Field Trips

Introduction

One day was set aside to enable all the participants to visit four protected-agriculture complexes. The diversity of structures, growing systems and crops provided an excellent forum for further discussion of the major themes of the Workshop.

Brief descriptions of the four complexes follow.

Horticulture & Greenhouse Experimental Station, Ottoria

The Horticulture & Greenhouse Experimental Station is one of three research stations belonging to the Department of Agricultural and Water Research, Ministry of Municipal Affairs and Agriculture. It is located in the middle of Qatar in Ottoria village some 35 km east of Doha.

The station was established in 1979. The total area of the farm is 7 ha and consists of 12 plastic houses (2160 m²). In 1984, a modern fiberglass house with computer control was erected. The total area of this well-equipped unit was 1102 m² and it consists of six compartments. The unit was furnished with control room, central computer, small laboratory, stand-by generators and nutrient film technique (NFT) controlling equipment.

In 1993, a major renovation plan was implemented which included the following.

Redesigning of the fiberglass unit with some major changes to overcome problems associated with orientation.

Establishing a controlled growing room within the fiberglass unit to ensure the production of good-quality seedlings.

Adding 12 plastic houses with evaporative cooling systems.

Redesigning the irrigation network for the farm and installing a modern irrigation system for the open-field experimental plots

Installing a solar-powered water-pump and irrigation controller

Installing a water desalination unit.

The dynamic research team of the research station consists of one PhD scientist, an agriculturist, a technician with three assistants, and a foreman with 14 laborers.

Participants examining the tube culture techniques, Horticulture & Greenhouse Experimental Station

Major Research Activities

1. Development and/or adaptation of new growing systems and techniques with more emphasis on soilless culture.
2. Greenhouse management, including greenhouse cooling systems, shading systems and materials, and the utilization of solar power for irrigation and water desalination.
3. Crop management in relation to plant density, irrigation, nutrition, and pest and disease control programs.

4. Crop and cultivar responses and performance under local conditions for cucumber, tomato, pepper, eggplant, lettuce, melon, squash, strawberry, banana and cut flowers such as roses, carnations, and bird of paradise.

Banana production in protected agriculture at the Horticulture & Greenhouse Experimental Station

Arab Qatari Agricultural Production Company

Background

The Arab Qatari Agricultural Production Company was established by the 58th decree issued by His Highness the Amir of the State of Qatar in November 1989. It is a joint-venture company between the Government of the State of Qatar and the Arab Authority for Agricultural & Investment Development (AAAID), and has capital assets of 47,000,000 QR.

Assets

The assets of the Company include:

Twelve fiberglass-roofed greenhouses covering a growing area of 3 ha and run with a computerized fan-and-pad cooling system.

Six glass-roofed greenhouses covering a growing area of 3 ha run by a computerized fan-and-pad cooling system.

Three green-wholes covering a growing area of 3 ha, roofed with aluminum slots and an insect screen, without cooling.

Sixteen plastic tunnels occupying an area of 5000 m².

An industrial building comprising a grading and packing unit, five cold rooms, two reverse osmotic desalination plants, offices and a workshop—other buildings include officials' residence, laborers' camps, store rooms and a mosque.

Open fields covering an area of 33 ha, of which 18.5 ha are sprinkler irrigated, 3.3 ha drip irrigated, and 11.2 ha flood irrigated.

Production of cucumber in sandbags in cooled multi-span house, Arab Qatari Agricultural Production Company

Objectives and Activities

The main objectives and activities of the Company are:

1. Contribution to the agricultural development and food security in Qatar.
2. Apical intensification of vegetable production by maximizing the utilization of greenhouses throughout the year.
3. Involvement in production of cut flowers and ornamental plants, and vegetable and flower seedlings.
4. Vegetable and fodder production in open fields.

Other activities include introduction of some European vegetables, sale of some agricultural inputs and supply of quality products for the fresh food market.

Products

The main products of the Company are:

Greenhouse	**Open field**
Cucumber	Alfalfa
Tomato	Sweet corn
Sweet pepper	Squash
Snap beans	Celery
Okra	Lettuce
Cut flowers	Chinese cabbage
Indoor plants	

Greenhouse Technical Characteristics

Growing media: Coarse washed sand in plastic bags represent the media for greenhouse vegetables. Rockwool and water culture have been eliminated because of their high cost and critical requirements for technical operation

Fertigation: Makes use of the A & B tanks' system where 13 macro- and micro-nutrients are fed to drippers. Each group of greenhouses is given the same fertilizer formula—the quantity depends on the age of the plants. Supplemental foliar fertilizers are sprayed when necessary. Plants are irrigated 2–4 times daily for intervals of 2–4 minutes depending on their growth stage and climate.

Temperature and humidity controls: In the 12 fiberglass houses, the control is through a central computer; the six glasshouses have individual computers.

Seedling preparation: Seedlings are sprouted in peatmoss cubes in the nursery, after which they are transferred to cold-room incubators on illuminated stacks, then to greenhouses once fully developed.

Pest and disease control: Prophylactic chemical pest and disease control is emphasized at pre-fruiting stages, making use of chemicals with optimum safety periods. Greenhouses are sterilized with formaldeyde before planting. Sandbags are treated with Previcur at planting time. At fruiting stages sprays are cut down to a minimum and harvest is delayed.

Shading systems: An automatic shading system is installed in the fiberglass houses. Glasshouses are lightly painted with chalk suspension in summer, which is washed off in winter.

Progress in Vegetable Production

Year	Quantity (tonnes)
1990	504
1991	420
1992	556
1993	946
1994	911
1995	958
1996	1187
1997	1259

Al Sameria Farm, Rawdat Rashid, Al Shahania

The Al Sameria Farm, which is owned by Sheikh Ahmed Bin Hamed Al Thani, has an area of 85.15 ha, of which 20 ha are cultivated. Eight plastic houses (9 × 40 m) are used in the protected-agriculture industry, with the following crops and growing systems.

Cucumber: cv Shabieb; planted 10 October 1997; first production 2 December 1997; production period 60 days; 1000 plants/greenhouse; in-line spacing 35 cm; production rate 200 boxes per greenhouse (13 kg/box); total production 2600 kg in 60 days.

Green beans: cv Daimona and Amira; planted 15 October 1997; first production 10 December 1997; production period 60 days; 2 plastic houses; in-line spacing 35 cm; total production 500 kg.

Sweet pepper: 1 plastic house; 800 plants/greenhouse; planted 1 November 1997; first production 5 December 1997.

Al-Sulaiteen Agricultural Complex

The Al-Sulaiteen Agricultural Complex is located at Aum-Salal Ali city, some 20 km north of Doha. The total area of the project is approximately 40 ha with scope for expansion according to the requirements of different stages of the project.

In March 1995, activities started at the farm with preparatory survey and geological maps. A complete soil and water survey was carried out accompanied with the necessary physical and chemical analyses. This was done with the assistance of the Department of Agricultural and Water Research, the Department of Agricultural Development and specialized private companies and consultants. The feasibility study and design of the project were completed in December 1996. The project is designed according to the latest scientific standards and techniques to achieve the following.

1. To establish an agricultural complex using suitable scientific methods and techniques to preserve natural resources and to provide the local market with top-quality fresh products.

2. To establish centrally (and fully) controlled growing rooms for the production of high-quality seedlings and young plants.

Fully controlled growing room, Al Sulaiteen Agricultural Complex

3. To act as a technical and training center to provide consultancy, and technical and management expert systems to growers.

4. To conduct research and experiments with national, regional and international research organizations.

Production Sectors

Open field sector
This comprises fodder production using sprinkler irrigation, vegetable production with drip irrigation, and date palm and fruit trees under bubbler irrigatation.

Protected agriculture sector
This sector consists of many production zones.

1. Multi- and single-span greenhouses with evaporative cooling systems for the production of cut flowers, vegetables and fresh fruits on a total area of 4900 m² (4.9 ha):

    30 single-span plastic houses—total area of *c.* 6000 m² (in production)

    2 multi-span greenhouses—total area of 9000 m² (in production)

    2 multi-span greenhouses—total area of 10,000 m²

    5 multi-span greenhouses—total area of 22,500 m²

2. Shaded nursery with a total area of 1500 m² for the production of outdoor decorative plants, fruit trees and shrubs.

3. A fully controlled growing room for the production of vegetable seedlings and young plants, with a capacity of 40,000 plants/month.

Single-span plastic houses with evaporative cooling system, Al Sulaiteen Agricultural Complex

Animal production sector
This section is divided into many production units that include poultry, dairy and beef cattle, and small ruminants for dairy and meat.

Special production sector
Honey bees and ostrich farming.