

---

---

# ***PALAWIJA***

# ***NEWS***



The CGPRT Centre Newsletter

---

Volume 10, Number 1

March 1993

---

Field note:

## **DT80 Soybean in the North of Viet Nam**

Le Quang Hanh; Le Dinh Son\*

### **Soybean producing areas in South Viet Nam**

"In South Viet Nam the two main soybean producing areas lie in Dong Nai Province (eastern South Viet Nam) and the Mekong River Delta.

Most soybean is grown in Yellow-Brown Basalt-derived Feralite soil with a fine topsoil and many surface rocks. These soils have a deep water-table which has an average pH value of 5. The wet season extends from May to November with an average annual rainfall of 1,500 mm. The rainfall is heavy in June, August and September decreasing quickly in October and November. Soybean farming is not mechanized. In the Mekong River Delta alone the total area under soybean is about 20,000 ha. This region produces about one third of the national crop" (Tu Bich Thuy, 1990, Workshop on Priorities for Soybean Development in Asia, Bogor, in press).

### **Introduction**

In this note, we would like to bring to the attention of researchers the results of surveys on DT80 soybean production carried out by the authors for the National Pulse Crop Research Centre in 1986 and 1987. Follow-up surveys were done for the Agricultural Research Centre of Phu Qui in 1989-1992.

DT80 soybean is a hybrid of V70 and V.M.C. (L.Q. Hanh 1988). It is a good variety, normally grown during the summer - autumn season, but sometimes it is planted in late spring. It has now

\* Phu Qui Agricultural Research Centre, Pulse Crop Research Centre of Viet Nam Department of Agriculture and Extension, Nghe An, Thanh Hoa, province.

been introduced to many northern provinces such as: Thanh Hoa (north central coast); Ninh-Binh (Mekong Delta); Ha Naoi (Red River Delta); Ha Son Binh (Red River Delta); Hai Hung (Red River Delta); Ha Bac (midland area); and Nghe An (Mekong Delta).

DT80 soybean has the following characteristics:

- Strong stem, and tolerance to wind
- Large foliage area
- Yellow seed
- Purple flowers
- Many pods per plant
- Protein content of the seed is 43,2%.

### **Methodology**

A survey programme concerning the overall situation of the production of DT80 soybean in Northern Viet Nam was carried out by the National Pulse Crop Research Centre and the Agriculture Research Centre of Phu Qui.

Four co-operatives and 35 farmers were selected in 7 villages: Nghia Trung and Nghia Quang of Nghia Dan district; Bai Phu of Anh-Son district in Nghe An province; Dinh Hung, and Thieu Thanh of Thieu Yen district in Thanh Hoa province; Uy No of Dong Anh district in Ha Noi; Tam Diep in Ninh Binh province.

### ***IN THIS ISSUE***

<i>Field Note: DT80 Soybean in the North of Viet Nam</i> .....	1
Le Quang Hanh; Le Dinh Son	
<i>Involvement of Farmers and Extension Workers in On-farm Adaptive Research For Food Legumes and Coarse Grains</i> .....	2
C.E. van Santen	
<i>Editorial</i> .....	3
Seiji Shindo	
<i>CGPRT Centre News and Activities</i>	7

## Results

Background on Soybean (DT80) production and utilization in Northern Viet Nam: - DT80 Soybean growing areas.

The North of Viet Nam Consists of the Provinces: Lang Son, Ha Bac, Bac Thai, Ha Noi, Hai Hung, Ninh Binh, Thanh Hoa, Ha Tay, Nghe an.

The total land planted to DT80 soybean is nearly one thousand hectares, primarily Basaltic or alluvial soils. The altitude of the DT80 soybean area ranges from 10-105 metres above sea level. The rainfall per year is 1400-2000 mm and the temperature ranges from 18°C - 29°C.

In 1983, 100,000 ha was planted to soybean in Viet Nam with an average yield of 1,070 kg/ha.

After 10 years DT80 soybean has extended to 1,000 hectares in 7 provinces. The area, yield and production of DT80 soybean are given in Table 1.

**Table 1. Area, yield and production of DT80 Soybean in the Provinces of North-Viet Nam. Average 5 years: 1988-1992).**

No.	Province	Area ha	Yield kg/ha	Production m tons
1	Thanh Hoa	120	1,850	222.00
2	Ninh Binh	250	2,105	526.25
3	Ha Noi	50	1,887	94.35
4	Ha Son Binh	150	1,596	239.40
5	Hai Hung	58	1,968	114.14
6	Ha Bac	96	1,679	161.18
7	Nghe An	280	2,208	618.24

The average yield is 1.96 tons dry soybean seed per hectare (average 1,899 kg/ha).

In the areas given above, soybean seed has mainly been used in the daily diet after making soyacake. It seems likely that with extended processing cash income could increase.

From the data of Table 1 it is clear that DT80 soybean is a promising high-yielding variety in the North of Viet Nam. Its area could be increased both on Basaltic and alluvial soil.

## Involvement of Farmers and Extension Workers in On-farm Adaptive Research For Food\* Legumes and Coarse Grains

by C.E. van Santen\*\*

### Introduction

In East Java, Indonesia, a multi-year programme with the purpose of increasing yield and return of maize was executed in the 1980s. (Harrington, Krisdiana and Herianto 1992). The experience gained during the programme is relevant for similar exercises in the region, which seek to reach the same goals through farmer participation.

In view of these experiences, this note was prepared to briefly outline the involvement of farmers and extension workers, in particular in relation to the development of food legumes and coarse grains, in other words, to discuss the link between farmers, extension workers and agricultural researchers in their joint efforts for agricultural development (the FER link).

A survey implemented seven years after the start of the programme indicated that over 70% of the farmers had adopted three recommendations to improve maize yields, resulting in average yield increases from 1 to 1.5 tons per ha. However, another set of three recommendations also developed by the on-farm adaptive research (OFAR) team, relating to fertilizer application which potentially could increase yields by another 1 to 1.5 tons of maize per ha, with a high marginal rate of return, was only adopted by a small percentage of the farmers in the study area.

The OFAR team had asked farmers and extension workers for advice and assistance throughout the programme. During the programme hundreds of farmers and dozens of extension workers had been involved. The results of the 'adoption survey' mentioned showed that the OFAR research team had partly succeeded in its aims. The team discussing the adoption survey results posed the following questions:

- Why did farmers adopt three of the recommendations and reject the other three?
- Should the team have also involved the farmers and extension workers in the research decision-making process and regarded them more as colleagues instead of advisors?

\* Regional Workshop on On-Farm Adaptive Research, for Food Legumes and Coarse Grains 18-20 February 1993, Ho Chi Minh City, Viet Nam \*\* Agricultural economist CGPRT Centre, Bogor.

## Editorial

### Trends in Root and Tuber Crops

Seiji Shindo,  
Director

CGPRT Centre

Root and tuber crops are important in the Asian food and feed economies. Although it is not generally known, development shows dynamic characteristics.

The majority of root crops are grown in rainfed areas where wetland rice cannot be cultivated. In these areas root crops are a major source of food for the local people and constitute an important source of cash income.

Root crop production (including tubers) in Asia and the Pacific has increased modestly in the last decade. According to the FAO Production Yearbook, the total production of root and tuber, including sweet potato, Irish potato and cassava, yam and taro, amounted to about 236 million tons in 1989 which reflects a minor increase compared to 219 million tons in 1980. The increase is mostly attributed to yield increase, as the harvested area showed a slight decrease in the period, from 1.72 million ha in 1980 to 1.61 thousand ha in 1989.

One of the features in the production trend of root and tuber crops is that in the general stagnation of production in the region, there are exceptions. These tend to be countries with special physical and cultural systems which suit these crops.

The use of cassava in Thailand and Indonesia has particularly expanded in the

animal feed industry as a source of concentrated feed, in which feed mixes of cassava and maize have *been* preferred because of the favourable starch ratio. Thailand and Indonesia export cassava chips and pellets, mainly to EC countries. In Indonesia, cassava is also extensively used as material for processed food and, to a lesser extent, as industrial material.

In Viet Nam, and to a lesser extent in Laos, both sweet potato and cassava are used as livestock feed and human food. Sweet potato tops, a by-product, are fed to livestock, particularly pigs. The starch is used for producing noodles and starch paper. In addition, cassava-based products are utilized for a variety of industrial purposes.

Similarly in the Philippines, both sweet potato and cassava have long been used for food and as an important source of feed for pigs.

China is the largest producing country of sweet potato in the world. The crop is widely consumed as direct food but the processing of various products has been

increasing. Both roots and leaves are also very important as pig feed.

In Papua New Guinea and other Pacific countries, several root crops such as cassava, sweet potato, taro, and yam are grown.

While the majority of root crop production is traded in local markets and consumed locally, there seems to be a discernible trend towards an increasing market surplus. This surplus is either traded in wider areas beyond local markets or processed for other uses than direct food or feed.

Moreover, their significance is increasing despite the relative neglect of these crops in national research and policy. With general economic growth, new products and new outlets emerge as the range of products based on root crops expands due to increasing and diversified demands on the utilization side and to the increasing marketable surplus on the production side.

Production in major countries is shown in the table below:

**Root crop production in major countries in Asia and the Pacific ('000 tons in 1989)**

	Cassava	Sweet potato	Yam	Taro
China	3,222	112,200		1,182
India	4,500	1,300		
Indonesia	17,064	2,180		
Laos	100	218		
Myanmar	53	28		
Papua New Guinea	112	510	210	215
Philippines	1,850	670	26	103
Solomon Island	1	52	19	22
Thailand	20,701	102		56
Viet Nam	3,000	2,000		

Source: FAO, Production Yearbook, 1990.

- Would this have resulted in a different and more efficient focus on the research objectives, more in line with the farmers needs in the study area?

These questions illustrate the importance of the involvement of farmers and extension workers in on-farm adaptive research (OFAR).

For a fruitful discussion of the role of farmers and extension workers in OFAR it is necessary to understand what OFAR is and can do within the context of agricultural development. The aim of developing agriculture is to increase income and welfare. An important determinant of agricultural development is increase in agricultural productivity. Essential for achieving and sustaining increased

agricultural productivity are the availability of improved technologies and an increased demand for agricultural produce.

Within the context of the contribution of agricultural research to agricultural development, the specific task of OFAR is to adapt improved technologies into practical recommendations, which can be easily adopted by farmers from a specific recommendation domain.

A recommendation domain is a group of farmers with similar physical and socio-economic circumstances, so that the group members can all benefit from the same recommendations.

The guiding principles of OFAR are to focus on problems and possible solutions under representa-

---

---

tive conditions, relevant for a defined group of farmers. Using the farming systems perspective, it involves farmers, extension workers and biological and social scientists. It aims to convert short-term solutions into practical recommendations and to establish a feed back

The main stages in the O between on-farm and on-station research. FAR research process are:

1. Diagnosis
  - Problem identification.
  - Conduct of informal and/or informal surveys
2. Planning
  - Selection of priorities for research
  - Design of on-farm experiment
3. Experimentation
  - Experimentation in farmer's fields, formulation of improved technologies under farmer's conditions
4. Assessment
  - Assessment by farmers
  - Agronomic evaluation
  - Statistical analysis
  - Economic analysis
5. Recommendation
  - Formulation of recommendation
  - Demonstration of improved technologies to farmers

It is obvious that OFAR can only be meaningfully implemented under the conditions of well established cooperation between farmers, extension workers and agricultural researchers.

It is therefore useful to examine the role, position and motivations of these three partners in agricultural development, in particular those involved in food legumes and coarse grains (FLCG) crop development.

### **The Farmers**

Farmers are the ultimate beneficiaries of public research. Farmers producing FLCG crops are mainly small farmers with a small resource base in terms of capital and land. They often operate in areas with low potential and in marginal conditions, in uplands and remote areas. These farmers carry an important responsibility for the welfare of their families and obligations to their society. Many small farmers are experimenters themselves and

interested in increasing their production to raise their income. They are keen to learn about new technologies. However, in view of the limited risks they can take and the specific agro-ecological situation of their farm land (soils, climate) they have to carefully scrutinize any new technology before they can adopt it. Thus farmers often first **adapt** a new technology to their specific circumstances before **adopting** it. It has also been observed many times that farmers adopt new technologies step wise, often by using the new technology initially only on a part of their fields. Farmers in general have a thorough knowledge of the physical potential as well as limitations of their fields. They are keen observers though they may not be able to express their observations in scientific language.

### **Extension Workers.**

The main task of the extension workers is to diffuse and demonstrate new technologies to farmers. However in practice extension staff are often burdened with many other assignments, such as compiling agricultural statistics and supervising rural credit schemes. In view of their wide-ranging responsibilities they often have inadequate access, to resources and research outputs, in particular when dealing with minor crops such as FLCG crops. In many countries remuneration of extension field workers is much below that of researchers. A further major bottleneck is often that extension and research are organised in separate independent agencies, lacking adequate communication mechanisms between them. Potentially, however village level extension workers, assigned to rural areas, have good access to farmers and are in a position to obtain first-hand information on farm conditions.

### **Agricultural Researchers**

Agricultural researchers have often received in their training an emphasis on academic work. Their promotion is in most countries in the region dependent on the number of publications produced. On-farm adaptive research may thus offer fewer rewards as compared with more fundamental types of research.

### **Partners and Problems**

This short review of the position of the three potential partner groups in OFAR indicates a number of constraints. Ways and means have to be found to overcome these, as the ultimate justification for funding of agricultural research is the assistance expected from agricultural research to

---

---

raising agricultural productivity. As stated before OFAR has the task of developing practical recommendations for specific groups of farmers.

To design the practical recommendations, detailed, location specific knowledge is required. This is due to the great variation in physical conditions between locations and includes information on farmer requirements for a specific crop, crop productivity, market requirements and physical and socio-economic circumstances.

The first consideration is that the small farmers of the recommendation domain concerned possess this knowledge. To initiate an OFAR programme researchers need to obtain this information through intensive contacts with representative farmers of the recommendation domain concerned and from extension workers residing in the rural areas.

A second consideration is that physical conditions on research stations are practically never representative for farm conditions, due to different management regimes including experiments on land preparation, pest and disease control and soil fertility, apart from differences in soil types.

Byerlee and Collinson (1980) in their by now classic paper Planning Technologies Appropriate to Farmers; Concepts and Procedures summarized this as follows: "Effective communication between researchers and farmers ensures a greater awareness of the constraints and problems of farmers in the design of technologies. Experimentation in farmer's fields ensures that technologies are formulated under farmer conditions. It overcomes the difficulty of using results developed on station to make farmer recommendations, in particular, where experimental research station conditions are often not representative for an area because of intensive management practices and different physical conditions. Because of this farmer orientation, on-farm research has to identify beforehand the farmers for whom the research is intended."

The main question is thus **how** to involve farmers and extension workers in the OFAR process.

### **Cooperation Between Farmers and Researchers**

Biggs (1989) has given a practical description of the four main types of farmer cooperation in OFAR used to date, which is summarized as follows.

### **Contract Participation**

Scientists contract with farmers to provide land or services:

In this approach the farmer's role is passive and participation is not an explicit objective. Researchers investigating the biological relationships between productivity, soils and climate manage the trials themselves so as to maintain tight control over the variables. Multilocational testing of new varieties by plant-breeders is a good example of contract participation. Although this 'mode cannot by itself be considered as client oriented research, it can form an important component of such efforts.

### **Consultative Participation**

Scientists consult farmers about their problems and then develop solutions:

This type of participation has been compared with the doctor-patient relationship. Researchers use formal and informal surveys to define farming systems and diagnose priority problems. They then design experiments to test various solutions or to better understand identified problems.

The emphasis is on adapting technology to the socio-economic as well as the agro-ecological conditions facing farmers. Researchers involve farmers mostly in the diagnosis and then later in the evaluation of proposed solutions.

### **Collaborative Participation**

Scientists and farmers collaborate as partners in the research process:

This approach involves more intensive and continuous interaction. Researchers actively draw on farmer's knowledge and experimentation in seeking solutions to identified constraints. Regular meetings are held between farmers and researchers to understand current farming practices, set priorities among research problems, develop potential solutions, monitor progress, and jointly review results.

### **Collegiate Participation**

Scientists work to strengthen farmers' informal research and development systems in rural areas:

Here the emphasis is on increasing the ability of farmers to carry out research on their own as well as to request information and services from the formal research system. The mode of participation is often used with large-scale commercial producers, but is much less common with resource-poor farmers.

---

## Cooperation Between Researchers And Extension Workers

The cooperation between researchers and extension workers has been summarized by Zuidema (1989) as follows:

Links between research - and extension workers:

### *Problem definition*

Researchers need extension workers to help them understand farmers' problems and conditions and to facilitate contacts with farmers; extension workers need researchers to identify the scientific approaches required to address specific problems.

### *Experimentation*

Researchers need extension workers to help identify representative locations for trials, develop realistic experimental designs, and explain objective and procedures and provide advice during implementation.

### *Technology adaptation*

Researchers need extension workers to help farmers choose the right option for their particular circumstances; extension workers need researchers to propose the options for modifying technology to suit local conditions.

### *Technology verification*

Researchers may need extension workers to help manage on-farm trials; extension workers need researchers to ensure scientific rigor and to organise and process data from the trials. Researchers, extension workers, and farmers may all have valuable insights to contribute to the interpretation of results.

### *Technology packaging*

Researchers need extension workers to ensure that the inputs required by new technologies are available to farmers; extension workers need researchers to explain the context in which a new technology should be used.

### *Provision of information*

Researchers need extension workers to produce and deliver effective messages to farmers; extension workers need researchers to ensure that these messages are accurate and sufficient detailed.

### *Provision of feedback*

Researchers need extension workers to provide specialised communication services in order to disseminate technologies; extension

workers need researchers to provide specialist services such as soil testing, pest identification, and seed certification.

### *Provision of feedback*

Researchers need extension workers to tell them about farmers' reactions to new technology; extension workers need researchers to turn field problems back into researchable opportunities.

## Conclusions

These notes on the involvement of farmers and extension workers in the OFAR process and their cooperation with researchers only touched on some of the aspects of this essential matter of implementing an efficient on-farm research programme.

To conclude, it should be stressed that proper involvement of farmers and extension workers with researchers is important in all steps of the OFAR process to develop practical recommendations which help farmers to increase productivity and raise their income through the production of FLCG crops.

## References

- Biggs, S.D. (1989) Resource Poor Farmers Participation in Research: A Synthesis of Experiences from Nine National Agricultural Research Systems. ISNAR. The Hague, Netherlands.
- Byerlee and Collinson. (1980) Planning Technologies Appropriate to Farmers: Concepts and Procedures. CIMMYT, Mexico.
- Harrington, L.W., Krisdiana, R. and Herianto. (1992) On-Farm Research and Farmer Adoption of New Maize. MARIF, Malang, Indonesia.
- Zuidema, L. (1989) Improving Collaboration between Research and Extension Workers. ISNAR. The Hague, Netherlands.

## Annex 1

### Recommended for Further Reading

- Asby, J.A. Adopters and Adapters: The participation of farmers in OFR in Tripp, R. (1991) editor: Planned Change in Farming Systems: Progress in On-Farm Research. West Sussex, England. Page 273 - 286.
- Cernea, M.C., Coulter J.K. and Russell J.F.A. (1985) Research, Extension Farmer: A Two Way Continuum for Agricultural Development. World Bank/UNDP. Washington D.C., USA.

---

Chambers, R., Pacey A. and Thrupp L.A. (1989) *Farmer First: Farmer Innovation and Agricultural Research*. London, UK.

CIMMYT (1988) *From Agronomic Data to Farmer Recommendations*. Mexico.

Ewell, P.T. (1989) *Linkages Between On-Farm Research and Extension in Nine Countries*. ISNAR. The Hague, The Netherlands.

Hildebrand. P. E. and Poey F. (1985) *On-Farm Agronomic Trials in Farming Systems Research and Extension*. Boulder, Colorado, USA.

Hildebrand, P. E. (1986) *Farming Systems Research and Extension*. Boulder, Colorado, USA.

Laumans, Q.J. and Winarto A. (1988) *Dynamic in On-Farm Research*. MARIF, Malang, Indonesia.

Merrill-Sands, D. and Kaimowitz D. (1989) *The Technology Triangle: Linking Farmers, Extension and Agricultural Researchers*. ISNAR.

van Santen, C.E. (1991) *Reader: Regional Training Course On-Farm Research May 13-25, 1991, Malang, Indonesia*. CGPRT Centre. Bogor, Indonesia.

Tripp, R. and Woolley J. (1989) *The Planning Stage of On-Farm Research: Identifying Factors for Experimentation*. CIMMYT and CIAT. Mexico and Cali, Colombia.

Tripp, R. (1991) *Planned Change in Farming Systems: Progress in On-Farm Research*. West Sussex, England.

---

## CGPRT Centre News and Activities

---

### ***Local Soybean Economies and Government Policies in Thailand and Indonesia***

Jierwiryapant, Pattana; Hermanto; Roche, Frederick and Bottema, *JWT*. 1992. 203 p. ISBN 979-8059-49-2

Pattana Jierwiryapant clearly and thoroughly discusses the production, cultivation practices, utilization and marketing of soybean, and relevant government policies from 1971-1991, in Chiang Mai, Thailand. She uses the Policy Analysis Matrix System to weigh up comparative advantage of soybean in relation to onion and garlic in Chiang Mai province. Important conclusions show the relevance of the PAM System to the formulation of future government policies on soybean.

Hermanto, Armen Zulham and Sri H. Suhartini use Comparative Advantage Analysis to study local comparative advantage of soybean production in villages in different agri-ecological zones in East Java, Indonesia.

Frederick Roche et al. study regional costs and comparative advantage of the secondary crops, maize, soybean and cassava, using new secondary data from the Central Bureau of Statistics. They measure the production and marketing costs and the potential efficiency of high cost systems.

Price US\$ 17.50. US\$ 13.50 (Developing Countries)  
Rp 17.500

### ***Increasing Soybean Production in Asia***

Proceedings of a Workshop, held in Phitsanulok, Thailand. (August 21 - 24, 1990).

CGPRT Centre. 1992. 187 p. ISBN 979-8059- 50-6

These proceedings are the results of the Soybean Yield Gap Analysis Project in Thailand and Indonesia with country papers from China, Korea, the Philippines, South Viet Nam and Sri Lanka.

Soybean production and utilization, socio-economic constraints on the grower, and the transfer of research results and the adoption of new technology by farmers are aspects covered in both Thailand and Indonesia.

China's problems of production, and consumption prospects, the intensive cultivation practices of Korea and the private and company production of soybean in the Philippines provide interesting contrasts. The status of soybean in South Viet Nam contrasts in turn with the Yield Gap Analysis of Soybean in Sri Lanka.

Price US\$ 18.00. US\$ 13.50 (Developing countries)  
Rp 12.500

---

---

## **Agricultural And Rural Development Policy: Efficiency, Equity And The Environment**

**A Short course for Development Professionals  
17th May to 9th July, 1993**

### **Course Content**

Theory concerning 1) analyzing the relationships between agricultural policy, rural development and rural poverty reduction, 2) the choice of agricultural and rural development strategies and their appropriate policy components, 3) the analysis of macro economic policy reform and its effects on the agricultural sector and 4) environmental assessment and management in the agricultural and natural resource sectors.

### **Areas of Special Emphasis include**

Acquiring operational competence with standard and recently developed techniques for agricultural and rural development policy analysis. For example, the Tingeren Economic Policy Framework, the Policy Analysis Matrix, and the Policy Pay-off Matrix and Policy Stakeholder Analysis.

Coverage of major areas of policy concern, such as commodity and input prices, credit, irrigation, mechanization and agricultural research.

Incorporating environmental objectives in policy formation, and conducting environmental assessment and management within policy processes.

Incorporating gender analysis into agricultural and rural development policy.

Institutional policy analysis concerning the role of private, government and non-government (NGO) organizations in agricultural and rural development.

Policies concerning common property management in rural areas.

### **Participants**

This course is primarily designed for economists and other social scientists who are engaged in policy and planning in government or aid agencies, international agricultural research centres, international environmental organizations, NGO's, and professional advisors and consultants working on agricultural, rural development, natural resource management and environmental issues. One of the major objectives of the course is to enable participants to stand back from their day-to-day work and have time to study recent developments in

this field, and have an opportunity to reflect on their own experiences.

### **The Approach of the Course**

The approach to teaching is participative and practical, with extensive use being made of case studies. For the sections of the course where microcomputers are required, participants will have access to the Overseas Development Group computer laboratories, which are well equipped with IBM compatible microcomputers.

Throughout the course participants will be encouraged to contribute their own professional experience and to learn from each other.

All course components are fully documented. At the end of the course all participants will have accumulated a comprehensive set of materials which may be used for day-to-day reference or for in-house training purposes. In addition each participant is presented with a set of essential textbooks.

For further details and an application form please contact:

The Course Coordinator, Overseas Development Group, University of East Anglia, Norwich UK, Telephone on Norwich (0603) 57880 or FAX Norwich (0603) 505262.

---

### **Post-Harvest Fruit, Vegetable and Root Crop Technology**

The UK Natural Resources Institute (NRI) invites nominations for their annual 13 week training course in Post-harvest Fruit, Vegetable and Root Crop Technology to be held at NRI's Training Centre, Chatham, Kent. The dates of the next two courses are:

20 September – 17 December 1993

19 September – 16 December 1994

The course provides in-depth training for personnel involved with research, extension and commercial post-harvest handling of perishable horticultural crops. Whilst the course is targeted to the needs of developing countries the course contains components which are relevant to any region of the world. Emphasis of the course includes the following themes:

- \* the preparation, handling and marketing of perishable crops for local and international markets;

- \* methods for assessing post-harvest losses;
- \* small-scale crop conservation;
- \* methods for maximising produce quality and establishing quality assurance procedures.
- \* infrastructural requirements

For further details contact: Training Contracts Officer, Natural Resources Institute, Chatham Maritime, Chatham, Kent, ME4 4TB, UK.

Tel: 44 634 880088;

Fax: 44 634 880066/77; Telex: 263907/8 LDN G.

---

### **INTERNATIONAL COURSE ON FOOD PROCESSING**

*Quality Assurance and Marketing in Food Processing Enterprises*

*Food Fortification for the Elimination of Micronutrient Malnutrition*

The course is organized by the International Agricultural Centre, Wageningen from August 15 to November 20, 1993, in collaboration with the Wageningen Agricultural University, institutes for higher agricultural education, institutes for applied scientific research in the Netherlands and the Programme Against Micronutrient Malnutrition (PAMM) in Atlanta, USA.

The programme on quality assurance and marketing is open to professionals from business advisory, training and support institutions and those who establish and operate small and medium scale enterprises.

The programme on food fortification is open to government employees and consultants with an advisory role to the food fortification industry and industry employees in charge of food fortification processing. All should have a direct relation to the realization of the national food fortification strategy component in the national programme for the elimination of micronutrient malnutrition.

Deadline for application is May 15, 1993.

INTERNATIONAL AGRICULTURAL CENTRE - WAGENINGEN

For more information please contact the Director

International Agricultural Centre (IAC)  
P.O. Box. 88

6700 AB Wageningen

the Netherlands

Telegrams : INTAS

Telephone : +31-8370-90111

Telex : 4588-INTAS NL

Telefax : +31



### **ICRA 13th International Course for development oriented Research in Agriculture**

**January 10 - July 28, 1994 (English);  
February 28 - September 15, 1994 (French)**

A post-academic course for researchers combining theoretical studies in the Netherlands or France with interdisciplinary group fieldwork in a developing country. This combination provides participants with the capacity to analyze constraints and opportunities for change in agricultural systems, and to develop appropriate research priorities and programmes. Requirements: PhD/MSc, 2 years developing country experience, age under 40.

The full course fee is Df 54,000; including all travel, accommodation, tuition and allowances. A limited number of scholarships are available for candidates from developing countries, France, The Netherlands, Switzerland and the U.K. ICRA can arrange co-funding for candidates whose sponsors cannot pay the full fee.

For further details and application forms please contact:

**Jon Daane, ICRA, P.O. Box 88, 6700 AB  
Wageningen, The Netherlands  
Telephone: (31) (0)8370-22938, Fax: (31)  
(0)8370-27046, Telex: 45888 NL**

---

---

### CGPRT Centre

The Regional Co-ordination Centre for Research and Development of Coarse Grains, Pulses, Roots and Tuber Crops in the Humid Tropics of Asia and the Pacific (CGPRT Centre) was established in 1981 as a subsidiary body of UN/ESCAP.

### Objectives

In co-operation with ESCAP member countries, the Centre will initiate and promote research, training and dissemination of information on socio-economic and related aspects of CGPRT crops in Asia and the Pacific. In its activities, the Centre aims to serve the needs of institutions concerned with planning, research, extension and development in relation to CGPRT crop production, marketing and use.

### Programmes

In pursuit of its objectives, the Centre has three programmes which are mutually supportive:

1. Research, which entails the preparation and implementation of studies covering production, utilization and trade of CGPRT crops in the countries of Asia and the South Pacific.
2. Training of national research and extension workers,
3. Information and documentation which encompasses the collection, processing and dissemination of relevant information for use by researchers, policy makers, and extension workers.

### Palawija News

Contributors are invited to submit concise summaries of significant social research related to CGPRT crops for publication. Submissions should be limited to two to four double-spaced typewritten text. Two figures (graphs or tables) may accompany the article. Include only references cited. All articles are subject to editing to meet space limitations.

Please send all queries relating to articles in *Palawija News* to Head Publications Section, CGPRT Centre, Jalan Merdeka 145, Bogor 16111, Indonesia.

*Palawija News* is distributed free of charge to interested individuals and institutions. Please send address corrections and additions to the Distribution Officer, Publications Section.

CGPRT CENTRE  
Publications Section

Editor: Meryl Wilson  
Douglas R Stoltz  
Production: Deddy Subandi M.  
S. Tayanih (Yayan)  
Distribution: Dina A. Satrio  
Printer: SMT Grafika Desa Putera



CGPRT Centre  
Jalan Merdeka 145,  
Bogor 16111, Indonesia  
Telephone: (0251) 336290, 343277  
Fax: 62-251- 336290  
Telex: 48369 AARDMA IA  
Cable: ESCAP CGPRT Bogor

Palawija News  
Volume 10, Number 1

---

---