives forward, and he will certainly not let them wither.

It was interesting to observe the Chinese reaction to the interactive style of teaching that has been pioneered in Master Classes. In China teaching is didactic – a lecturer stands and delivers a lecture to an audience that listens in silence and does not talk back. In Master Classes teachers stand among the participants, talk directly to them, and ask questions that expect immediate answers. For the first day or so this style was clearly a shock, but after that the participants very much warmed to it (helped by the fact that they had then met the teachers socially over the dinner table), and by the end they were telling us that they would take that style back to their provinces (a number of them were university teachers).

Paul Ferrar
Canberra

Maarten Ryder
Adelaide

August 2005



Prof Burgess and participants in the classroom at HAU



Symptoms of sharp eyespot – a serious wheat disease



Visit to farmers' fields: Dr Ma Ping, Dr Julie Nicol, local farmer and Prof Tang Wenhua

**INTERNATIONAL MASTER CLASS ON
SOILBORNE PATHOGENS OF WHEAT**

PROGRAM

Henan Agricultural University, 9-20 MAY 2005

Day	Event/lecture	Time	By whom	Comments
Sunday 8 May	Registration	All day	Li Honglian	
Day 1 Monday 9 May	Official opening	0830-1000	Prof. Zhao Weidong, Vice President of HAU Mr. Luo Quiwu, Deputy Minister of Agriculture Department in Henan province Dr. Albert Rovira Dr. Paul Ferrar	Chaired by Prof. Tang Wenhua Dr. Paul Ferrar
	Class photograph			
	REFRESHMENT BREAK	1000-1030		
	Introduction to Master Class: summarise program, aims, how we will work together, 'Scenario' idea (for later in Class) Circulate feedback questions	1030-1050	Lester Burgess	
	Wheat production systems (spring wheat, winter wheat, management, irrigation, rotation, crop residue)	1050-1120	Prof He Zhonghu	This talk in English, because Australian experts needed background
	Genetics and screening for resistance of wheat	1120-1200	Prof. He Zhonghu	
LUNCH BREAK	1200-1330			

Day	Event/lecture	Time	By whom	Comments
[Day 1 continued]	Key features of soilborne pathogenic fungi	1430-1500	Lester Burgess	
	Key features of nematodes	1500-1530	Ian Riley	
	Key wheat diseases: soilborne and foliar	1530-1600	Tang Wenhua	
	Australian perspective of diseases to be covered	1600-1620	Hugh Wallwork	
	BREAK	1620-1635		
	Introduction to field trip, sampling and assessment	1635-1730	Li Honglian, Lester Burgess, Ian Riley, Julie Nicol, Ma Ping	
	Welcome banquet hosted by HAU	1830-2030	Toast by HAU Vice president	
	Informal meeting at which participants introduce themselves including their experience and topics they are interested in discussing in the class [Presentations by participants on other evenings]	During Dinner	Ma Ping Tang Wenhua All participants Participants	
Day 2 Tuesday 10 May	Field trip to Yuan Yang County, 80 km from Zhengzhou	Start 0800	Li Honglian All participants	Sharp eyespot, take all, root rot nematode and other disease collections
	LUNCH BREAK	1200-1400		
	Field trip to Xushui Town for cyst nematode	1400-1630	Li Honglian Zhouzhou Plant Protection Station	

Day	Event/lecture	Time	By whom	Comments
Day 3 Wednesday 11 May	Work in the pathology lab on plant material collected on yesterday's field trip, and also material that participants brought from their home provinces, or collected in advance from the HAU farm plots that were established for the class. Washing, extraction, plating	Start 0800, work to take all day	Li Honglian, Julie Nicol, Ian Riley, Lester Burgess, Ma Ping, Maarten Ryder	
Day 4 Thursday 12 May	Summary of farming systems, and minimum tillage and its impact on root diseases	0800-0900	Albert Rovira	
	Take-all	0900-1030	Hugh Wallwork	
	BREAK	1030-1100		
	Nematology: Biology and Ecology	1100-1200	Ian Riley	
	LUNCH	1200-1400		
	Laboratory session on nematodes	1430-1600	Julie Nicol, Ian Riley, Peng Deliang	
	BREAK	1600-1630		
	Population Dynamics of nematodes	1630-1730	Ian Riley	

Day	Event/lecture	Time	By whom	Comments
Day 5 Friday 13 May	Root lesion nematodes (RLN)	0800-0900	Julie Nicol	
	Common root rot, Pythium, eyespot, base rot	0900-1030	Hugh Wallwork Maarten Ryder	
	BREAK	1030-1100		
	Cereal Cyst Nematode (CCN)	1100-1200	Julie Nicol	
	LUNCH	1200-1430		
	Laboratory work: class split into two groups, who changed over half way through the afternoon One group on fungi One group on nematodes	1430-1730	All experts, Peng Deliang	Participants check isolations
	Presentations by some participants on their institutions and work programs	From 2000	Participants	
Day 6 Saturday 16 May	Whole day tour to Kaifeng city, ancient capital of Song Dynasty, Lunch in Kaifeng	0730-1700	Li Honglian and assistants	
Day 7 Sunday 16 May	Nematode sampling trips to Hebei, Shandong and Anhui Provinces	0800-1130	Selected Chinese and Australian experts	Cereal cyst nematode sampling

Day	Event/lecture	Time	By whom	Comments
Day 8 Monday 16 May	Introduction to molecular diagnostics	0800-0900	Hugh Wallwork	Paper by Kathy Ophel-Keller
	Sharp Eyespot	0900-1000	Li Honglian	
	BREAK	1000-1030		
	Rhizoctonia bare patch	1030-1130	Stephen Neate	
	LUNCH	1200-1430		
	Viruses	1430-1530	Chen Jianping	
	Laboratory session Rhizoctonia diseases Viruses diseases	1530-1730	Li Honglian	
Day 9 Tuesday 17 May	Introduction to Fusarium biology/ taxonomy	0800-0900	Lester Burgess	
	Fusarium head blight (FHB)	0900-1030	Stephen Neate, Tomohiro Ban, Shang Hongsheng	
	BREAK	1030-1100		
	Crown rot and foot rot	1100-1200	Lester Burgess	
	LUNCH	1200-1330		
	Pink snow mould	1430-1530	Shang Hongsheng	
	Laboratory session on Fusarium Fusarium, Pink snow mould	1530-1730	Shang Hongsheng, Li Honglian	
	Presentations by some participants on their institutions and work programs	From 2000	Participants	

Day	Event/lecture	Time	By whom	Comments
Day 10 Wednesday 18 May	Control of soilborne diseases:			
	Introduction	0800-0815	Lester Burgess	
	Chemical control	0815-0900	Hugh Wallwork, Zhang Xiaofeng (presented by Ma Ping)	
	Biological control in Australia	0900-1000	Maarten Ryder	
	BREAK	1000-1030		
	Biological control in China	1030-1130	Yang Hetong	
	LUNCH	1200-1330		
	Field trip to HAU farm plots (15 km away): to inspect breeders' plots, disease nursery and control experiments (biological and chemical)	Start 1430, for whole of afternoon	Li Honglian, Ma Ping, Wang Huiwei	
	Presentations by final participants on their institutions and work programs	From 2000	Participants	
Day 11 Thursday 19 May	Genetics of resistance	0800-0900	Hugh Wallwork, Julie Nicol,	
	Screening, Breeding for resistance	0900-1000	Hugh Wallwork, Julie Nicol	
	BREAK	1000-1030		
	Disease prediction: survey samples, planning for sampling (DEST project)	1030-1130	Ian Riley	Paper partly by Kathy Ophel-Keller
	LUNCH	1200-1330		
	Stalk rot of corn	1430-1530	Wang Xiaoming	
	Preparation of "Scenarios"	1530-1800	All participants (in groups)	

Day	Event/lecture	Time	By whom	Comments
Day 12 Friday 20 May	Progress of research on wheat in NERCW	0800-0900	National Engineering Research Centre for Wheat (NERCW) Prof Yin Jun	
	Progress of wheat disease control in Henan	0900-0930	Henan Plant Protection & Quarantine Station (HNPPQS) Senior expert	
	Control of Wheat eyespot by Celest	0930-0940	Representative of Syngenta	
	Control of Wheat diseases by Raxil	0940-0950	Representative of Bayer	
	BREAK	1000-1030		
	Presentation of "Scenarios"	1030-1130	Selected participants (representing groups)	
	LUNCH	1200-1430		
	What should be done next, and how? FEEDBACK on the class	1430-1700	Ma Ping to coordinate discussion	Possibly time in the lab for those who want it
	Closing Ceremony, including graduation (presentation of certificates) Certification awarded	1730-1800	Senior HAU person Prof. Yin Jun, deputy director of NERCW Zhao Yongqian station master of HNPPQS Maarten Ryder, Julie Nicol, Li Honglian	Chairman: Dr. Albert Rovira Also presentation of official gifts

Note: Ma Ping and Tang Wenhua were responsible for organising translation in the workshop.

Timetable for meals:

1. Breakfast 0700-0800
2. Lunch 1200-1330
3. Supper 1830-2000

ATTACHMENT 2

THE PARTICIPANTS OF INTERNATIONAL MASTER CLASS ON SOILBORNE PATHOGENS OF WHEAT

NO.	Province	Name	Sex	Position	Degree	Unit	Phone/Mobile	E-mail
1	Qinghai	Hou Shengying	F	Associate Prof.	Bachelor	QAAS	0971-5311195 13997157201	houshengying@yahoo.com.cn
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SUMMARY AND ANALYSIS OF PARTICIPANTS' FEEDBACK

Feedback was sought from participants by circulating a questionnaire with 13 questions, for return by the end of the Class. This revealed a number of areas where the content or the balance of the Class was not optimal, and comments are summarised and analysed below. This is useful feedback for any future Master Classes in China.

1. What do you think is the most important thing you have learned from the Class?

This varied quite a lot between participants, but common themes were:

- learning methodologies for studying both fungi and nematodes
- methods for counting nematodes in the soil
- methods for isolating pathogens
- laboratory work in general
- understanding that there are more pathogens affecting wheat than the participant had realised
- techniques for identifying pathogens
- control or integrated management of wheat diseases
- gaining of new ideas
- how to improve my research direction and exchange ideas
- confidence now to do trials myself

2. What were the two most important aspects of the Class activities for you?

- **Lectures**
- **Laboratory sessions**
- **Discussion groups**
- **Field work**
- **Meeting with other scientists with similar interests**
- **Something other than the above – give details**

The results of this survey were:

12 people nominated laboratory sessions
8 people nominated lectures
7 people nominated meeting of other scientists
5 people nominated field work

Under “Other”, one person nominated “Information about research for my studies”.

Nobody nominated Discussion groups. In discussion of this result during the feedback session, it appeared that participants had not been sure what exact part of the course this meant, so they had not voted for it.

The strong positive response to Laboratory Sessions also reflects other answers and feedback.

3. Did you have any language problems? If so, please give details.

It was clear from the responses that many (most?) participants had trouble with English at some stage of the Class. Most said that they had little or no trouble with everyday English, but many had trouble picking up technical scientific terms and also names of chemicals, etc. It seemed clear that the Australians misjudged somewhat the level of this difficulty. In future courses it would be helpful to have technical terms and names written on boards as well as spoken. A compounding factor was also the speed at which some Australians spoke – when specialist terms are being used, there is a need to go particularly slowly.

4. Did you find anything missing from the Class? If so what would have liked to have been included?

Items nominated included:

- not enough time for discussion among participants, and between participants and Australians
- **principles** for understanding soilborne disease and ecology of pathogens
- not enough on Australia's own research and results
- not enough translation
- references on pathogen taxonomy
- not enough face to face exchange (i.e. one-on-one teaching)
- not enough information relating to extension services and farmers
- a party!

5. What was your opinion of the Class Manual?

This was widely praised, and there were no real criticisms. Some participants wondered whether the material could have been presented on CD-ROM more cheaply, but it was pointed out that it was easier to have a printed Manual for quick reference in the Class than a CD-ROM which required a computer.

The only thing missing was felt to be information on the Class lecturers (an oversight). Some participants thought that the Manual contained very valuable detail, but even more detailed information would have been even better. We noted that there are plans for a comprehensive Manual to be co-published, possibly by CIMMYT, ACIAR and the Crawford Fund, which should fill that need.

Some participants thought that more pictures of laboratory equipment would have been useful (but the next Manual should help there). Some also thought that more time should have been allowed for participants to read the Manual (but it was partly intended as a resource for when they go home – we knew that not all could be read and digested during the Class).

6. How has your view of soil borne diseases of cereals changed as a result of the Class?

Almost every participant said that they now know that there are more soilborne diseases than they had previously realised; some also said that they realise these are more important diseases than they had known, and that there is a need for more research in their province. This is a valuable outcome. Some noted that they now had more practical familiarity with the diseases. One noted that they had realised the importance of rotation and other control measures; one said it was necessary to cooperate with extension services, influence policy makers and educate farmers.

7. Has the range of your professional contacts changed as a result of this Class? If so please describe what has happened.

Most participants felt that their range of contacts had changed substantially – between themselves and also between participants and overseas scientists (i.e. those teaching the Class). Some felt there had been only a slight change; one felt that it was useful that there was now contact between mycologists and nematologists.

8. What should be done now to reinforce the activities of this Class?

The major response by far was formation of networks, talking between each other, exchanging emails, etc. No specific projects were nominated, though one person felt that the next step should be to practice what they had just learned. One also felt that the next step was to persuade the government to provide more support.

9. Were the accommodation, meals and general arrangements appropriate? If not, could you provide details?

The accommodation, meals and other arrangements were generally praised. One person commented that it was too hard to get Internet access from the hotel (which the Australians also found); one felt the meals were not enough (maybe because we were late for meals a few times and food tended to run out). One felt that there should have been some entertainment or music or sports, i.e. more recreational activity.

10. If we ran the Class again, what changes would you recommend?

There were a number of responses made by more than one person:

- it would have been better if the Class could have been three weeks instead of two (agreed by all, but the problem is finding teachers who can stay away that long)
- it would have been better to have more laboratory work and less lecturing (a common theme)
- it would have been better to send the Manual and other information to participants in advance, so that they could have done more background reading and preparation before the Class started) (also a common theme)
- the teachers should speak more slowly (again a common point)
- extension experts could have been invited
- one person felt the lectures could have been better planned to include only key information, since time was limited (“Cherish lecture time, show valuable thing only”), and several thought that some presentations could have been dropped altogether and the time used better

11. How do you propose to pass on the information you have learned to your colleagues in your home institution?

Every participant said that they would give lectures or seminars when they got home. Several said that they would also copy written material for circulation.

12. Will it be difficult to implement the knowledge you have learned from the Class into your work activities in your home institution? If so, can you provide details?

Most thought that it would not really be hard, though it would need some effort and application. A few felt that lack of equipment (especially but not only for nematology) would be a problem, and also lack of funding. Two felt that they would still not be able to undertake molecular work. One wrote: “Research no problem; changing the system huge problem!”

13. Are there any comments you would like to make that are not included in items 1 - 11 ?

One person felt that there had been too wide a difference in English language ability between participants. One felt that more Master Classes were needed in China, and we would be welcome to return.