



Training Course



Evaluation of tropical legume germplasm for livestock nutrition and soil improvement

Documentation & Lecture Notes

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Hanoi, Vietnam 12 - 15 April 1999

***Vietnam Agricultural Science Institute
&
Institute of Plant Production and Agroecology
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Preface

Legumes are known to be the second most significant plant family, after the grasses, with regard to their economic importance. This statement refers almost exclusively to species for human nutrition while neglecting other purposes. However, at least since sustainability issues and natural resource management concerns have been gaining momentum in the tropics, the role of legumes other than for human nutrition is increasingly being recognised, especially for low external input production systems. This refers particularly to the potential of legumes for (i) soil conservation and soil fertility improvement, and (ii) livestock nutrition.

In spite of the recognition of the need to develop adapted legume technologies, research on tropical legumes other than for human consumption is still lacking far behind. One of the reasons is that appropriate, easy to apply research methods are not always readily available. This is particularly true for research concerned with the potential of legumes to protect and improve the soil but also regarding their potential for livestock nutrition.

In this context the wide, as yet unexplored gene pool of tropical species deserves particular attention. It is suggested that rather than concentrating on some commercial or semi-commercial lines, the broad range of wild (native and naturalised) species and genotypes, and cultivated (yet unimproved) varieties and landraces be explored, properly characterised, and evaluated.

The idea of this training course on "Evaluation of tropical legume germplasm for livestock nutrition and soil improvement" was born during the discussions on a collaborative-research agenda between the University of Hohenheim and the Vietnamese research partner institutions VASI (Vietnam Agricultural Science Institute), NIAH (National Institute of Animal Husbandry), Hanoi Agricultural University, and Thai Nguyen University of Agriculture and Forestry. It was felt that such a course, based on the combined training course experiences in South America, Africa, and Southeast Asia, would be a very useful endeavour and that beside stimulating the awareness of the soil improvement and forage potential of non-grain legumes, it would offer an urgently needed exposure of students, researchers and extensionists to methodological aspects of germplasm evaluation and related research issues.

On behalf of the lecturers from the University of Hohenheim I wish to express our sincere appreciation for the cooperation and friendship that we experienced during the course from the organising institution VASI, our Vietnamese lecturer colleagues, and the and the highly motivated course participants.

Rainer Schultze-Kraft

VASI – University of Hohenheim cooperation:

Tropical Legume Evaluation Course 1999

Course Programme

Title: *Evaluation of tropical legume germplasm for
livestock nutrition and soil improvement*

Venue: Vietnam Agricultural Science Institute (VASI), Hanoi, Vietnam

Date: 12-15 April 1999

Note:

- It is intended to complement this course in 2000 by a second short course "Collection and Preservation of Native Legume Genetic Resources".
- 1.5 hs "Lecture" means 60 min. lecturing and 30 min. discussion.
- "Group work" refers to 60-90 min discussion of a specific topic among members of the respective working group with the aim of a "Presentation" – 10-15 min. per group – of the respective results (first thing next morning).
- The "practical exercise" on days 2 and 3 will consist of the preparation (seed scarification etc.) and establishment of a legume germplasm evaluation field trial at VASI. Germplasm to be used in this trial will consist of a set of 20 "best bet" legume species and accessions with potential for North Vietnam; the seed has been provided by CIAT (Cali, Colombia) and ILRI-IITA (Ibadan, Nigeria) through the University of Hohenheim. It is suggested that this trial be continued by VASI at least until the Genetic Resources Preservation course in 2000 (when the results can be analysed and discussed).

12 April 1999 (day 1):

Hour	Subject	Presenter
0800 h	Registration	VASI
0830 h	Course Opening	Prof. Tran Dinh Long
	Presentation of course objectives and of participants	Prof. Rainer Schultze-Kraft
	Course Organisation	Axel Schmidt, MSc
0900 h	Lecture 1: Tropical legumes in agricultural production and resource management: an overview	Prof. Rainer Schultze-Kraft
1000 h	Tea break	
1030 h	Lecture 2: Botany, rhizobiology and biogeography of tropical legumes	Prof. Rainer Schultze-Kraft
1200 h	Lunch break and group photo	
1300 h	Lecture 3: Experiences with evaluation of legume genetic resources in Vietnam	Prof. Tran Dinh Long
1400 h	Tea break	
1430 h	Lecture 4: The Hohenheim/VASI project - <i>"Identification of Diversity Centres to Preserve Genetic Resources of Legumes for Sustainable Development of the Vietnamese Highlands"</i>	Bettina Heider, MSc
1600 h	Group work	All
1700 h	Welcome dinner at VASI	VASI

13 April 1999 (day 2):

Hour	Subject	Presenter
0800 h	Presentation of group work results	Vietnamese scientists
0900 h	Lecture 5: Diversity of legume germplasm for livestock nutrition and soil improvement in Vietnam	Prof. Luu Ngoc Trinh
1000 h	Tea break	
1030 h	Lecture 6: Germplasm evaluation for livestock nutrition - Part I	Prof. Rainer Schultze-Kraft
1200 h	Lunch break	
1300 h	Lecture 7: Germplasm evaluation for livestock nutrition - Part II	Axel Schmidt, MSc
1430 h	Tea break	
1500 h	Practical exercise: Preparation for establishment of field trial	All
1600 h	Group work	All

14 April 1999 (day 3):

Hour	Subject	Presenter
0830 h	Presentation of group work results	Vietnamese scientists
0930 h	Practical exercise: Establishment of legume germplasm evaluation field trial	All
1200 h	Lunch break	
1300 h	Practical exercise: Establishment of legume germplasm evaluation field trial (continued)	All
1400 h	Lecture 8: Germplasm evaluation for soil improvement - Part I	Dr. Lambert Muhr
1530 h	Tea break	
1600 h	Group Work	All

15 April 1999 (day 4):

Hour	Subject	Presenter
0800 h	Presentation of group work results	Vietnamese scientists
0900 h	Lecture 9: Germplasm evaluation for soil improvement - Part II	Dr. Lambert Muhr
1030 h	Tea break	
1100 h	Lecture 10: General aspects of germplasm evaluation statistics	Axel Schmidt, MSc
1230 h	Lunch break	
1330 h	General discussion and course evaluation	All
1500 h	Closing ceremony (incl. awarding certificates to participants)	Prof. Nguyen Huu Nghia - Director General VASI & Prof. Rainer Schultze-Kraft

Objectives of the Training Course

At the end of the course, participants

- became interested in legumes other than well-known species for human nutrition
- are aware of the multifunctionality (multiple-purpose role) potential of tropical legumes, especially regarding soil conservation and improvement
- are particularly aware of the potential of forage legumes in integrated (i.e. crop/livestock production systems)
- are familiar with some botanical and rhizobiological basics of legumes, including access possibilities to important botanical information
- are aware of the importance of genetic resources of native legumes and the need of their preservation
- are able to establish and conduct germplasm evaluation trials for assessment of the potential of legume species and ecotypes for livestock nutrition and soil improvement
- are prepared to actually use the new knowledge, develop it further in future research activities, and transmit it to fellow researchers, students and/or farmers