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Collective Final Report

On

**International Course :
" Plant Biotechnology &
Biosafety "**

14 - 24 October 1995

Cairo, Egypt

Collective Report

International Course: " Plant Biotechnology & Biosafety "

Course Organizer:

The course was organized by the Egyptian Focal Point for Genetic Engineering and Biotechnology, Academy of Scientific Research and Technology (ASRT) in collaboration with the International Centre of Genetic Engineering and Biotechnology (ICGEB), UNIDO, and ISESCO.

Location:

Plant cell and tissue culture laboratory
National Research Centre (NRC),
Cairo, Egypt.

Duration:

(Ten days) 14-24 October, 1995.

Course Instructors:

6 instructors from 2 countries (Annex 2) :

Participants:

After the circulation of the first announcement (Annex I), the organizing committee received 126 application forms and candidatures from thirty two countries.

The selection was carried out by a panel consisting of :

Prof. Hamdy A. Moursy (ASRT, Egypt); Dr. M. El-Bahr (NRC, Egypt); Dr. Mohamed A. Aly (Faculty of Agriculture, Univ. of Cairo); and Dr. Helmy El-Bora'i (NTI, Egypt). The selection was based on the following criteria:

- Exclusion of over/under qualified candidates.
- Participation of different nationalities.
- Age of the participants (if possible not more than 40 years)
- Possibility of using the acquired knowledge and techniques by the candidate in his present or near future career.
- Possibility of partial covering of participation expenses by the candidate's government.

A total of 19 participants were from 8 countries (Annex II).

The course consisted of seventy five credit hours. There are (23) lectures and (49) hours of practical exercises, in addition to 3 hours of the evening round table discussions (Annex III).

Fellowships:

All foreign participants were granted fellowships (covering full accommodation, and pocket money. In addition five Egyptian participants from outside Cairo were provided accommodation.

Certificates:

The certificates (Annex IV) were awarded to the nineteen participants in the closing ceremony which was attended by President of ASRT, Prof. Dr. Ali Ali Hebeish; President of the NRC, Prof. Dr. Nabeel Abu-El-ainin; Vice-president of the ASRT and Course organizer, Prof. Dr. Hamdy A. Moursy; and the two vice-president of the NRC : Prof. Dr. Nabeeh Ashor and Prof. Dr. Nabeel Saleh

Economic Support :

The Egyptian Focal Point received three thousand U.S. dollars from the ISESCO (Islamic Educational Scientific and Cultural Organization), and the Course was sponsored by the UNIDO, and the ICGEB supported the course with an instructor.

Conclusion :

After accomplishing this course it could be concluded that this course fulfills one of the requirements of the third world countries in updating the knowledge and practical training of their scientists. It is also clear that Egyptian facilities and capabilities in cooperation with the international and regional organizations has much to do in this field.

Recommendations :

- 1- The Course should be held annually in the same laboratory
- 2- The Course should be a cooperative effort between the Egyptian Focal Point, UNIDO as well as the ICGEB, in collaboration with other sponsoring regional and international organizations

Prof. Dr. Hamdy A. Moursy

Hamdy A. Moursy
Vice-president of ASRT,
and Course Organizer

Annexes

Annex I First Circular

Annex II Official list of related personnel

Annex III Course contents

Annex IV Print of the awarded certificate

Annex V Financial Statement

**Training Course on
" Plant Biotechnology and Biosafety "**

14-24 October 1995, Cairo, Egypt

First Circular

Organised by:

- National Egyptian Focal Point of Genetic Engineering and Biotechnology,
Academy of Scientific Research and Technology (ASRT), Cairo, Egypt.

Sponsored by:

- International Centre for Genetic Engineering and Biotechnology (ICGEB)
Trieste, Italy.
- Academy of Scientific Research and Technology (ASRT), Cairo, Egypt.

To be held at:

Plant Cell and Tissue Culture Department,
National Research Centre,
Cairo, Egypt

1. INTRODUCTION :

Plant cell and tissue culture techniques have become a necessity in basic and applied research and applications in industry and agriculture. The need to master these techniques is becoming more and more important as applications increase in various fields. Thus providing basic training and an understanding of the possible applications of these methods is a must. A practical course on plant biotechnology focusing on cell and tissue culture and gene transfer would help a great number of interested scientists and industrialists to take their first step with confidence. Biosafety considerations and regulations will be addressed as a major component of the course.

To respond to this growing need, the regional and international co-sponsoring agencies have organized this course, in cooperation with the National Egyptian Focal Point of Genetic Engineering and Biotechnology (a body of the Egyptian Academy of Scientific Research and Technology).

II. Objectives :

1. To offer basic knowledge of plant cell and tissue culture techniques.
2. To provide practical training on several *in vitro* culture methodologies.
3. To discuss the applied aspects of cell and tissue culture.
4. To address the biosafety aspects of plant Biotechnology.
5. To suggest problem-solving approaches to plant cell manipulation towards acquiring a basic knowledge of conservation and utilization of plant genetic resources.
6. To permit the exchange of experiences among scientists from different countries.

III. Course Venue and Schedule:

The course will last for two weeks, from 14-24 October 1995, with morning and afternoon sessions. It will consist of theoretical lectures, hands-on training and round table discussions.

The course will be held at the Plant Cell and Tissue Culture Department, National Research Centre, Cairo, Egypt. A selected group of experienced national and international scientists will provide the lectures and training throughout the course.

The course will be conducted in English only.

IV. PARTICIPATION :

The course is open to research workers and experts from member countries of ICGEB. Special preference will be given to qualified experts from Arab, and African countries. Pending the availability of space, the course may be open to other developing countries that are members of ICGEB. Fluency in the English language is a prerequisite for all participants.

Qualifications:

1. Applicants must hold a MA. or a Ph.D. in plant sciences, and /or must be actively involved in agricultural research, plant breeding and agronomy for the past three to five years. Familiarity with tissue culture and recombinant DNA technologies is preferable for the course attendance.
2. Applicants active in work involving tissue culture technologies and conversant with theory and basic / intermediate techniques in molecular biology will have priority.
3. All applicants shall complete attached form and return it by 31 August 1995 to ASRT, to the address listed below.
4. Due to limited available space, candidates will be screened by a panel of scientists, to select most suitable participants.

V. FINANCIAL ARRANGEMENTS :

A limited number of fellowships will be provided to cover accommodation for the duration of the course. Preference will be given to more qualified candidates from least developed countries and / or less privileged institutions. Justification for fellowship request must be detailed in the attached application form.

Participants paying their own expenses will be accepted according to their qualifications and the availability of space.

The host institution will assist in providing local transportation and will arrange hotel reservation for participants.

The co-sponsors and the host institution will assume no responsibility for:

- (a) Costs incurred with respect to vaccinations, insurance, medical treatment or hospitalization, before, during or after the course;
- (b) Compensation in the event of death, disability or illness;
- (c) Compensation for loss or damage to personal property;
- (d) Compensation for salary or remuneration, for the duration of the course.

VI. COMMUNICATION :

Correspondence can be sent to:

Mr. Hamdy Abdel - Aziz Morsy
The National Egyptian Focal Point of Genetic Engineering and
Biotechnology
Academy of Scientific Research and Technology (ASRT)
101 Kasr El - Aini Street, Cairo, Egypt
Tel. (202) 3541044
Fax. (202) 3562820
Tlx. 93069 ASRT - UN

VII. Tentative Course Outline :

A. Theoretical :

1. Introduction to plant cell and tissue culture.
2. Establishing cell suspension and callus cultures.
3. Protoplast isolation, fusion and culture.
4. Organ culture (leaf, anther, embryos, flower buds, etc.).
5. Somatic embryogenesis.
6. Artificial seeds.
7. Virus - free plants.
8. Gene transfer.
9. Haploid plant production.
10. Secondary metabolites production *in vitro*.
11. Somatic cell genetics.
12. Somaclonal variation.
13. Cell selection for tolerance to environmental stresses.
14. Organell uptake.
15. Conservation and utilization of plant genetic resources.
16. Biosafety and risk management.

B. Practical sessions :

1. Culture methods:
 - Initiation of cell suspension and callus cultures
 - Single cell culture
2. Protoplast isolation and culture.
3. Cellular structure:
 - Cell wall stains
 - Isolation of nuclei
4. Organ culture:
 - Embryo culture
 - Anther culture
 - Leaf - segment culture
 - Flower-bud culture
5. Plantlet regeneration.
6. Micropropagation - shoot tip culture.

VII. Round table discussions :

Sessions will be held twice weekly, in the evenings. The topics will be determined at the beginning of the course.

International Course

" Plant Biotechnology and Biosafety"

14 - 24 October, 1995

National Research Centre,

Cairo, Egypt

Official List of Related Personnel

- Supervisor**
- Organizing Committee**
- laboratory Managers**
- Instructors**
- Participants**
- Official Observers**

Course Supervisor

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International Course :
" Plant Biotechnology & Biosafety "
14 - 24 October

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**Theoretical & Practical International Course
" Plant Biotechnology and Biosafety "**

14 - 24 October, 1995, Cairo

Time Table

Saturday, October 14, 1995

9:00 - 9:30	Registration (RAJA Hotel)
9:30 - 10:00	Introduction To The Course (Prof. Dr. Hamdy A. Moursy)
10:00 - 11:00	In Vitro Propagation Of Some Economic Plants (Dr. Mohamed K. El- Bahr)
11:00 - 11:30	Coffee break and move to Plant Cell & Tissue Culture Dept., NRC.
11:30 - 14:00	Lab. work (Propagation of Mulberry Plant)
14:00 - 15:00	Lunch (at Lab.)
15:00 - 16:15	Lab. work (Multiplication of Mulberry)
16:15 - 16:30	Coffee break
16:30 - 17:30	Lab. work (Incubation of Tobacco leaf tissue in protoplast isolation solution)
17:30 - 18:00	Lab. Discussion Session

Sunday, October 15, 1995

9:30 - 10:30	Methods of Plant Transformation (Dr. Shiva Reddy)
10:30 - 11:00	Coffee break and move to NRC
11:00 -14:00	Lab.work (Protoplast isolation and purification)
14:00 - 15:00	Lunch
15:00 - 16: 15	Lab. work (counting and viability test)
16:15 - 16:30	Coffee break
16:30 - 17:30	Lab. work (protoplast culture)
17:30 - 18:00	Lab. Discussion Session

Monday, October 16, 1995

9:30 - 10:30	Somatic Embryogenesis (Dr. Mohamed A. Aly)
10:30 - 11:00	Coffee break and move to NRC
11:00 -14:00	Lab. work (preparation of Agrobacterium culture for transformation)
14:00 - 15:00	Lunch
15:00 - 16: 15	Lab.work (Co - cultivation of Tobacco leaf discs with Agrobacterium)
16:15 - 16:30	Coffee break
16:30 - 17:30	Lab.work (transfer leaf discs to selction medium)
17:30 - 18:00	Lab. Discussion Session
18:30 - 20:30	Round Table Discussion (Raja Hotel)

Tuesday, October 17, 1995

9:30 - 10:30	Vectors Construction For Plant Transformation (Dr. Shiva Reddy)
10:30 - 11:00	Coffee break and move to NRC.
11:30 -14:00	Lab.work (DNA isolation)
14:00 - 15:00	Lunch
15:00 - 16:15	Lab.work (DNA Purification)
16:15 - 16:30	Coffee break
16:30 - 17:30	Lab (Estimation of DNA Conc.)
17:30 - 18:00	Lab. Discussion Session

Wednesday, October 18, 1995

09:30 - 10:30	DNA Fingerprinting and SDS - PAGE As a Molecular Markers In Tissue Cultures (Dr. Mahmoud M. Saker)
10:30 - 11:00	Coffee break
11:00 - 14:00	Lab.work (Protein extraction and estimation)
14:00 - 15:00	Lunch
15:00 - 16:15	Lab.work (SDS - PAGE Protein Profile)
16:15 - 16:30	Coffee break
16:30 - 17:30	Lab.work (SDS - PAGE Protein Profile)
17:30 - 18:00	Lab. Discussion Session
18:30 - 20:30	Round Table Discussion (Raja Hotel)

Thursday, October 19, 1995

09:30 - 10:30	Selectable and Screenable Markers For Plant Transformation (Dr. Shiva Reddy)
10:30 - 11:00	Coffee break
11:00.-14:00	Lab.work (Restriction of genomic DNA)
14:00 - 15:00	Lunch
15:00 - 16:15	Lab.work (Agarose gel electrophoreses)
16:15 - 16:30	Coffee break
16:30 - 17:30	Lab.work (Blotting DNA on nylon membrane)
17:30 - 18:00	Lab. Discussion Session

Friday, October 20, 1995

9:30	Weekend (a tour to culture)
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Saturday, October 21, 1995

09:30 - 10:30	Characterization Of The Classes Of Transformants (Dr. Wagdy A. Sawahel)
10:30 - 11:00	Coffee break and move to NRC .
11:00 - 14:00	Lab.work (Estimation of GUS activity)
14:00 - 15:00	Lunch
15:00 - 16:15	Lab.work (Sectioning and fixation of material)
16:15 - 16:30	Coffee break
16:30 - 17:30	Lab.work (Incubation of material in X-Gluc solution)
17:30 - 18:00	Lab. Discussion Session
18:30 - 20:00	Round Table Discussion (Raja Hotel)

Sunday, October 22, 1995

09:30 - 10:30	Genetic Transformation Approaches (Dr. Wagdy A. Sawahel)
10:30 - 11:00	Coffee break
11:00-14:00.	Lab.work (probe preparation and prehybridization)
14:00 - 15:00	Lunch
15:00 - 16:15	Lab.work (Hybridization)
16:15 - 16:30	Coffee break
16:30 - 17:30	Lab. work (Washing the membrane and signal detection)
17:30 - 18:00	Lab. Discussion Session

Monday, October 23, 1995

09:30 - 10:00	Transgenic Plants And Its Biosafety (Dr. Wagdy A. Sawahel)
10:00 - 11:00	Biosafety (Dr. Mohamed Nabeel)
11:00 - 11:30	Coffee break and move to NRC .
11:30 - 14:00	Lab.work (PCR confirmation of transgenic plants)
14:00 - 15:00	Lunch
15:00 - 16:15	Lab.work (PCR amplification)
16:15 - 16:30	Coffee break
16:30- 17:30	Lab. work (Preparation of RAPD reactiin)
17:30 - 18:00	Lab. Discussion Session

Tuesday, October 24, 1995

09:30 - 10:00	Chloroplast Transformation And Biosafety (Dr. Shiva Reddy)
10:00 - 11:00	Agrobacterium - Mediated Transformation Of Legumes (Dr. Mohamed A. Aly)
11:00-12:00	Coffee and move to NRC.
12:00 - 14:00	Lab.work (Analysis of PCR product)
14:00 - 15:00	Closing ceremony and graduation

ACADEMY OF SCIENTIFIC RESEARCH AND TECHNOLOGY
EGYPTIAN NATIONAL FOCAL POINT FOR GENETIC ENGINEERING AND BIOTECHNOLOGY
In Collaboration With
INTERNATIONAL CENTRE FOR GENETIC ENGINEERING AND BIOTECHNOLOGY

Certify that

Miss. **LAIB YAMINA** *attended the international training course on:*

"PLANT BIOTECHNOLOGY AND BIOSAFETY"

14 - 24 OCTOBER, 1995; CAIRO, EGYPT

The course was held at the National Research Centre (Egypt) and consisted of (seventy five) hours of lectures and practicals

DR. S. REDDY
ICGEB

PROF. DR. H. A. MOURSY
COURSE ORGANIZER

PROF. DR. M. N. ABU EL-ENEEN
PRESIDENT, NRC

PROF. DR. A. A. HEBEISH
PRESIDENT, ASRT

**Financial Statement of
Training Course
" Plant Biotechnology & Biosafety "**

Participants:

*	Travel costs					
*	Subsistence costs (accommodation and pocket money)	parts	days	US \$	= US \$	
		15	X 12	X 100		= 18,000

International Staff:

*	Subsistence costs	Persons	days	US \$	= US \$	
		1	X 14	X 150		= 2,100

Other Costs:

*	Management + Expendables, minor equipment & accessories about				= U.S \$	
						= 10,000

U.S.\$	18,000
U.S.\$	02,100
U.S.\$	10,000
	<hr/>
	30,100

Prof. Hamdy A. Moursy

Hamdy A. Moursy
**Vice-president of ASRT,
Course Organizer, and
Head of Organizing Committee**