

האוניברסיטה העברית בירושלים  
THE HEBREW UNIVERSITY OF JERUSALEM

הפקולטה לחקלאות FACULTY OF AGRICULTURE

AMRAM ASHRI, Ph. D.  
Jacob and Rachel Liss Professor of Agronomy

פרופ' עמרם אשרי  
הקתדרה לגנטיקה והשבחת צמחים ע"ש יעקב ורחל ליס



7.1.92

Dr. M.S. Swaminathan  
14, 2nd Main Road  
Kottur Gardens  
Kotturpuram  
Madras 600 085  
India

Dear Dr. Swaminathan,

Our Faculty of Agriculture is celebrating this year its 50th birthday, its jubilee. We are planning to hold a symposium on June 16, 1992 which will highlight some of the major issues facing Israel's agriculture in the global framework.

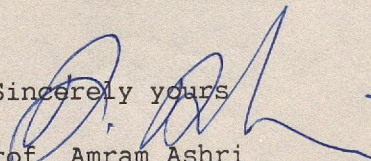
On behalf of the organizing committee I would like to invite you (as the sole overseas participant) to give a keynote address to the symposium. Knowing your background and some of your current interests, we feel that your views on agricultural perspectives, on intensification of agriculture without abusing the trust of future generations and on the role of biotechnology would be most appropriate for this event.

We shall be honored if you will be able to accept this invitation. Naturally, the Hebrew University will furnish you with a return airticket to Tel-Aviv and your per diem for a week. We very much look forward to your visit. It will enable you to visit our research as well as our agriculture in the field. It will also give you an opportunity to check on possible cooperation etc. On the other hand, your visit will also serve to focus on key issues of development, especially in LDC's. To this end a public lecture to those interested including non-technical people, on these subjects will be most effective (in addition to the symposium presentation).

Please confirm by fax if possible (No. 972-8-468265) your participation -- we very much hope that you will be able to come -- and suggest the topic or topics you would like to present at the symposium. Some years ago it did not work out; now we trust it will.

Best wishes for a happy 1992 to you and yours, may there be more peace in the world and less hunger.

Sincerely yours

  
Prof. Amram Ashri  
Genetics & Breeding

Confirmation

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פרופ' עמרם אשרי

הקתדרה לגנטיקה והשבחת צמחים ע"ש יעקב ורחל ליס



11.2.92

Prof. M. S. Swaminathan  
M. S. Swaminathan Research Foundation  
14 2nd Main Road  
Kottur Gardens  
Kotturpuran  
Madras 600 085  
India

Dear Dr. Swaminathan,

On behalf of our Dean, the Hebrew University of Jerusalem, the organizing committee and myself, I would like to thank you again for accepting our invitation to give the keynote address at our jubilee symposium. In my letter of January 7, 1992 I indicated to you our general idea of the areas we would like you to cover, in the scientific symposium and also if you agree in a public lecture. I would appreciate it if you could indicate to me possible topics which you are considering so that we can "discuss" them.

During your visit we would like you to see some of our research and agricultural developments, as time and your preferences will permit. These could lead hopefully to research cooperation and other contacts. Please let me know if you have some special areas of interest so that we shall be able to fit them into your program. We would like you to spend some of the time indoors - at the symposium etc. and some outdoors - in the fields and laboratories.

As I wrote you earlier, we envision that you will be here a week. The symposium will take place on Tuesday, June 16, 1992, thus your arrival at least a day or two earlier is advisable. The Hebrew University will send you a return airticket (tourist) and cover your per diem for a week or more, if you can stay longer.

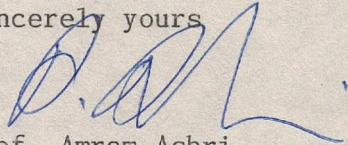
In connection with the actual arrangements and the scientific visits, please let me know if you will be accompanied by your wife, your proposed dates of departures and arrival, preferred carrier if any and nearest airport to your home.

When I have the information we shall prepare a tentative itinerary and fax it to you for comments.

Please respond by fax to me, at No. 972-8-468265, or by telex to No 381331 HUAGR IL.

Looking forward to your visit.

Sincerely yours



Prof. Amram Ashri  
Genetics & Breeding

Copy: Prof. N. Snapir, Dean

P.S. Thank you for your telex of 10.2.92  
A.A.



משרד המדע והטכנולוגיה  
MINISTRY OF SCIENCE AND TECHNOLOGY

The Director-General

המנהל הכללי

3 May 1992

Prof. M.S. Swaminathan  
M.S. Swaminathan Research Foundation  
14 2nd Main Road, Kottur Gardens  
Kotturpuran  
Madras 600 085  
India

Fax: 91 44 410031

Dear Prof. Swaminathan,

It gives me great pleasure to extend to you, on behalf of our Ministry this official invitation, to visit Israel in June 1992 in order to participate in the celebrations of the 50th anniversary of the Faculty of Agriculture of the Hebrew University of Jerusalem.

We understand that you have been asked to deliver the opening lecture at the symposium on "Sophisticated Agriculture and Environment".

Kindly be advised that your air ticket and expenses in Israel during your stay will be covered in full by our Ministry. Mrs. Beki Shimoni, Head of our Conference Unit, will be in touch with you, regarding the arrangements of your flight, etc.

I am looking forward to meeting you here in Israel.

Yours sincerely,

Dr. Gershon Metzger

cc: Mr. D. Lavi, Coordinator for the Anniversary Events  
Prof. N. Snapir, Dean, Faculty of Agriculture  
Prof. A. Oshri, Faculty of Agriculture  
Prof. D. Rosen, Chairman, 50th Anniversary Committee  
Ms. Esty Newman, Division for International Relations  
Mrs. Beki Shimoni, Head, Conference Unit

INDIA-ISRAEL COLLABORATION IN SOLAR ENERGY, WATER MANAGEMENT  
AND SEMI-ARID AND ARID ZONE HORTICULTURE

Suggestions based on a visit to Israel from June 15-21, 1992

by

Dr. M.S. Swaminathan

**I. Introduction**

I visited Israel from June 15 to 21 on an invitation from the Hebrew University of Jerusalem and the Ministry of Science and Technology of the Government of Israel. I was the Chief Guest at the Golden Jubilee Celebration of the Agriculture Faculty of the Hebrew University. Elections were about to take place at the time of my visit. There were strong expectations of a change in Government, ultimately leading to an amicable solution to the question of a homeland for Palestinians. A list of the heads of Government Departments, University Scientists, Kibbutzim leaders, farmers and Jews of Indian origin in Israel with whom I held discussions is given in Annexure 1. I found among both scientists and farmers a genuine interest for collaboration and in sharing experience in agriculture, water management and solar energy applications. Shri. Virendra Gupta, Charge d' Affaires of India in Israel was kind enough to join me in a few discussions. He informed me that a group of Indian agricultural experts will shortly visit Israel. Short visits alone will not do. We should take up a few joint pilot projects particularly in districts where water is the principal constraint. I offer a few suggestions in this report for appropriate follow-up.

## II. Potential Areas of Collaboration

### 1. Solar Energy

Israel is the largest per capita consumer of solar energy in the world. More than 25 percent of houses are equipped with solar heating and refrigeration systems. Energy authorities hope that the use of solar energy will rise to 25 percent of the country's total energy consumption early in the next century. Solar energy research, including new approaches to the direct conversion of solar energy into chemical energy, is receiving high priority in the research agenda of the Ministry of Science and Technology. Highly decentralized to centralized systems are planned. This is an area where collaboration will be of mutual benefit.

### 2. Irrigation Water Management and Arid and Semi-arid

#### Horticulture:

Israel's accomplishments in water harvesting and utilization are truly remarkable. The country is now preparing for the absorption of one million new immigrants largely from Russia, increasing the population of the country by nearly 25%. Even today water is the most serious constraint and hence the following measures are being contemplated.

1. A sharp reduction in highly water consuming crops that do not give a high return per cubic meter of irrigation water
2. Re-use of purified brackish water
3. Storing of flood water

4. Development of an alternative agriculture involving drip irrigation based greenhouses, which give a much higher income per cubic meter of irrigation water
5. A massive transition to the desalination of sea water  
Agricultural exports will be accorded high priority in the alternative agriculture based on the philosophy "increase income per cubic meter of irrigation water". The price of water will be raised to its real value in order to encourage the shift to high value agriculture.

The conjunctive use of treated sewage water and fresh water has become a regular practice. Most Kibbutzim adopt such use. The National Water Agency, Mekorot, controls the use of all water including sewage water. No individual can exploit groundwater without permission.

Irrigation research is of a participatory kind with the active involvement of farming families. Jews of Indian origin like Mr. Eliahu Bezalel, who came to Israel from Cochin in 1955, have been pioneers in greenhouse horticulture. Each family was allotted only 12,000 cubic meters of water for both domestic and agricultural use. Hence, specialized farming with the most economical and efficient water use methods began. Several of them already have collaboration with horticulturists in Maharashtra. More systematic efforts to derive benefit from their expertise both in horticulture and water use efficiency will be rewarding.

## Recommendations

### 1. Solar technology

A Travelling Seminar involving Indian and Israeli solar technologists with a view to exchanging ideas and technologies in areas such as the following will be useful.

- a) Household applications, including design of urban and rural homes
- b) Use in plantation crop industry such as drying of tea leaves
- c) Use in horticulture and perishable commodities with particular reference to cold storage.
- d) Desalination of sea water for drinking water purposes and
- e) Research on the storage and transportation of solar energy (in the form of chemical energy)

About 6 Indian technologists and industrialists and 6 Israeli technologists could undertake joint visits to potential application sites and develop a report with concrete recommendations on a joint action plan. The gap between technological know-how and its field application is practically nil in Israel and we can derive much benefit from their accomplishments and experience.

I therefore recommend the immediate initiation of a joint study of mutually beneficial areas of collaboration in the area of harnessing solar energy for domestic, agricultural and industrial uses. Dr. Gershon Metzger, Director General, Ministry of Science and Technology, Israel, could be invited to lead such a Team from the Israeli side.

## 2. Water Management and Semi-arid and arid Horticulture

a) Send a multi-disciplinary team (including farmers from the Rajasthan canal area to study Israel's experience in arid zone irrigation.

b) Invite a group of Israeli irrigation experts and farmers, with expertise both in desert irrigation and horticulture to join an appropriate Indian group for a Travelling Seminar, starting from Hanumangarh and ending in Barmer, so that a thorough study can be made of the problems facing farmers along the Rajasthan canal area arising from inadequate water management.

and, (c) Associate suitable Israeli farmers and experts from Kibbutzim (i.e., cooperatives where farming is collectively managed) and Moshavs (i.e., cooperative village, where farming is individually managed) in a couple of projects sponsored by the Small Farmer's Agri-business Consortium. The Rajasthan canal command area and the Dharmapuri district in Tamil Nadu, could be the starting points of the programme for maximizing income and employment per cubic meter of water, in an ecologically sustainable manner. Pilot projects covering atleast 10,000 ha

will be of both demonstration and learning value. The technologies introduced from Israel for testing should include the testing of the new groundnut varieties Shalamit and Hanoch which are yielding 6 to 7 tones of pods per hectare in Israel. It will be useful to invite the breeder of these varieties, Dr. Izhack Wallerstern of the Volcani Agricultural Research Centre to work with the Rajasthan Agricultural University for testing the groundnut varieties in the Rajasthan canal area along with appropriate water management practices. Mr. Lelinger and Mr. Amnon Nir of Kibbutz Naan have good knowledge of the problems of the Rajasthan Canal area and they could be invited to join the Study Team.

#### ACKNOWLEDGEMENTS

I am indebted to the Ministry of Science and Technology of the Government of Israel and the Hebrew University of Jerusalem for inviting me and for enabling me to learn as much as possible within 6 days. I am particularly grateful to Prof. Amram Ashri, Jacob and Rachel Liss Professor of Agronomy of the Hebrew University, for accompanying me in all my visits and discussions. I am also grateful to Mr. and Mrs. Virendra Gupta and to Mr. Benjamin Jacob, Chairman Association of Indian Jews in Israel for all the kind help and hospitality they so generously extended.

**Annexure-1**

**I. MINISTRY OF SCIENCE AND TECHNOLOGY**

1. Dr. Gershon Metzger  
Director General  
Ministry of Science and Technology
2. Dr. (Ms) Miriam Waldman  
Director  
Biological and Ecological Research
3. Ms. Esty Newman  
Division for International Relations
4. Dr. Meyuhas  
Space Technology
5. Mrs. Beki Shimoni  
Head  
Conference Unit
6. Ms. Freida Soffer  
Director  
Budget and Administration

**II. MINISTRY OF FOREIGN AFFAIRS  
INTERNATIONAL COOPERATION DIVISION**

1. Dr. Moshe Yegar  
Deputy Director General
2. Mr. Shlomo Bino  
Director
3. Mr. David Matnai  
Director  
Asia Division
4. Mr. Yitzhak Abt  
Director  
Center for International Cooperation  
in Agriculture
5. Mr. Itzhak Gerberg  
Economic Division (shortly to join as  
Counsel-General at Bombay)

### III. THE ISRAEL ACADEMY OF SCIENCES AND TECHNOLOGY

Prof. Dr. Joshua Jortner, President

### IV. MINISTRY OF AGRICULTURE, VOLCANI CENTER

1. Prof. Ezra Sadan  
Director General and Head  
Agricultural Research Organisation  
The Volcani Center
2. Prof. Yshhay Folman  
Chief Scientist
3. Dr. Shamay Ishar  
Head  
Institute of Field and Garden Crops
4. Dr. Izhack S. Wallerstern  
Groundnut Breeder
5. Dr. No'am G. Seligman  
Agronomy and Natural Resources
6. Prof. Rafael Frankel  
Field Crops
7. Ms. Dalia Cohen  
Agricultural Research Organisation
8. Dr. Moshe Sre  
Director  
Irrigation and Soil Field Service

### V. THE HEBREW UNIVERSITY OF JERUSALEM

1. Prof. Yoash Vaadia  
Vice President
2. Prof. N. Snafir  
Dean  
Faculty of Agriculture
3. Prof. Amram Ashri  
Jacob and Rachel Liss Professor of Agronomy
4. Dr. Rony Wallach  
Soil Physicist and Irrigation Engineer
5. Prof. Ilan Chet  
Biotechnology

6. Prof. Vzi Kafkafi  
Arid land agriculture
7. Dr. Haim D. Rabinowitch  
Vegetable Production and Breeding
8. Dr. Amos Banin  
Soil and Water Sciences
9. Prof. Baruch Rubin  
Head  
Research Committee
10. Prof. Yona Chen  
Soil Chemistry

#### VI. KIBBUTZIM AND FARMERS

1. Mr. Meir Lebinger  
Kibbutz Naan
2. Mr. Eliazhu Bezalel  
Managing Director  
Plant and Flower Nurseries Ltd
3. Mr. Benjamin Jacob  
Chairman  
Association of Indian Jews in Israel
4. Mr. Noah Massil  
Secretary  
The Central Organisation of  
Indian Jews in Israel
5. Mr. Lior Eli  
Kibbutz Givat Brenner
6. Mr. Amnon Nir (former student of IIT, Madras)  
Kibbutz Naan

#### VII. EMBASSY OF INDIA

Mr. Virendra Gupta  
Charge d' Affairs