



# “CHEMICAL AND PHYSICAL SOIL ANALYSIS” TRAINING COURSE

International Center for Agricultural Research in the Dry Areas (ICARDA)

April 23-27, 2006

Aleppo - Syria

**Manager:** Dr. Richard Thomas

Director of MP3, Improved Land Management to Combat Desertification.

**Instructor:** Mr. George Estefan

Supervisor of the Soil, Plant, and Water Analysis Laboratory, MP3.

**Course Materials:** “A Soil and Plant Analysis Laboratory Manual, second edition, ICARDA, 2002”  
by John Ryan, George Estefan, and Abdul Rashid

## **Course Program:**

### **Sunday 23 April**

**08:30–12:00**

**1. Background Considerations:**

Soil Sampling and Processing; Laboratory Organization; Data Processing; Quality Control; Standardization, and Safety.

**2. Instrumental Analysis:**

Introduction to various analytical techniques such as Kjeldahl Nitrogen, Spectrophotometer, Atomic Absorption Spectrophotometer, and Flame Photometer, PF, etc...

**12:00-12:30 Lunch Break**

**12:30-14:30**

**3. Soil Physical Analysis: Practical**

- a. Texture.
- b. Field Capacity Moisture and Permanent Wilting Point.

### **Monday 24 April**

**08:30–12:00**

**Soil Chemical Characterization: Practical**

- a. pH Value, Electrical Conductivity (Saturated Paste and 1:1 soil: water suspension).
- b. Cation Exchange Capacity.

**12:00-12:30 Lunch Break**

**12:30-14:30**

- b. Organic Matter, Calcium Carbonate, Gypsum.

### **Tuesday 25 April**

**08:30–12:00**

**Soil Chemical Characterization: Practical**

- a. Nitrogen (Total and Mineral Forms), continued.

**12:00-12:30 Lunch Break**

**12:30-14:30**

- b. Phosphorus (Total and Available Forms), continued.

**Wednesday 26 April**

**08:30-12:00**

**Soil Chemical Characterization: Practical**

- a. Nitrogen (Total and Mineral Forms).
- b. Phosphorus (Total and Available Forms).

**12:00-12:30 Lunch Break**

**12:30-14:30**

- c. Potassium and Sodium (Extractable and Soluble Forms).

**Thursday 27 April**

**08:30-12:00**

**1. Soil Chemical Characterization: Practical**

- a. Soluble cations (Calcium and Magnesium).
- b. Anions (Carbonate, Bicarbonate, Chloride).
- c. Extractable Boron.
- d. Soil Micronutrients (Iron, Zinc, Manganese, Copper).

**12:00-12:30 Lunch Break**

**12:30-14:30**

**2. Laboratory Analysis Interpretation:**

Basis for fertilizer recommendations and problems - solving for agricultural and environmental purposes.

**3. Course Evaluation.**

**4. Closing Ceremony.**

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**Invitation list**

Dr. Colin Piggin  
Dr. Richard Thomas  
Dr. Kamel Shideed  
Mr. George Estefan  
Dr. Izzat Ghannoum

**Participants**

1. Mr. Mahana Fadel Taha Altek/Iraq
2. Mr. Saady Raouf Yacoub/Iraq
3. Mr. Zuhair Hamed Ali/Iraq
4. Ms. Maysoon Baker Marie/Iraq
5. Ms. Hanan Abdul-wahed Ali/Iraq
6. Dr. Sa'ad Daoud Taha/Iraq
7. Mr. Ali Jassem Mohamed/Iraq
8. Mr. Khoshvy Mohammad Mahmood /Iraq
9. Mr. Zuhair Younes Sharif/Iraq
10. Ms. Ahlam Ghanem Mohamed/Iraq