

INTRODUCTION

The Sixth post-graduate training course on the improvement and production of maize, sorghum and millet for Africa and the Near East was financed by the Swedish International Development Authority (SIDA) and executed by the Food and Agriculture Organization of the United Nations (FAO) in close collaboration with the Government of India. The training programme has three distinct activities which include: i) training course of six months duration held at the Indian Agricultural Research Institute (IARI), New Delhi with the collaboration of the Indian Council of Agricultural Research (ICAR); ii) follow up evaluation and technical support to the former trainees through advisory visits to their home countries by specialists and iii) the organization of periodic seminars for upgrading their technical knowledge. Under this training programme six training courses have been held in 1971, 1973, 1975, 1979, 1981 and 1984 and 102 agricultural graduates have received training.

The formal approval of the Government of India to host the sixth training course was received by the FAO on 23 December, 1984. A Preparatory Mission comprising Dr. W.M. Tahir, Cereal Improvement Officer, Plant Production and Protection Division, FAO, Rome and Dr. Gösta Julén (former Director of Research, Svalöf AB, Svalöf), FAO consultant, visited New Delhi from 1 to 15 February, 1984. The Preparatory Mission held detailed discussion with Dr. A.M. Michael, Director IARI and his colleagues and finalized the details of technical and administrative arrangements. They also attended a special meeting of the Academic Council of IARI to finalize the minimum requirements of academic qualifications and practical experience of candidates to be selected for the training course.

The letter of invitation seeking nomination of candidates was issued by FAO in the last week of February, 1984 to 16 African countries (Botswana, Ethiopia, Gambia, Ghana, Kenya, Lesotho, Liberia, Malawi, Nigeria, Sierra Leone, Somalia, Sudan, Swaziland, Tanzania, Uganda, Zambia) and 13 Near East countries (Afghanistan, Egypt, Iran, Iraq, Jordan, Lebanon, Libya, Pakistan, Saudi Arabia, Syria, Turkey, Yemen AR, Yemen PDR). Of 42 nominations received 18 candidates were selected. All eighteen participants attended the total programme of the training course. All of them held a minimum of B.Sc. degree in agriculture and at least two years field experience. The selected trainees as a group represented a high degree of homogeneity in their educational background and research experience, and exhibited very keen interest in the various training activities in the classroom, laboratory and in the field. For the first time the trainees from Uganda, Yemen (AR) and Zambia participated in the training programme. There was a favourable balance in the field of specialization of the participants between agronomy and plant breeding.

As in the previous two training courses the participants were housed in the International House specially constructed in 1979 within the campus of the Indian Agricultural Research Institute for the use of trainees of international training courses. It has 20 single and 5 double air-conditioned suites, a seminar room and good boarding facilities at reasonable prices. The International House is located well within walking distance from the Central Library of IARI, class-rooms and laboratories as well as the experimental fields.

The syllabus used for the fifth training course held in 1981 was, in general, considered to be well balanced and met the needs of the participants. Some other features of the course can be summarized as follows. (i) Each of the participants received specialized training in the crop/discipline of his choice which was explicitly established at the start of the course. (ii) The participants fully involved themselves and participated in regular activities of the ongoing research programme in their own field of specialization and for this purpose they spent the entire forenoon (about four hours) in carrying out their practical work in the field. (iii) Received in the afternoon only one lecture and had the rest of the time for personal studies. (iv) For developing the capability to independently execute a research project, a field experiment was assigned to each participant in the field of his specialization. Under the supervision of a senior staff of IARI, each trainee fully involved himself in planning, execution and final analysis of the experimental data and in preparation and presentation of research project report. (v) Besides conducting their own field research projects participants also regularly visited the field experiments of their colleagues and supervisors. They held detailed discussions and made useful suggestions. (vi) Special attention was given to developing the capacity of the participants to retrieve published scientific information on a specific aspect and to present it in a brief and lucid manner. This objective was achieved through preparation of a detailed review of literature by each of the participants in the field of his specialization. (vii) A harmonious balance between lectures and practical work both in field and laboratories was attained. The formal lectures were spread throughout the training course to provide opportunity for individual study and discussion. Adequate time for reference to literature in library was provided in the afternoon and in the evening.

A few participants with low proficiency in English received special attention of their supervisors, who identified their weaknesses and gave extra individual attention in the field and in the evening in the International House. The participants received major part of their training by working with the scientists of their own crop/discipline. Those who had opted to specialize in sorghum breeding spent three months at the Regional Research Station of IARI, Hyderabad, while others received their entire training at New Delhi. The progress of each participant was monitored and his specific needs were ascertained on a continual basis through weekly reports, written examinations, preparation and presentation of various reports and the participation in discussion during lectures and seminars. Arrangements were made to facilitate the participation of the trainees in some important national seminars, workshops and symposia of direct relevance to their field of training. Field study tours were organized both to the agricultural research stations and agricultural universities and to the farmers field to acquaint the participants with the specific agricultural problems in various regions of the country and the varied approaches being followed to overcome them.

The training programme was aimed at developing the scientific and experimental capability of individual participants through practical field and laboratory work and better understanding of the relevant basic concepts in order to identify major factors limiting productivity of summer cereals and to conduct suitable field experiments for their resolution.

Following pages provide information on the various activities undertaken by the participants of the sixth training course during the period of six months, including course content, details of the participants, course staff, field trips etc. It is hoped that this report will provide the necessary information to the appropriate authorities in the African and the Near East countries to assess the benefits realized by their nominees from the training course and undertake a realistic evaluation of the research and development capabilities of their scientists who received training under this programme and fully support them in their activities.

3. COURSE CO-ORDINATION

A. Co-ordination Committee

A Course Co-ordination Committee was set up in order to continuously monitor the progress of the training course and to ensure that the needs of the trainees were fully met and the suggestions of the course staff were timely considered and implemented. This committee was set up at the beginning of the training course and it had the representation of the course staff, FAO and the trainees. The composition of the committee was as follows:

Dr. A.M. Michael, Course Director	Chairman
Dr. E. Bojadzievski, FAO Representative in India	Member
Dr. W.M. Tahir, Course Co-Director	Member
Dr. Joginder Singh, Deputy Course Director	Member
Dr. A.R. Seshadri, Counsellor (Academic)	Member
Dr. Rajat De, Counsellor (Research)	Member
Mr. N.J.K. Nangoti, Participants' elected representative	Member
Mr. T.B. Khanna	Secretary

The Co-ordination Committee held several meetings during the training course. The committee reviewed the progress of the training course and decided on matters related to the academic and welfare needs of the participants. For example it considered the need for scheduling of additional lectures and practicals as desired by the participants, provision of reference literature and facilities, and organization of field trips. Based on the recommendations of this committee suitable modifications were made in the planned activities of the training course and wherever felt necessary a reference was made to the FAO Headquarters for consideration and action. This committee was assisted by two sub-committees namely: i) sub-committee on Technical Programme and ii) Sub-committee on welfare.

B. Sub-committee - Technical Programme

This committee continuously monitored the progress of various training activities with specific reference to academic matters. It also ensured that the participants derived benefit from the ongoing programmes of various research divisions of IARI and facilitated contacts with the senior scientific staff of IARI. The committee had the following composition.

Dr. A.R. Seshadri, Dean and Joint Director (Education), Counsellor (Academic)	Chairman
Dr. Rajat De, Joint Director (Research) and Counsellor (Research)	Member
Dr. S. Ramanujam/Dr.S.S.Shah, Head, Division of Genetics	Member
Dr. Rajendra Prasad, Head, Division of Agronomy	Member
Dr. S.K. Bhatia, Head, Division of Entomology	Member
Dr. M.M. Payak, Head Division of Mycology & Plant Pathology	Member
Dr. B.K. Mukherjee, Senior Maize Breeder	Member
Dr. Joginder Singh, Deputy Course Director	Member-Secretary

C. Sub.committee-Welfare

To ensure the well-being of the participants a welfare committee was set up at the beginning of the course. The committee held several meetings to discuss the matters relating to boarding and lodging arrangements, transport requirement of the participants, excursions and social activities during week-ends and holidays. The composition of the committee was as follows:

Dr. Joginder Singh, Deputy Course Director	Chairman
Dr. H.V. Henle, FAO Office, New Delhi	Member
Mr. P. Sukumaran, Welfare Officer (Board and Lodging)	Member
Mr. S.P. Chawla, Welfare Officer (General Affairs)	Member
Mr. Stephen John Haule, elected representative of the participants	Member
Mr. T. G. Khanna, Administrative Officer	Member-Secretary

D. Staff Steering Committee

To ensure that all topics of the formal lectures, field and laboratory practicals as originally outlined were fully covered in a planned way, to establish good balance between lectures and practical activities, and to synchronize the field practicals with the appropriate stages of crop growth, a detailed schedule of daily activities for the entire period of six months was developed in the form of a daily time-table for each of the three groups of participants specializing in maize breeding, sorghum breeding and agronomy. For each day this time-table provided full information on the title of the lecture/practical, name of the speaker, scheduled time and location. Copies of the time-table were made available to all the participants and the course staff. The speakers were informed of their lectures/practicals in the beginning of the training course. The schedule of activities was reviewed by the Staff Steering Committee comprising the Course Directorate, Counsellors and all the Core course lecturers. This committee met every Friday morning to review the scheduled timetable and to develop plans for the following week. These plans ensured that the participants had an opportunity to attend to the various operations in their field research projects at the right time and that there was a proper synchrony between formal lectures and practical training in the field. Copies of the revised time-table along with the proceedings of this committee meeting were regularly made available to all the participants and course staff by the weekend. This mechanism of weekly revision of the training programme provided a great deal of flexibility to the Course Directorate to fully meet the training needs of the participants.

PROGRAMME OF THE TRAINING COURSE

1. ARRIVAL OF THE PARTICIPANTS

Even though the course started on 15 June, 1984 the precise date of arrival of the participants largely depended on the flight connections from their respective home countries to New Delhi. Majority of the participants joined the training course by 18 June when the lectures and field work were started.

2. INAUGURATION

The training course was formally inaugurated by Mr. Yogendra Makwana, Union Minister of State for Agriculture on 25 June, 1984 in the Auditorium of the Nuclear Research Laboratory, Indian Agricultural Research Institute, New Delhi. FAO was represented by Dr. E. Bojadzievski, FAO Representative in India and Dr. W.M. Tahir, Cereal Improvement Officer and Course Co-Director, FAO, Rome. Mr. Stig Abelin, Counsellor, Swedish Embassy, New Delhi

practicals given by the various staff members are given in Annexure 4.

4. ORIENTATION TO IARI COMPLEX

Participants spent initial 10 days in visiting the major research divisions of IARI covering the various regimes of agricultural research, the Central Library and the Farm Operation Service Unit (FOSU); the Indian Agricultural Research Statistics Institute (IASRI) - a national institute of ICAR on agricultural statistics equipped with modern facilities for handling research data including two large computer units for data analysis; the National Bureau of Plant Genetic Resources (NBPGR) - the national organization for the exploration, collection, conservation and quarantine of all incoming and outgoing seed samples and plant materials; and National Seeds Corporation - a national agency for organization, planning and co-ordination of seed production of high yielding varieties of various crops.

(F) Study Tours and Field Visits

India has a large network of agricultural research institutions located in various parts of the country. The research programmes of specific commodities are co-ordinated through the All India Co-ordinated Crop Improvement Projects. Visits to a few of the selected institutes and agricultural universities were organized to provide an opportunity to the participants to study the nature of problems being investigated and the level of success attained through the use of diverse approaches. Besides the research stations the participants also visited the farmers' field to ascertain the nature of their problems and the extent to which the research and extension agencies have been successful in their solution and in persuading the farmers to adopt the new technology. While scheduling these study tours it was ensured that the participants did not miss any important operation or activity at the main location of their training and the places of visit had the crop in the most desired stage of development for study. One or more of the senior staff members accompanied the participants in these field trips to help in maintaining a continuity in training programme and to make on the spot clarification or provide additional information on any new points that emerged during the course of the field visit. The places visited by the participants are shown on a map in Annexure 8. A brief description of the various field trips is given below:

(i) Hyderabad

All participants located at IARI, New Delhi undertook a five-day (25-28 September, 1984) field study tour to Hyderabad (Andhra Pradesh). While at Hyderabad they visited the National Sorghum Research Centre and the Regional Research Station of IARI at Rajendra Nagar; the Andhra Pradesh Agricultural University at Rajendra Nagar and its maize research station at Amberpet; the All India Co-ordinated Research Project on Dryland Agriculture, Hiyatnagar, and the International Crops Research Institute for Semi-Arid Tropics (ICRISAT). The participants specializing in sorghum breeding and located at Hyderabad also participated in these field visits. Participants showed special interest in the techniques of water harvest, multiple-tool-bar for bullock drawn equipment and demonstrations on various practices that help in growing two crops per year under rainfed conditions.

(ii) Karnal and Hissar

Participants specializing in agronomy and maize breeding and located at IARI, New Delhi undertook three one-day field trips to Karnal, Hissar and adjacent places in the state of Haryana. These short visits were useful to strengthen the formal training programmes organized at IARI.

The participants undertook a one-day (10 September) visit to Karnal. They visited the Central Soil Salinity Research Institute (CSSRI) at Karnal

and its Operational Research Project in Village Guddah near Panipat. Under this project CSSRI at this village has reclaimed over 70 hectares of saline soil and farmers are growing successful rice crop. They also visited the Regional Research Station of IARI, the Regional Research Station of the Haryana Agricultural University at Uchaini, and the forage improvement and cattle breeding programme of the National Dairy Research Institute. Another one-day (13 September) visit was made to the Haryana Agricultural University, Hissar. Participants visited the millet improvement programme, dryland farming project, forage sorghum improvement programme, advance centre for crop physiology, Department of Seed Technology, and the crops museum of the Department of Plant Breeding. They showed keen interest in the research activities of the crop physiology laboratory, related to determining the criteria for the selection of varieties for stress environments. The participants re-visited Haryana Agricultural University, Hissar on 13 October to participate in the National Symposium on Breeding for Stress Resistance in Crop Plants organized by the Indian Society of genetics and Plant Breeding.

(iii) Rajasthan and Uttar Pradesh

Participants undertook two day (16-17 September) field visit to G.B. Pant University of Agriculture and Technology, Pantnagar, Uttar Pradesh. They saw and discussed programmes related to maize breeding, maize pathology, maize entomology, agronomy and soil sciences and seed production. In addition they visited farmers field and the seed processing plant of the Tarai Development Corporation, Pantnagar. They also visited the research and development activities at the Bichhpuri farm near Agra on 3 October.

Two-day visit (9-10 October) was made to Durgapura Research Station of Sukhadia Agricultural University of Rajasthan, Jaipur and the participants showed keen interest in the research programme on pearl millet and the biological control of white-grub.

(iv) Delhi and adjacent areas

The participants visited on 22 September the extension programme of IARI at Shikopur and Krishi Vigyan Kendra (Agricultural Research Information Centre) at village Rampur and on 9 December a number of villages in Baghpat Tehsil of Meerut. They met a large number of farmers in the field and studied the rural industries.

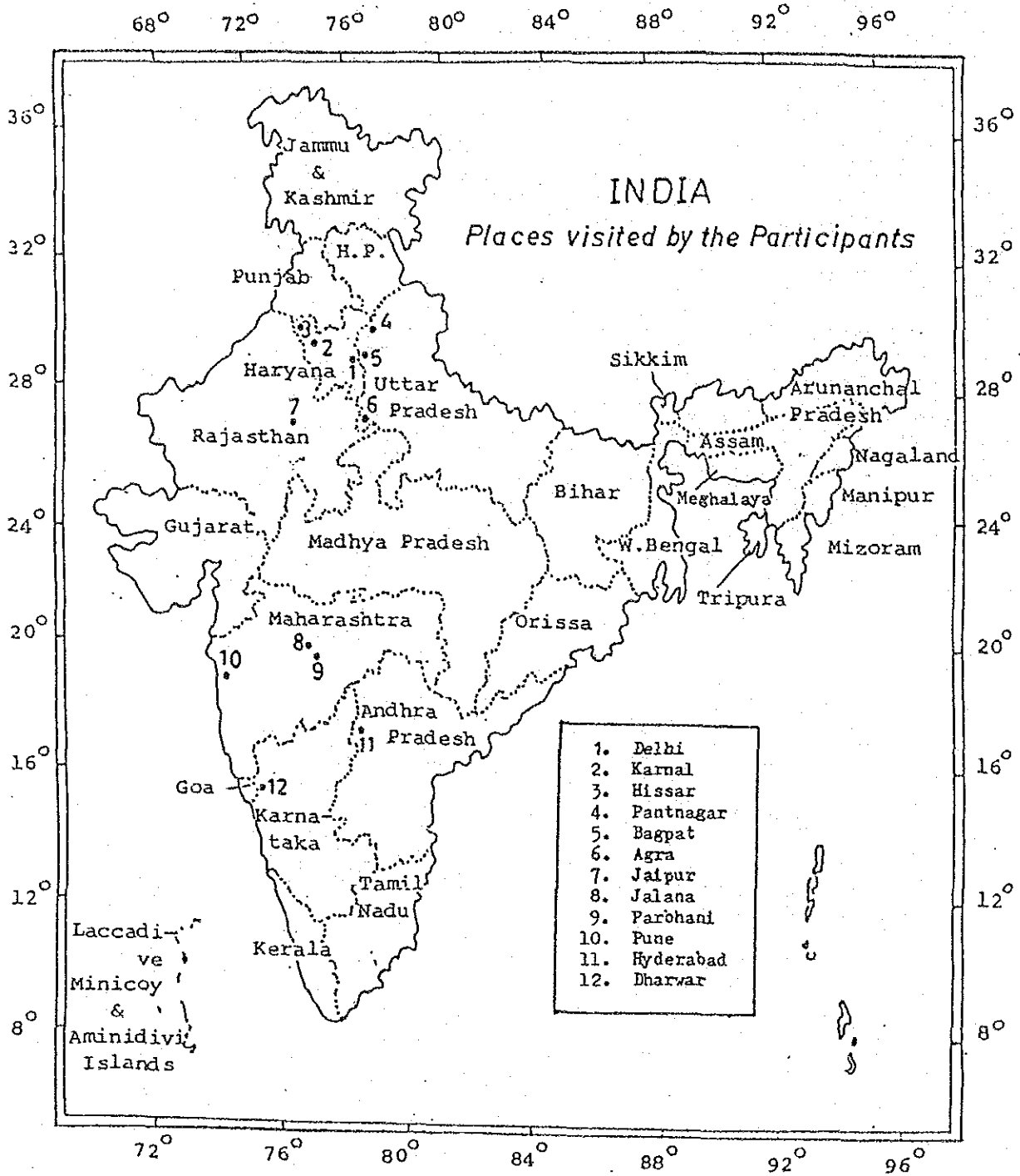
Participants located at Delhi also attended a number of important national seminars and symposia held at IARI, New Delhi and its vicinity. The meetings attended were: Tenth Annual Rabi Workshop of the All India Co-ordinated Maize Improvement Project (3-5 September); National Symposia "on means to increase crop response to fertilizer use" organized by the Fertilizer Association of India (4 October) and Golden Jubilee Meetings of the Soil Science Society of India and symposia on "Soil resources and productivity management (7 October).

(H) Evaluation

(i) Internal: Formal evaluation was considered necessary to ensure sustained interest of the participants throughout the training course and to help the course Directorate to identify individual participants requiring special attention in specific areas of their study. Participants were evaluated on a continuous basis. Each participant submitted a weekly report on the work done by him in the previous week and his plan of work for the next week. These reports were commented by the respective supervisors in the background of his performance in the field work. Participants were also evaluated on the overall quality of three reports (field research project, review of literature, research project proposal) prepared and defended by them in the joint meeting of the course staff and participants. In addition the participants took two mid-term (14 August and 15 October) and one final written examinations and an oral test (1 December). The participants were graded on the basis of their overall performance in various aspects of training into two categories, average and above average (those whose performance was over 60% across the board). These grades were included in the final certificates awarded to all the participants at the closing function. A detailed transcript was also provided to each participant.

(ii) External: In order to obtain an impartial opinion on the overall quality of the training course FAO sent three outside Consultants with considerable experience in research and training and a vast knowledge of research and development requirements of the recipient countries. They were: (i) Dr. Gösta Julén, former Research Director, Svalöf AB, Svalöf (Sweden) who pioneered FAO/SIDA training courses on field food crops in 1961 and has been closely associated with them since then, (ii) Professor J.C. Holmes, School of Agriculture, Edinburgh University (U.K.) who has vast experience in research and development and in training and has been associated with FAO/SIDA training programme and its follow-up evaluation since 1977, and (iii) Dr. M. Yousaf Chaudhri, Member (Crop Sciences) Pakistan Agricultural Research Council, who has taught plant breeding at undergraduate and post graduate level for 25 years and conducted successful research on field crops especially maize. In addition he was Manager of UNDP/FAO project field food crops in Burma and carried out numerous FAO programming and evaluation missions. In his capacity as member of Technical Advisory Committee (TAC) of Consultative Group on International Research (CGIAR) he is familiar with on-going research and training activities at International Research Centres. Copies of their reports are given as annexure 9.

Annexure B



(1) CONSULTANCY REPORT ON THE SIXTH FAO/SIDA COURSE
ON MAIZE, SORGHUM AND MILLET FOR AFRICA AND THE
NEAR EAST

by

DR GOSTA JULÉN AND PROFESSOR J C HOLMES

INTRODUCTION

On the request of FAO, Dr Gösta Julén, Svalöv, Sweden and Professor John Holmes, Edinburgh, U.K. visited the FAO/SIDA Course on Maize, Sorghum and Millet, held at the Indian Agricultural Research Institute, New Delhi in order to evaluate the training activities and the welfare of the trainees. To accomplish this we had discussions with the Course Director, the Deputy Course Director, lecturers and supervisors. We listened to lecturers and discussions, saw the trainees in the field and discussed with them their research projects, and had individual interviews with each of the trainees. A visit was made to Hyderabad to see the Sorghum Breeding trainees.

PROGRAMME

Monday	October 8	Arrival in New Delhi at 0320 Visit to FAO office Meetings with Course Director and Deputy Course Director
Tuesday	October 9 and	Field visit together with the trainees to Sukhadia University, Durgapur Farm, Jaipur
Wednesday	October 10	
Thursday	October 11	Visit to research projects p.m. Attended lecture in Plant Breeding
Friday	October 12	Meeting with the Programme Review Committee Visit to research projects Meeting with Course staff and trainees for discussion on research project proposals Individual interviews with trainees Meeting with Deputy Course Director, Welfare Officer, and trainees on food problems
Saturday	October 13	Field visit to Harjiana Agricultural University, Hissar
Monday	October 15	Visit to research projects Individual interviews with trainees Departure for Hyderabad
Tuesday	October 16	Visit to IARI Regional Research Station Meeting with Dr R V Vidhyabhusanam, responsible for the Sorghum Breeding training Visit to research projects and interviews with the trainees

Wednesday	October 17	Together with the trainees, visits to the Dryland Farming Project and to ICRISAT Return to New Delhi
Thursday	October 18	Field visit to research projects of participants Lecture by Professor Holmes 'Research, Development, Extension and the Farmer' Lecture by Dr Julen 'Variety Evaluation' Interviews with participants
Friday	October 19	Meeting with Programme Review Committee Field visits to experimental plots in maize breeding and maize agronomy Lecture by Professor Holmes, 'The role of the Agronomist' Meeting in the FAO office Lecture by Dr Julén 'Relationship between Research, Extension and Farming in some African countries' Interviews with participants Discussion with the Welfare Officer for board and lodging
Saturday	October 20	Meeting with Course Director and Deputy Course Director Meeting with the Welfare Committee
Sunday	October 21	Departure from New Delhi at 0840.

INTERVIEWS WITH INDIVIDUAL TRAINEES

We interviewed the trainees individually, asking questions on the training, the staff commitment and support, and on the living conditions. We also gave them the opportunity to raise any other issues. All of the trainees seemed pleased at the interest being taken in them. They spoke highly of the quality of the Course and were very sure that it would help them greatly in their work at home. This was the case for all, whether mature people of long experience or young fresh graduates. They were all full of praise for the help they had been given by their supervisors.

A majority, however, felt that the Course was a little academic with not enough practical training in the field. However, it should be borne in mind that these interviews took place at the end of the lecture period and at the start of the harvest period for their projects. Nevertheless we believe that the concept of the training course of practical training alongside experienced breeders or agronomists was not met completely, but the balance of the Course did suit some of the trainees very well. Visits were mostly to research stations and while these were useful it was felt that more visits to practical farms and to see extension methods on farms should be included. We were of the strong opinion that this should be done and the Course Director agreed to arrange suitable visits to see farming and extension in action. Overall, we were well pleased with the trainees reaction to the Course. Their satisfaction was of a much higher level than we had experienced in previous Courses.

Regarding food and living conditions there was a minor crisis at the time of our visit. There was a strong feeling that the quality had deteriorated steadily from the general high level in the first six weeks. The complaints were of poor quality of ingredients, cooking and hygiene. Urgent discussions were held by the Deputy Course Director involving the Welfare Officer, the cook, staff of the Catering Department and trainees. Menus were prepared and hopefully the resulting improvement can be sustained to the end of the Course.

One or two minor topics were raised by individuals such as the acquisition of books, dollar payment in the last month, postponement of exams and these were relayed to the Deputy Course Director, or would be raised with Dr Tahir in Rome.

(2) CONSULTANCY REPORT ON THE EVALUATION OF "SIXTH
FAO/SIDA TRAINING COURSE ON MAIZE, SORGHUM AND MILLETS"

Dr. M. Yousaf Chaudhri
Member (Crop Sciences)

ASSIGNMENT

Pakistan Agricultural Research Council

1. The consultancy assignment had the following specific terms of reference:

- i) Deliver lectures on crop improvement as suggested by the course directorate.
- ii) Carry out an evaluation of the Training Course through individual and group discussions with both the trainees and the course staff.
- iii) Submit a report to the FAO Course Organizer on possible improvements of the syllabus and curriculum, methods of teaching, selection of course staff and trainees, as well as on follow-up support.

2. The assignment was carried out with a ten days visit (Sept. 17-26, 1984), to Indian Agricultural Research Institute (IARI), New Delhi, India, where the Training Course was located.

COURSE PARTICIPATION

3. A total of 18 persons belonging to 10 Asian and African countries were participating in the course. All of them were located at the IARI campus, in the first phase of their training. Two of them were later moved to Poone and Hyderabad to pursue specialized training in Millet and Sorghum. At the IARI the trainees were residing in the International Hall, which is located in a very wholesome environment and had comfortable single and double room accommodation and adequate cafeteria facilities. The trainees were divided into two sub-groups viz: Breeding and Agronomy, and for several aspects of the training programme were handled separately.

4. All of the trainees had at least the first degree in Agriculture and have been serving for some years in their national programmes. Some possessed Master's degree as well and a few had been to CIMMYT, for a short term training. Their professional experiences in all cases were quite relevant to their

subject of training, although their competence varied a great deal depending on the strength of their national programmes and the contents of their academic degrees.

5. The English language proficiency of the trainees ranged from very poor in the case of Somalian nationals who had their elementary schooling in Arabic and university education in Italian, to excellent in the case of urban dwelling Kenyan participants, with whom english has almost become a mother tongue. Most others had the desired level of language competence.

EVALUATION FINDINGS

18. The Indian Agricultural Research Institute, for several obvious reasons, was an ideal place for hosting such an International Training Course. The Institute has a cadre of highly qualified competent staff and extensive, well equipped laboratory and field facilities, for practical demonstration. This facilitated adequate coverage of various disciplines through lectures and associated practical laboratory and field exercises. Almost all the scientists associated with the training, had strong on-going research programmes and thus were capable of inducing necessary skills into the trainees. The library facilities at IARI are very comprehensive. In fact IARI library is one of the largest agricultural libraries in this part of the world. The participants were generally satisfied with the technical competence of the staff assigned to them for training.

19. This was the sixth in a series of training courses held since early seventies, under the FAO/SIDA programme on Field Food Crops and over the years the methodology has evolved to the level of near perfection. Generally speaking the trainees were satisfied with the conduct of the course and were very impressed by the technical competence of the staff assigned to them for training and the facilities available at the institute.

20. The procedure adopted jointly by FAO and the host country for selecting the trainees was appropriate and had led to the identification of suitable persons with relevant professional backgrounds. All of the trainees were employees of their respective national programmes and, in all cases, were expected to go back to continue working with these programmes. To that extent the course would certainly be contributing towards strengthening of the national programmes in terms of professional manpower.

21. Although the training imp^orted in the course under review was superior in several respects, one may still question the desirability of selecting candidates who had already undergone short-term training at some other institutes, particularly if a national programme is desparately in need of building up its cadre of trained manpower.

22. With the sort of range in language profeciency that existed among the trainees one can well imagine the difficulty of course organizers to set standards for conduct of the course, that would fit well to all participants of the course. Besides langauage proficiency, the absorptive capacity of the trainees also varied a great deal depending on the strength of their academic training and professional experiences. Some of them had real difficulties in following lecture contents particularly in the initial stages.

23. A pre-enrolment coaching in english language for those with whom english has not been a medium of instruction of a working language, would be worth considering for future organization of such courses. Such a coaching can be arranged either within the country of their origin or in the Institute hosting the training course. In the later cases the deficient candidates can be brought in 4 to 6 weeks earlier than others.

24. Although in general the trainees felt very satisfied with the conduct of the course a number of points that emerged while observing and discussing various aspects of the training programme would merit consideration for making such an exercise in the future still more useful and productive.

25. It was felt that although contents of all the lectures delivered to the trainees were relevant, in a number of cases these were rather too extensive and could not have been fully absorbed by the trainees in such a short period. Probably, the teachers with all the competence at their command, were eager to put across as much material as they could in the allocated time. The poor language proficiency and weak professional background of some of the trainees limited their absorptive capacity.

26. While listening to some of the lectures and going through the mimeographed material passed on to the trainees, it was felt that at least some of the material could have been either avoided or at least sufficiently condensed, without in any way affecting the quality of the lecture contents or its usefulness. In fact some of the material included in the lectures seemed rather too advanced for the type of background that the trainees possessed.

27. Noting the relative time spent on class room lectures and laboratory practical or field demonstration it appeared that the process was rather too theory oriented. This was particularly felt in subjects like Plant Pathology and Entomology, where a more extensive laboratory exercise for identification of organisms and symptoms of diseases or pests, would have made the theory part much more instructive and would have had lot of applied utility in the trainees professional career. Even for some of the topics in Plant Breeding and Field Techniques, more elaborated practical demonstrations would have made the subject matter more comprehensive.

28. In most cases the lecturers proceeded with the assumption that the trainees have a certain background which made things somewhat difficult for those who did not possess adequate background in a particular subject. A case in point was the lectures on Quantitative Genetics where the trainees felt that a quick review in the beginning of more elementary topics of the subject would have certainly helped them to comprehend the more advanced topics in a much nicer way. This sort of pattern in all subjects would definitely help in carrying the entire group along.

29. It appeared that the lecture programme was too congested in the beginning and was somewhat relaxed in the latter stages. One can realise the time constraint under which the whole process was being implemented but even then a scope did exist for beginning at a slow speed and then accelerating the pace. This would have provided an opportunity to the trainees to adapt to a system of instruction to which some of them may not have been exposed before.

30. Conduct of field experiments was a very useful component of the training program. In most cases the trainees were able to get a project of their own interest, and planned in relevance to the needs of their national programmes. They were intimately associated with all phases of implementation of their respective projects and were guided and assisted by their assigned staff member. Their full involvement in the project helped them in learning finer details of data recording in various phases of the field experiment. This exercise also provided the trainees with opportunities to interact with each other both in the breeding and agronomy groups and discuss various aspects of their respective projects. During discussions with the trainees it clearly emerged that they were learning a great deal in research methodology in the conduct of these field projects.

31. There was a strong desire, in most of the trainees, to spend still more time in the field with the concerned scientists of IARI. This would have provided them an opportunity to discuss and clarify a number of related issues about which their comprehension was still somewhat hazy. This was particularly important for the aspects of field projects relating to plant pathology and entomology, where expertise in individual observations is necessary. Most of the national programmes to which these trainees belonged are weak in these areas.

32. In some cases the trainees had difficulty in relating field observations to theoretical bases. This pointed to the need for a greater field orientation in the training programme and a greater interfare between the trained and the assigned staff member, in the field.

33. Review of literature presentation was a good exercise for the trainees as most of them had not done it before. They had to do a lot of scanning through the literature in the library, abstract pertinent information and compile it in a logical sequence for typing, reproduction and distribution. They were appropriately guided by their assigned staff through all this process. It was, therefore, a good learning for all of them.

34. It seemed, however, that the topics assigned were too broad and the trainees were expected to put a lot of material together. Whereas the organization of the material in most cases was quite satisfactory, the trainees in many cases were not able to comprehend the subject matter well and consequently were not able to respond efficiently to the points raised for discussion. Short narrow based topics could have helped the writer comprehending the subject matter and then a group discussion could have been much more productive.

35. A few trips made to the other institutes and to the production areas were much appreciated by the trainees. Besides broadening their visions about research priorities and programmes it afforded them an opportunity to observe in the field the process of adoption of improved production technologies, under various agro-ecological and socio-economic situations, the farmer's attitudes towards it and various types of production constraints confronted by them. In these trips they got a chance to observe the linkages between research and extension for the transfer of technology.

36. These visits, however, seemed inadequate. One does realize the time constraint and financial limitations in organizing more extensive and frequent field trips but even then a few more visits to the production areas, by sampling enough production ecologies, would have been very useful as this would have provided the trainees an opportunity to witness the crop culture under various circumstances.

37. There was a general feeling among the trainees that the classroom type examination to which they were subjected was not appropriate at their stage. It had kept them tense most of time. Where-as some sort of examination scare was necessary to keep the attentions of the trainees fully focussed on the training course but as all of them were inservice personnel probably a blend of a few more objective type quizzes in the classroom, ~~combined~~^{and} with frequent field evaluations, through some suitable mechanism, would have been appropriate.

38. The trainees were very appreciative of the provision of funds for the purchase of books and other technical printed material. Most of them being based at the out-stations, in their respective countries, did not have any access to such materials.

39. Although none of the participants of this training course were involved in any research management/organizational activities in their home countries yet during their stay at the IARI they got acquainted with the linkages between research, post-graduate teaching and extension and this would provide them with a useful background in their future career.

40. On the non-academic front, the trainees were generally happy with the various arrangements. Keeping in view the living expenses that they had to meet during their stay at IARI, the amount of stipend looked adequate. However, the charges for the meals were rather high compared with the quality and quantity of the food that was served. The catering service was let out to a contractor and there were some problems in the beginning, but one can imagine the difficulties in setting a common menu that would suit the tastes of so many nationalities.

LECTURES BY THE CONSULTANT

41. Two lectures on "The Changing Perspectives in Crop Research" were given to the trainees which were participated by most of the training staff as well. The lectures mainly concerned with the shifts in crops research priorities and strategies in response to changing agro-ecological, bio-adaptive and socio-economic environments. A lively discussion took place following the delivery of these lectures. An outline of these lectures is attached as Appendix.

FOLLOW UP

42. A follow up support to the trainees would be very desirable. This may take the following forms:-

- i) A periodic visit by a consultant to the trainees home countries to assess the usefulness of this training to the national programmes.
- ii) A periodic get together of the trainees in a Workshop/Seminar.
- iii) A support for individual participation in Seminars/Workshops/Symposia.
- iv) A support for study tours to elite institutes of relevance to their field of specialization.
- v) A support to facilitate supply of germplasm and published literature.
- vi) A mechanism for regional cooperation for joint planning, exchange of information and research material.

43. Such training courses have been extremely useful in building up a critical mass of technical manpower in the developing countries. It is understood that this is last course in the series. As most of the developing countries, particularly in Asia and Africa, are still short of trained manpower, it will be very desirable to continue this activity for several more years. The contents of such training courses need to be more field oriented.

44. Many of the trainees were keen to pursue post-graduate degree programmes at IARI. The co-sponsors of this course may consider finding ways and means to support such programmes for the needy countries.

ACKNOWLEDGEMENT

45. The assistance provided by Dr. Jaginder Singh, Coordinator, All India Maize Programme, and his staff during this assignment is gratefully appreciated.

資料(3)

RECORD OF DISCUSSIONS BETWEEN THE JAPANESE CONSULTATION TEAM AND
THE AUTHCRITIES CONCERNED OF THE GOVERNMENT OF INDIA
ON THE THIRD COUNTRY TRAINING PROGRAMME (DRAFT)

The Japanese Consultation Team (hereinafter referred to as "the Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by _____ visited _____ from _____ to _____ for the purpose of formulating the training course in the field of maize composite under the Third Country Training Programme of JICA.

During its stay in India, the Team had a series of discussions with the authorities concerned of the Government of India with respect to the framework of the above mentioned training course and the desirable measures to be taken by both Governments to ensure its successful operation.

As a result of the discussions, both parties agreed to recommend to their respective Governments the matters referred to in the documents attached hereto.

ATTACHED DOCUMENT
(Original Draft)

The Government of Japan and the Government of India will cooperate with each other in organizing the training course in the field of maize composite at Indian Agricultural Research Institute (hereinafter referred to as "the Course") under the Third Country Training Programme of JICA.

The Government of India will conduct the Course with the support of the technical cooperation scheme of the Government of Japan. The Course will be held once a year from the Japanese fiscal year of 1987 to 1991 subject to an annual consultation between both Governments.

The Course will be operated in accordance with the followings:

I. TITLE

The Course will be entitled International Training Course in Breeding method of Maize Composite.

2. PURPOSE

The purpose of the Course is to provide participants from developing countries with opportunities to refresh and upgrade relevant techniques and knowledge in the field of maize composite.

ATTACHED DOCUMENT
(Revised Draft)

Same as the Original Draft

on Population Breeding in Maize.

Same as the Original Draft

3. OBJECTIVE

At the end of the Course, the participants are expected to be able to:

- 3-1 Select the mother population of maize,
- 3-2 breed new composite varieties of maize,
- 3-3 maintain the maize composite varieties, and
- 3-4 reconstruct the maize composite varieties.

4. DURATION

The first Course will be held from July to October, 1987.

5. CURRICULUM

The tentative curriculum of the Course is attached as ANNEX I.

6. INVITED COUNTRIES

The Governments of the following countries will be invited to apply for the Course by nominating their applicant(s):
Bangladesh, Bhutan, Burma, Indonesia, Maldives, Nepal, Pakistan, Sri Lanka, Thailand.

Same as the Original Draft

4. DURATION

The first Course will be held from 1st of August to 31st of October, 1987.

Same as the Original Draft

6. INVITED COUNTRIES

The Governments of the following countries will be invited to apply for the Course by nominating their applicant(s):
Bangladesh, Bhutan, Burma, Indonesia, Maldives, Nepal, Pakistan, Sri Lanka, Thailand, Philippines, Malaysia. (Some countries from Africa and Middle east, if relevant)

7. NUMBER OF PARTICIPANTS

The number of participants from the invited countries shall not exceed eight (8) in total. And the number of participants from India shall not exceed (2).

Same as the Original Draft

* Allocation for India is subject to further discussion.

8. QUALIFICATIONS FOR APPLICANTS

Applicants for the Course are:

8-1 To be nominated by their respective Governments in accordance with the procedure mentioned in 10-1 below,

Same as the Original Draft

8-2 To be university graduates or to have the equivalent academic background,

8-2 To be university graduates in biological science/agriculture science or to have the equivalent academic background,

8-3 To have the practical experience of more than three (3) years, in the field of maize breeding, and/or seed production and processing,

two (2) years, in the field of breeding, and/or seed production and processing,

8-4 To be engaged in research work in Central Research Institute of agriculture.

relevant field in university or Government Institutions.

8-5 To be under forty (40) years of age in principle,

forty-five (45) years of age in principle.

8-6 To have a good command of written and spoken English, and

Same as the Original Draft

8-7 To be in good health to complete the Course.

Same as the Original Draft

9. FACILITIES AND INSTITUTIONS

Indian Agricultural Research Institute
(hereinafter referred to as "IARI")

Same as the Original Draft

10. PROCEDURE OF APPLICATION

10-1 The Governments applying for the Course shall forward five (5) copies of the prescribed application form for each nominee to the Government of India through their diplomatic channels not later than two months before the commencement of Course.

10-2 The Government of India will inform the applying governments whether or not the applicant(s) is/are accepted to the Course not later than one month before the commencement of the Course

11. UNDERTAKING OF GOVERNMENT OF JAPAN AND GOVERNMENT OF INDIA

In organizing and implementing the Course in compliance with the Schedule of Course Operation attached in ANNEX II, both Governments will take the following measures in accordance with the relevant laws and regulations in force in each country.

Same as the Original Draft

11-1 The Government of India

11-1-1 Ministry of Foreign Affairs

- (1) To forward the General Information brochures (G.I.) of the Course to the Governments of invited countries through its diplomatic channels,
- (2) To receive application forms and forward them to IARI, and
- (3) To notify the respective Governments through its diplomatic channels of the results of selection of participants.

11-1-2 IARI

- (1) To formulate the curriculum based on ANNEX I, Same as the Original Draft
- (2) To draft and print the G.I. Same as the Original Draft
- (3) To assign an adequate number of its staff as lectures/instructors for the Course. Same as the Original Draft
- (4) To provide its training facilities and equipment for the Course, *Additional Equipment is subject to further discussion.
- (5) To select participants in the Course, and to inform the result of the selection to their respective Governments and the Office of JICA in India (hereinafter referred to as "the JICA Office") *Item (5) is subject to further discussion.

- (6) To arrange accommodations for participants, Same as the Original Draft
- (7) To arrange international air tickets for participants from the invited countries and to meet and see them off at the airport, *Indian side is acceptable on the condition that payment is made by Japanese side. However, subject to further discussion. Same as the Original Draft
- (8) To arrange domestic study tour(s) to be included in the Course.
- (9) To take budgetary measures to bear the expenses necessary for conducting the Course excluding the expenses financed by the Government of Japan.
- (10) To issue certificates to the participants who successfully complete the Course at the end of the Course. Same as the Original Draft
- (11) To submit a course report and a statement of expenditures to the JICA Office, and Same as the Original Draft
- (12) To coordinate any matter related to the Course. Same as the Original Draft
- 11-2 The Government of Japan
- (1) To dispatch, following the regular procedures of its technical cooperation scheme, a short-term expert who delivers lectures on such subjects as mentioned in ANNEX I, Same as the Original Draft
- (2) To bear the following expenses for the Course through JICA as the Tentative Estimate of Expenses attached in ANNEX III,

- (a) Such expenses relevant to participants from the invited countries as international economy-class flight fare, accommodation, per-diem and medical insurance premiums.
- (b) Such expenses relevant to IARI as honoraria for external lectures, arrangement of meeting and study tour(s), teaching aids, expendable supplies, copies and reprints, and secretarial services.

*Indian participants ; Subject to further discussion.

*For honoraria and total amount; Subject to further discussion.

12. PROCEDURE OF REMITTANCE AND EXPENDITURE *Item 12 is subject to further discussion.

The remittance and expenditure of the funds for the expenses to be borne by JICA will be arranged in accordance with the following procedure.

12-1 IARI will open a bank account in India to accept the fund remitted by JICA and inform the JICA Office of the name of bank, the account code number and the name of the account holder.

12-2 IARI will submit to the JICA Office the bill of estimate for expenses to be borne by JICA not later than sixty (60) days before the opening of the Course.

12-3 JICA will access the bill of estimate and remit the assessed amount of expenses to the account mentioned in 11-1 above within thirty (30) days after the receipt of the bill of estimate.

12-4 IARI will submit to the JICA Office a statement of expenditures within thirty (30) days after termination of the Course.

12-5 In case any amount of the fund remitted by JICA remains unspent, IARI will reimburse the unspent amount to JICA in accordance with the instructions given by JICA. The fund allocated for the flight fare, accommodation, per-diem and medical insurance premiums shall not be appropriated for any other purposes.

12-6 By the request of JICA, IARI will make available for JICA's reference all the receipts and other documentary evidence necessary to certify the expenditures stated in 12-4 above.

* Subject to the confirmation by Chief Accountant, IARI.

13. This Attached Document and the following Annexes attached hereto shall be deemed to be a part of the Record of Discussions.

- ANNEX I : Tentative Curriculum of the Course
- ANNEX II : Schedule of the Course Operation
- ANNEX III : Tentative Estimate of Expenses

*ANNEX II and III are subject to further discussion.

資料(4) FAO/SIDA 訓練コースに係るインド政府・FAO交換覚書

MEMORANDUM OF RESPONSIBILITIES TO BE ASSUMED BY THE GOVERNMENT OF THE
REPUBLIC OF INDIA AND BY FAO FOR THE SIXTH FAO/SIDA TRAINING COURSE
ON MAIZE, SORGHUM AND MILLET FOR AFRICA AND THE NEAR EAST

The following provisions set out the respective responsibilities to be assumed by the Government of the Republic of India, hereinafter referred to as the Host Government, and by the Food and Agriculture Organization of the United Nations, hereinafter referred to as FAO, to assure the efficient conduct of the Sixth FAO/SIDA Training Course on Maize, Sorghum and Millet for Africa and the Near East, hereinafter referred to as the Training Course, which forms part of the FAO/Government Co-operative Programme.

The Training Course will be sponsored and conducted by FAO, in co-operation with the Host Government and will be held at the Indian Agricultural Research Institute (IARI), New Delhi, and at its Regional Research Centre in Hyderabad. The proposed dates for the Training Course are 15 June to 14 December 1984.

FAO will be responsible for issuing all invitations to the participating governments.

The objective of the Training Course is to provide reorientation to university graduates from Africa and the Near East on theoretical and practical aspects of the improvement and production of maize, sorghum and millet.

The Programme will consist of lectures, discussions, practical field and laboratory work, visits to agricultural universities and research stations, demonstration fields, yield trials, seed production and farmers' fields.

The following Governments will be invited to nominate participants: Afghanistan, Botswana, Cyprus, Egypt, Ethiopia, Gambia, Ghana, Iran, Iraq, Jordan, Kenya, Lebanon, Lesotho, Liberia, Libya, Malawi, Nigeria, Pakistan, Saudi Arabia (Kingdom of), Sierra Leone, Somalia, Sudan, Swaziland, Syria, Tanzania, Turkey, Uganda, Yemen Arab Republic, Yemen (People's Democratic Republic of), Zambia and Zimbabwe.

The technical and professional qualifications required of prospective candidates as a condition for eligibility to participate in the training activity will be agreed upon between FAO and the Host Government, acting through ICAR. Before reaching such agreement, FAO and the Host Government may agree to submit these technical qualifications to the academic board of the institution where the training activity is to be held, and, when jointly determining such qualifications, will give due consideration to the views expressed thereon by the academic board. FAO will then proceed to a preliminary screening of the candidates, after which the FAO Co-Director, in consultation with the National Director, shall draw up a list of candidates proposed for selection and submit it to the National Academic Council for advice, prior to selection of individual candidates by FAO. The final list of candidates so selected by FAO will be chosen from among those candidates suggested by the FAO Co-Director in consultation with the National Director. FAO will then notify the Governments concerned of the names of the selected candidates.

The Training Course will be conducted in English.

PART I - OPERATIONAL RESPONSIBILITIES OF FAO

A. Staff (at FAO's cost in accordance with FAO regulations)

FAO will:

1. Designate a Co-Director to be jointly responsible with the Director nominated by the Host Government for the operation of the Training Course.
2. Provide lecturers and/or consultants, as required.

B. Material, Supplies and Services

FAO will:

3. Prepare, in collaboration with the Host Government, the Programme for the Training Course.
4. Provide documentation essential for the Training Course.
5. Make lump-sum payment of US\$12000 to the Indian Council of Agricultural Research (ICAR) for providing facilities relevant to the training programme, including transportation of trainees at the Training Course, and supporting staff for the Course.
6. Provide any other special material or supplies required for the conduct of the Training Course, including transport up to and return from the point of entry in the host country, it being understood that any material or supplies provided by FAO remains the property of FAO.
7. Pay an honorarium to the Director nominated by the Host Government, as well as honoraria to lecturers and administrative personnel provided by the Host Government, as a compensation for the work performed by them beyond their normal hours of duty.
8. Meet the total cost of the Training Course including transport (round-trip tourist air tickets and internal travel) for participants selected as well as their subsistence allowance during their stay in the host country at rates not exceeding those established by the United Nations Development Programme for fellowship holders.
9. Make available and pay for the books for participants which will remain the property of the participants.
10. Issue and distribute a report of the Training Course after its conclusion.

PART II - RESPONSIBILITIES OF THE HOST GOVERNMENT IN REGARD TO PRIVILEGES AND IMMUNITIES FOR FAO AND PARTICIPANTS

The Host Government undertakes to:

11. Accord, for the purpose of the Training Course, to FAO, its property, funds and assets as well as to FAO staff and experts, all the privileges and immunities specified in the provisions of the Convention on the Privileges and Immunities of the Specialized Agencies.

12. Grant visas and all necessary facilities to participants, lecturers, experts and consultants attending the Training Course.
13. Hold FAO and its staff harmless in respect of any claims by third parties (other than participants) arising out of the Training Course, except where it is agreed by the Host Government and FAO that the claim arises from gross negligence or wilful misconduct of such staff.

PART III - OPERATIONAL RESPONSIBILITIES OF THE HOST GOVERNMENT

A. Staff

The Host Government will:

14. Nominate a Liaison Officer to be responsible for the co-ordination of local facilities and arrangements of field trips and other projects included in the Programme of the Training Course.
15. Nominate the Director of the Indian Agricultural Research Institute, New Delhi, as the Director of the Course, who, in collaboration with the Liaison Officer, will be jointly responsible with the Co-Director provided by FAO for the operation of the Training Course.
16. Provide instructors, lecturers and administrative staff for the Training Course in addition to those provided by FAO, as will be mutually agreed between the Director and Co-Director of the Training Course.

B. Facilities and Equipment

The Host Government will provide or pay for:

17. Two meeting rooms and one lecture hall with appropriate seating and table space for 18 persons; adequate laboratory space; two offices adequately furnished, space for duplication and collation of documents, and land and equipment for practical field work.
18. Typewriters, calculating machines, duplicating machinery and other equipment as required.

C. Supplies and Services

The Host Government will provide:

19. Telephone, telegraph and postal services within the host country, free of charge, in connection with the work of the Training Course.
20. Cost of medical care and hospitalization for FAO staff assigned to the Training Course, it being understood that such facilities will be of a kind to which senior civil servants of the Government are entitled.
21. First-aid facilities for participants and staff.

資料(5) International Training Course に係る経費概算

Proposed Budget* for the JICA-TCTP on "International Training Course on Population Breeding in Maize" (August-October, 1987)

		US\$	US\$
A. Course Director	4mmxUS\$1000	4,000	
Dy. Course Director	4mmxUS\$ 800	3,200	7,200
B. <u>Core-Faculty</u>			
Academic & Research Counsellors			
Lecturers/Instructors	24mmxUS\$ 350	8,400	8,400
Project Supervisors			
C. Guest Lectures and other technical and supporting staff assistance		4,000	4,000
D. Administrative Officer	4mmxUS\$325(1)	1,300	
Welfare Officer	3mmxUS\$200	600	
Secretary	3mmxUS\$325	975	
Typist	8mmxUS\$150	1,200	
Overtime allowance		1,000	9,075
E. Institution Fee @\$200 per trainee			2,000
F. Study Tour			1,200
G. Hospitality		1,500	
Inauguration, Periodic Seminars & Valedictory		1,000	
Air freight for despatch of training study material		2,000	
Duplication & compilation services		200	
First-Aid facilities & services		500	
Stationery & office supplies		2,200	
Training Aids & supplies		2,000	
Purchase & Hire of equipment and related services		4,000	
Internat travel of participants and staff		3,000	16,400
Accommodation & living allowances @25 x 10 x 90		22,500	22,500
I. Purchase of literature 200 x 10		2,000	2,000
J. Health Insurance of participants, etc.		1,000	1,000
K. Printing of Reports, Information Bulletins, etc.		5,000	5,000
L. Miscellaneous		400	400
			79,175
			or
		Approx.	80,000
M. Flight Fare 500 x 10			5,000
		Total	85,000

資料(6) Minutes

1. Japanese Preliminary Survey Team (hereinafter referred to as "the team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. H. Takei visited India from 8th to 13th of December, 1986 and discussed with the authorities concerned of the Government of India on the formulation of the training course in the field of maize composite under the Third Country Training Programme of JICA (hereinafter referred to as "TCTP").
2. Both sides exchanged the views and identified that breeding method of maize composite is the appropriate theme for the training course being convinced of its significance and necessity for the neighbouring countries of India, and recognized mutual intention to cooperate each other in implementing the above course.
3. However, Indian side expressed its opinion that the course should be hosted and financed by Japan and in this regard, requested that Japanese side should take such roles as distribution of the course information to the invited countries, acceptance and screening of application and notification of the results. The team insisted, in accordance with the concept of TCTP, that Government of India should be the host country which undertakes above mentioned roles

in implementing the course and pointed it out as the essential role as being done in the TCDC programme of the Government of India.

Indian side took a note of it and agreed that the matter would be subjected to further consideration and discussion. The arrangement of overseas travel was also kept pending for further study.

4. The team and the authorities concerned of India had a series of discussions on the technical aspects of the training course on the basis of the identification as mentioned in 2 above and with the understanding that further study and discussion are to be continued on all matters in question written in 3 hereabove. As a result, both sides drew up the draft of R/D as attached hereto, specifying the unsettled items in the form of remarks and observations.
5. With regard to financial aspects, Indian side proposed the tentative estimate of expenses to be borne by JICA with amount of approximately 80 thousand US dollars besides overseas flight fare, which includes the honoraria for such internal personnel as course director/lecturers and all expenses for Indian participants in addition.

Japanese side expressed its opinion and observation that the above proposal is not feasible for the reasons that such items are not included in the budgetary provision of TCTP and the amount of the estimate far exceeds that of the budget allocated.

G.M. Pillai
Deputy Secretary (TC)
Department of Economic Affairs
Ministry of Finance
Government of India

Hideo Takei
Leader, Preliminary Survey
Team for TCTP
Japan International
Cooperation Agency
(JICA)

資料 (7) TENTATIVE CURRICULUM
OF THE COURSE

July 28-July 31	-	ARRIVAL OF PARTICIPANTS
July 31	8.30-9.30 -	REGISTRATION OF Participants.
	10 A.M. -	Introduction of Course staff & Participants.
AUG. 1	8.30-13.00-	Orientation- Visit to different Divisions.
2		Sunday.
3	9.00-13.00	Preparation of instruction sheets, master sheets, sowing and field layout plans and data recording sheets for breeding material and variety trials.
	14.30-15.30	Organisation of agricultural research in India.
	15.45-16.45	Plant and floral morphology and classification of maize types.
4	9.00-13.00	As on 3rd.
	14.30-15.30	Organisational set up of the Coordinated maize improvement project.
	15.45-16.45	Theories and origin of maize.
5	9.00-13.00	Preparation of seed material for trials.
	14.30-15.30	New strategy for increasing agricultural production.
	15.45-16.45	The cell, the nucleus, chromosome as transmitters to Heredity.
6	9.00-13.00	Field preparation for the experiments.
	14.30-15.30	Lab to Land programme of ICAR
	15.45-16.45	Germplasm resources, importance and role of diversity in maize improvement.
7		National festival
8		2nd saturday
9		Sunday
10	9.00-13.00	Field layout of various designs (randomized complete blocks, latin square, split plot, lattice etc.), for testing performance of breeding material and variety trials.
	14.30-15.30	Introduction to Indian Agricultural, major ecological zones, major crops grown, cropping and farming system.

AUG. 10	15.45-16.45	Cell-division, mitosis, meiosis and their implications.
11	9.00-13.00	Study of different commercial types in maize (dent, flint, Pop, Sweet corn etc.).
	14.30-15.30	Races of maize, their recognition and classification.
	15.45-16.45	Organisation, importance and activity of National Bureau of Plant Genetic Resources.
12	9.00-13.00	Study of variability for important characters in maize, height, stem and leaf characters, grain type colour and size, ear characters etc.
	14.30-15.30	Problems and objectives in maize breeding.
	15.30-16.45	Strategies and methodology for transfer of improved crop production technology to the farmers field.
13	9.00-13.00	Note taking on important characters such as germination, early development, tillering, height, maturity, disease and insect pest, yield etc. at various stages of development.
	14.30-15.30	Mendel's Laws
	15.45-16.45	History of maize breeding.
14	9.00-13.00	Practical as on 13.
	14.30-15.30	Mendel's Laws (conti.)
	15.45-16.45	Maize Research in India.
15	Independence day	
16	Sunday	
17	9.00-13.00	Practice in making of various breeding entities like full-sibs, bi-parents, back crosses etc.
	14.30-15.30	Inheritance of characters of major economic importance, limitations and potential in maize improvement.
	15.45-16.45	Plant genetic wealth and its utilization in crop improvement, centre of origin and diversity, organisation of the collections, Exploration and introduction.
18	9.00-13.00	Practical continued as on 17.
	14.30-15.30	The expression and interaction of genes.
	15.45-16.45	Nature of quantitative inheritance and role of genetic parameters in the Choice of breeding and selection methods.

AUG.	19	9.00-13.00	As on 18.
		14.30-15.30	Bottle-necks for higher production and basic approaches leading to development of breeding activities.
		15.45-16.45	The expression and interaction of genes (continued).
	20	9.00-13.00	Practical as on 19th
		14.30-15.30	Heterosis and its manifestation.
		15.45-16.45	Exploitation of heterosis, occurrence, importance and utilization, physiological explanation of heterosis.
AUG.	21	9.00-13.00	Practicals as on 21st.
		14.30-15.30	Maintenance and evaluation of plant genetic wealth, storage, quantitative aspects and activities of NBPCR.
		15.45-16.45	Linkage and recombination.
	22	9.00-13.00	As on 21st.
		14.30-15.30	Genetic basis of heterosis
		15.45-16.45	-do-
	23	Sunday -free	
	24	9.00-13.00	As on 22nd.
		14.30-15.30	Biochemical basis of heterosis
		15.45-16.45	-do-
	25	9.00-13.00	Practice in selfing and crossing techniques in maize.
		14.30-15.30	Evaluation of breeding procedures, selecti selection techniques and their subsequent modifications based on genetic concepts.
		15.45-16.45	-do-
	26	9.00-13.00	Practical as on 25th
		14.30-15.30	Linkage and recombination (continued)
		15.45-16.45	Inbreeding and its consequences in maize.
	27	FREE	
	28	9.00-13.00	As on 26th
		14.30-15.30	Seed industry development programme- importance, organisation and legislative regulatory aspects, seed production planning in relation to types of seed, diseases etc.
		15.45-16.45	Heritability and Selection.

AUG.	29	9.00-13.00	Selection in segregating populations of maize.
		14.30-15.30	Conventional hybrid maize breeding approach development and evaluation of inbred lines.
		15.45-16.45	Seed testing, importance of seed quality control, seed sampling and testing equipment and their use, procedure to determine purity of seed.
	30	-	
	31	9.00-13.00	Field exercises in mass selection.
		14.30-15.30	Prediction and production of double cross hybrids and synthetics.
		15.45-16.45	Studies on Mutation in maize.
Sep.	1	9.00-13.00	Field exercises in Ear to rows selection.
		14.30-15.30	Improvement of inbred lines for the synthesis of superior hybrids.
		15.45-16.45	Studies on polyploidy.
	2	9.00-13.00	Field exercises in Full-sib selection.
		14.30-15.30	Testing for germination, moisture percentage and weed etc.
		15.45-16.45	Isolation requirements, production of foundation and certified and other commercial seed requirement.
	3	9.00-13.00	Field exercises in detasseling.
		14.30-15.30	Study of seed testing procedures and relevant experiments.
		15.45-16.45	Commercial exploitation of hybrid vigour in maize.
	4	9.00-13.00	As on 3rd
		14.30-15.30	Studies on general and specific combining ability in maize.
		15.45-16.45	-do-
	5	9.00-13.00	Data recording on Plant and ear aspects in different trials.
		14.30-15.30	Population improvement approach-Genetic concepts of population improvement procedure.
		15.45-16.45	Special requirements for maximum seed production, harvesting, drying threshing cleaning and sizing, seed treatment etc.
	6	Free	
	7	9.00-13.00	Data recording on Days to flowering
		14.30-15.30	Mass selection and Ear to row selection and their modifications.
		15.45-16.45	-do-

Sep. 8	9.00-13.00 14.30-15.30 15.45-16.45	Data recording on Days to flowers. Maize Breeding Research in Japan. Selection schemes-Recurrent selection procedures.
Sep. 9	9.00-13.00 14.30-15.30 15.45-16.45	MID- TERM EXAMINATION. Physiological aspects of temperate maize. Population improvement approach-half sib and full-sib selection.
10	9.00-13.00 14.30-15.30 15.45-16.45	} Visit to Hyderabad.
11	9.00-13.00 14.30-15.30 15.45-16.45	
Sep. 12	2nd Sat. (free)	
13	Sun. (free)	
14	9.00-13.00 14.30-15.30 15.45-16.45	Data recording on plant and ear aspects. Seed storage and distribution-importance, organisation, Popularization of quality seed and methods used, role of extension service and credits- 2 hrs.
Sep. 15	9.00-13.00 14.30-15.30 15.45-16.45	Data recording on plant and ear aspects Role and importance of interdisciplinary research in maize improvement in Japan(2 hrs)
16	9.00-13.00 14.30-15.30 15.45-16.45	Data recording on plant and ear aspects Development of composites -do-
17	9.00-13.00 14.30-15.30 15.45-16.45.	Data recording on plant and ear aspects. Choice of population improvement procedures criteria used + Discussion on MID TERM EXAM.
18	9.00-13.00 14.30-15.30 15.45-16.45	Data recording on plant aspects and ear aspects. Breeding for drought tolerance in maize -do-
19	9.00-13.00 14.30-15.30 15.45-16.45.	Data recording on disease aspects in different trials. Importance, terms used to designate different seeds, procedures used for seed certification field and laboratory inspection methods, seed laws etc.(2 hrs.)

Sep. 20	Sun (free)	
Sep. 21	9.00-13.00	Data recording on disease aspects in different trials.
	14.30-15.30	Genetic basis of resistance to important diseases of maize. Breeding for resistance to important diseases of maize.
	15.45-16.45	-do-
22	9.00-13.00	Data recording on pests aspects in different trials.
	14.30-15.30	Breeding for resistance to important diseases of maize.
	15.45-16.45	-do-
23	9.00-13.00	Data recording on pests aspects in different trials.
	14.30-15.30	Genetics basis of resistance to important pests in maize.
	15.45-16.45	-do-
24	9.00-13.00	Harvesting of different Breeding materials.
	14.30-15.45	Breeding for resistance to agronomically important insects pests.
	15.45-16.45	-do-
25	9.00-13.00	Harvesting of different Breeding materials.
	14.30-15.30	Improvement of protein quality problem and prospects.
	15.45-16.45	-do-
26	9.00-13.00	Harvesting of different Breeding materials.
	14.30-15.30	Improvement of pest protein quality and quantity in maize.
	15.45-16.45	-do-
Sep. 27	Sun (free).	

Sept. 28	9.00 - 13.00 14.30 - 15.30 15.45 - 16.45	
Sept. 29	9.00 - 13.00 14.30 - 15.30 15.45 - 16.45	To Pantnagar
Sept. 30	9.00 - 13.00 14.30 - 15.30 15.45 - 16.45	
Oct. 1	9.00 - 13.00 14.30 - 15.30 15.45 - 16.45	Recording of plant stand in different trials Studies on determination of optimum maturity.
Oct. 2	National Holiday (free)	
Oct. 3	National Holiday Dussehra (free)	
Oct. 4	Sunday (free)	
Oct. 5	9.00 - 13.00 14.30 - 15.30 15.45 - 16.45	Recording of plant height and ear height in different trials and their moisture. Breeding for lodging resistance in maize. <u>do</u>
Oct. 6	9.00 - 13.00 14.30 - 15.30 15.45 - 16.45	Recording of plant height and ear height in different trials. Breeding for population stress in maize. <u>do</u>
Oct. 7	9.00 - 13.00 14.30 - 15.30 15.45 - 16.45	Harvesting of different trials and determination of moisture Mechanism of male sterility in maize. Male sterility and its utilisation in maize.
Oct. 8	9.00 - 13.00 14.30 - 15.30 15.45 - 16.45	Harvesting of different trials and determination of moisture. Method of seed production in hybrids.
Oct. 9	9.00 - 13.00 14.30 - 15.30 15.45 - 16.45	Harvesting and moisture determination of different trials. Methods of seed production of composites. <u>do</u>
Oct. 10.	2nd Saturday (free)	
Oct. 11	Sunday (free)	

Oct. 12.	9.00 - 13.00	Laboratory exercises in analysis of data.
	14.30 - 15.30	Maintenance and increase of inbred lines, germplasm in small plots
	15.45 - 16.45	_____ do _____
Oct. 13	9.00 - 13.00	Laboratory exercises in analysis of data.
	14.30 - 15.30	A comprehensive maize breeding programme.
	15.45 - 16.45	_____ do _____
Oct. 14	9.00 - 13.00	Laboratory exercises in analysis of data.
	14.30 - 15.30	* Review presentation
	15.45 - 16.45	
Oct. 15	9.00 - 13.00	Analysis and interpretation of results.
	14.30 - 15.30	Review presentation
	15.45 - 16.45	
Oct. 16	9.00 - 13.00	Analysis and interpretation of results.
	14.30 - 15.30	Review presentation
	15.45 - 16.45	
Oct. 17	9.00 - 13.00	Analysis and interpretation of results.
	14.30 - 15.30	Review presentation
	15.45 - 16.45	
Oct. 18	Sunday free	
Oct. 19	9.00 - 13.00	FINAL EXAMINATION.
	14.30 - 15.30	
	15.45 - 16.45	

<u>Date</u>	<u>Time, h</u>	<u>Description</u>
Oct.20	09 00 - 13 00	Presentation of project proposal
	14 30 - 15 30	-do-
	15.45 - 16 45	-do-
Oct.21	09 00 - 13 00	-do-
	14 30 - 15 30	-do-
	15 45 - 16 45	-do-
Oct.22	National festival Diwali	
Oct.23	09 00 - 13 00	Presentation of project proposal
	14 30 - 15 30	-do-
	15 45 - 16 45	-do-
Oct,24	09 00 - 13 00	Discussion with course staff
	14 30 - 15 30	-do-
	15 45 - 16 45	-do-
Oct.25	09 00 - 13 00	SUNDAY
Oct.26	09 00 - 13 00	Individual discussion with course
	14 30 - 15 30	staff -do-
	15 45 - 16 45	-do-
Oct.27	09 00 - 13 00	-do-
	14 30 - 15 30	-do-
Oct.28	10 00 - 13 00	VALIDICTORY FUNCTION
Oct.29	Pre-travel formalities	
Oct.30	-do-	
Oct.31	-do-	
Nov.1-4	LEAVE COUNTRY	

JICA