

## Detailed

### Curriculum Vitae

#### **Professor Adnan Badran**

#### **Biographical Data:**

##### **Business Address:**

Petra University  
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##### **Home Address**

P.O. Box 117 Amman 11822 Jordan  
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Civilian ship : Jordanian.

#### **Educational Record:**

- *Ph.D.* 1963 *Michigan State University, East Lansing, Michigan, USA*
- *M.Sc.* 1961 *Michigan State University, East Lansing, Michigan, USA*
- *B.Sc.* 1959 *Oklahoma State University, Stillwater, Okla., USA*
  
- *Hon. Ph.D.* 1981 *Sungkyunkwan University, Seoul, Republic of Korea*
- *Hon .Science Doctorate 2007 Michigan State University, East Lansing, Mich. USA.*

**Languages:** English, French, Arabic, some understanding of Spanish

#### **Currently:**

- *Senator and Chairman of the Senate Committee on Education Science, Culture and Media. (2006 - )*
- *President, Petra University. (2007 - )*
- *President, National Center of Human Rights. (2008 - )*
- *President of Arab Academy of Sciences. (2003 - )*

#### **Employment History**

2005 *Prime Minister of Jordan & Minster of Defense.*  
1998-2005 *President of Philadelphia University.*  
1994-1998 *Deputy Director General (DDG), UNESCO, Paris..*  
1990-1994 *Assistant Director General for Science (ADG/SC), UNESCO. Paris.*  
1989 *Minister of Education. Jordan*  
1988 *Minister of Agriculture, Jordan.*  
1986 – 1987 *Secretary General of the Higher Council for Science and Technology, Jordan.*  
1976 – 1986 *Founding President of Yarmouk University, Jordan and Founder of the Science and Technology University Campus (JUST University), Jordan.*  
1976-1986 *Professor at Yarmouk University and at Jordan University for Science and Technology and University of Jordan.*  
1971-1976 *Dean of the Faculty of Science at the University of Jordan.*  
1966-1971 *Assistant, Associate, Professor, Faculty of Science University of Jordan.*

- 1963-1966            *Senior Research Plant Physiologist and Biochemist at the United Fruit Research Laboratories, U.S. and Central America, and member of the Board of Management.*
- 1960-1963            *Research Assistant at Michigan State University. USA.*

### **Courses Taught at the University:**

- General Biology (Science Majors)
- Molecular Biology
- Cellular Physiology
- Plant Physiology
- Biochemistry

### **Professional Memberships:**

- Vice President of the Third World Academy of Sciences (TWAS) 1999-present
- Member and Secretary-General of the Third World Academy of Sciences (TWAS) 1991-1998
- American Institute for Biological Sciences 1963
- American Plant Physiologists 1963
- Member of the Board of Trustees of Mutah University 1978-1985
- Member of the Board of Trustees of the University of Jordan 1976-1985
- Member of the Royal Commission of Yarmouk University 1976-1985
- Member of the Executive Board of the International Union of Biological Sciences - IUBS 1985 - 1988
- Member of the Executive Board COSTED - ICSU 1984-1990
- Member of the Executive Board of the International Association of Universities (IAU) 1985-1987
- Chairman, Middle East International Association of Universities Presidents (IAUP) 1978-1986
- Member of the American Association for the Advancement of Science (AAAS)
- Member of the Board of Trustees of Philadelphia University 1992-1995
- Member of the Board of Trustees of the University of Jordan for Women 1992-present
- Former member of the American Association for Horticultural Sciences
- President of IAUP, Chapter of Middle East
- ICSU- CBE, CTS, COSTED-Bioscience networks-UNESCO.
- Member of the 'Comité des hautes institutions' of the European Academy of Arts, Sciences and Humanities - since June 1997

### **Activities**

- Development of the biology curriculum for the secondary education cycle in Jordan (1967)
- Development of biology curriculum for the secondary education in the Arab States through the Arab League for Educational, Cultural and Scientific Organization (ALECSO), Cairo, Egypt (1970)
- Chairman, Technical Committee on the establishment of Al-Faisal Vocational College in Jordan (1972)
- Chairman, Technical Committee on the establishment of the Faculty of Engineering & Technology at the University of Jordan-Amman (1972-1976)
- Chairman, Pre-medicine and pre-nursing curriculum committee at the University of Jordan, Amman (1972-1976)

- Chairman, Faculty of Engineering Temp. Council, University of Jordan, Amman (1973-1976)
- Member of the higher committee on the Development of School Curriculum of the Sultanate of Oman (1976-1984)
- Chairman, Technical Committee on re-evaluation of Secondary Education in Jordan (1971)
- Vice-Chairman, Commission of Biological Education of the International Union of Biological Sciences (IUBS), 1975-1980
- Editor, Biological Education Newsletter of IUBS supported by UNESCO (1973-1982)
- Member, The Committee on the Teaching of Science (CTE) of the International Council of Scientific Unions (1980)
- Member, the Science and Technology Policy Committee in Jordan, 1980
- Chairman, The Five-year Development Plan of the Social Sector in Jordan (1981-1985)
- Consultant, the Academic and Space Planning of Sciences and Engineering Departments at the newly established King Abdul Aziz University, Jeddah, Saudi Arabia (1970)
- Consultant for assessment the design of King Faisal University, Saudi Arabia (1976)
- Chairman, Technical and Educational Specifications of Yarmouk University comprising faculties of Arts and Sciences, Medical Sciences, Engineering Agriculture and Veterinary Sciences, Social Spine and General Facilities
- Chairman, Technical Committee prequalifications of Master Plan Consultants of Yarmouk University Campus (2000 acres and 1,000,000 m<sup>2</sup> of construction space) 1976
- Chairman, Technical Committe of prequalifications of Detailed Design and Tender Documents preparation of Yarmouk University Campus, first stage of 500,000 m<sup>2</sup> construction space (1977-1980)
- Member of Jordan Guidance Council, Ministry of Information 1980
- Chairman, Arab Center of Higher Educational Research ALECSO, Tunis-Damascus (1981-1983)
- Member of Executive Committee on Strategy of Science & Technology in the Arab World (1984-1987)
- Member of BOSTID/National Academy of Science Committee on Research Grants for Developing Countries Institution, Washington D.C. (1980-1983)
- Member of the Arab Thought Forum (1978-present)
- Member of the World Affairs Council (1980-present)
- Member of IOC - UNESCO Executive Committee (1984)
- President, National Parks Committee (1981-1989)
- Member, Jordan Higher Board for Science and Technology (1987)
- President, Higher Council for Agricultural Policy in Jordan (1989)
- Director of Agriculture and Biotechnology Sector, Higher Council for Science and Technology (1988)
- Coordinator of AraBN-Bioscience network of the Arab World (1986-1989)
- Rapporteur of the Arab Conference of Ministers of Higher Education in the Arab World (1985-1989)

## **Awards**

- Renaissance, Al-Nahda Medal;
- Yarmouk Khalid Bin Walid Medal;
- Alfonso the tenth Medal, Spain;
- Hall of Fame Alumni Award, Oklahoma State University, USA;
- Independence National Medal, Estiklal, 1995.
- Arab Thought Foundation Award for best Arab Scientist in higher education research (2005).

## **Listed in**

- International Who's Who of the Arab World
- International Who's Who of Intellectuals
- The International Register of Profiles
- Asia's Who's Who of Men and Women

## **Affiliations and Honours**

- Royal Conservation Society
- Presidential Fellow of Aspen
- World Affairs Council
- National Parks
- Honorary President of the Renewable Energy Network (REN)
- Member of AAAS award for International Scientific Cooperation, Washington D. C.

## **Books Published**

1. *Laboratory Manual-General Biology, Science*, University of Jordan 1968 (Badran & Kanawati).
2. *General Biology for the 1st Secondary Education* (text book), Ministry of Education, Jordan, 1973 (Badran, Lutfi, Nazer)
3. *General Biology for the 2nd Secondary Education* (text book), Ministry of Education, Jordan, 1974 (Badran, Lutfi, Awad)
4. *General Biology for the 3rd Secondary Education* (text book), Ministry of Education, Jordan, 1975 (Badran, Alawi)
5. *General Biology for the Secondary Class* (text book) - ALECSO Cairo, 1975 (Editor, Badran)
6. *General Biology for the Agricultural Secondary Education* (text book), Ministry of Education, Jordan, 1976 (Badran, Buchari, Awad)
7. *General Biology for the 2nd Secondary Class* (text book), ALECSO Cairo, 1976, (Badran et al.)
8. *Energy* chapter in a book on environment, ALECSO, Cairo, (Badran)
9. *Manual of Biology Laboratory* (text book), Yarmouk University, 1976 (Badran, Alawi)
10. *General Biology for the 3rd Secondary Class* (text book), ALECSO, Cairo, 1977 (Badran et al.)
11. *General Biology 1st Secondary Class* (text book), Oman 1981 (Badran and Baydoun)
12. *General Biology 2nd Secondary Class* (text book), Oman 1981 (Badran and Baydoun)
13. *General Biology 3rd Secondary Class* (text book), Oman (Badran and Baydoun)
14. *Teacher's Guide for Biology books of the Secondary Cycle*, Oman, 1983 (Badran and Baydoun)
15. *The Cell*. A textbook for Teacher's Training College, Oman, 1985, (Badran and Baydoun)
16. *Biology of the Living Organisms*. A textbook for Teacher's Training College, Oman, 1985 (Badran and Baydoun)
17. *The University - a creating process*. Louvain Center of Middle Eastern Journal, Louvain, Belgium, 1985
18. *Education in the Middle-East: Transition from traditional to modern society*, Paragon Book in press (edited), 1987 (Badran)
19. *The Economic Development of Jordan*, edited by Khader & Badran, Croom Helm, London, 1987.
20. *Strategy of Science and Technology for development in the Arab Region*, ALESCO-UNESCO, publication center of Arab Studies, Beirut, Lebanon, Badran et al, 1989.

21. *At the Crossroads: Education in the Middle-East*, PWPA Book, Paragon House, N.Y. 1989 (editor, Badran)

### **Papers and Patents Published**

22. *Environmental Study on McIntosh Maturation*, AIBS Symposium, University of Massachusetts, Amherst, USA, ASHS No. 320, 24, 1963
23. *Polyethylene Glycols - Tannins Interactions in Extracting Enzymes*. Nature 206: 622-624, 1965
24. *Mechanism of Core Browning in Bananas*, Physiology and Storage Section, AIBS Symposium, University of Illinois, Urbana, ASHA No. 104 21, 1965
25. *Preparation of Enzymes from Plant Tissues Containing High Molecular-weight Polyphenols*. Phenolics, Auxins and Oxidases Section. Plant Physiology Suppl. Vo. 10, AIBS University of Illinois, Urbana, 1965
26. *Controlled Atmosphere Storage of Green Bananas*, Ser. U.S. No. 3,450,542 Patent Office, Washington D.C. June 17, 1969
27. *Polyphenoloxidase Preparations and the Interaction of Polyethylene Glycols with Tannins*. 8th Science Symposium, University of Damascus, pps 1-20, 1967
28. *Method of Packing Ripening Plant Foods with climacteric rise of respiration to Prolong Storage*, Patent, Ser. U.S. 3,450,543, Washington D.C. Pat. Office, June 17, 1969
29. *Method of Packing Ripening Perishable Plant Foods to Prolong Storage*, Patent, Ser. U.S. 3,450,544, Washington D.C. Pat. Office, June 17, 1969
30. *Method of Preparing Enzymes from Plant Tissues Containing Phenols*. Patent, Ser. U.S. 3,440,143, April 22, 1969
31. *Endogenous Activation and Inhibition of Polyphenoloxidase in Plant Tissues Containing Phenols*. Publ. The Lebanese Society for Advancement of Science, Beirut, 1972
32. *Biochemical Study on Changes of Phenolic Compounds in Banana Fruit during Ontogeny, Chilling and respiration Climacteric*. Disarat vol. 2 (no. 2) 1972
33. *Biology and Health Education : Innovative Techniques*. UNESCO Book on New Trends in Education, Paris 1986
34. *Orientation of Education and Training Policy Toward Science and Technology Self-reliance*, IAS Journal, Islamabad, Pakistan 1988
35. *Science and Technology and Human Resources*, ISESCO, Dakar, Senegal 1988
36. *New Trends in Computer Education*, IUBS-CTS, Sydney, Australia, 1988
37. *Higher Education in the Arab world*, International Association of Universities (IAU) Publication, Rio, Brazil 1988
38. *Access to Higher Education in the Arab World*, IAU, Higher Education Policy, Vol. 2, No. 1989, 1
39. *Meeting the demand for Higher Education*, Chapter 20: 243-252, PWPA Book, Paragon House, New York, 1989
40. *Protected Cultivation in the Middle East: A promising future*, Chapter 19, pps. 289-301. Agriculture in the Middle East, Paragon House, New York, 1990
41. *Integration of Traditional and Frontier Technologies. New Technologies: Reaching the Unreached*. I. Biotechnology, Swaminathan Research Foundation, Madras, India, January 1991
42. *Global Change and the Human Prospect: UNESCO's Scientific Contribution*, pps. 245-257, Sigma Xi: The Scientific Research Society; Washington D.C., November 1991
43. *The Role of UNESCO in science and technology manpower development in developing countries*, IAS Journal: Royal Scientific Society Press, Amman, 1992
44. *Sustainable Development and the changing ecosystems*, IAS Journal: 81-123, Kuala Lumpur, Malaysia, August 1993
45. *The Role of Education in the protection of the environment*, IAS Journal: 433-462, Malaysia, August 1993

46. *Transboundary Waters: Prospects for Peace or Conflict*, IAS Journal: 225-252, Varan Printing House, Ankara, Turkey, 1995
47. *The Role of Education in Health, Nutrition and Development: Experience of UNESCO*, IAS Journal: 161-172, Varan Printing House, Ankara, Turkey, 1995
48. *Global Overview: State of Health Education in the World: Towards Partnership; Health Care Delivery and Medical Education: A blueprint for change*. World Federation for Medical Education. Medical Education Journal, Vol. 29, supp. 1, pps. 16-23, Blackwell Science, 1995
49. *Promoting Clean Technology Through the Use of Multimedia Learning Material in Environmental Engineering*, European Journal of Engineering Education, Vol. 20, No. 2, pps. 183-185, 1995
50. *UNESCO Policy on Data Exchange: Grave disparities in scientific data access (Data and knowledge in a changing world)*, CODATA-ICSU, Paris 1995
51. *Solar Energy for Environment and Sustainable Development*. World Renewable Energy Congress IV, Denver, Colorado, June 1996
52. *Globalization and Higher Engineering Education*. Australian Journal of Engineering Education, Vol. 7, No. 2, 1996
53. Human Capital and Quality Management: Strategies for an Era of Globalization. Journal of ECSSR - 4th Annual Conference. Abu-Dhabi, 24 May 1998.
54. *Human Resources and Economic Development*. Discussant IMF World Bank Arab Fund paper. Journal of Arab Monetary Fund - Abu Dhabi, 17 May 1998.
55. *Human Capital, Management and Quality : Globalization and Education Strategies 3<sup>rd</sup>. Millennium Challenges* , The Emirate Centre for Strategic Studies and Research, (PP 129-164), Abu Dhabi, UAE, 2000.
56. *Science and Technology : Arab World Perspective of Science and Technology in the Arab World: Reality and Ambition*, Abdul Hameed Shoman Foundation Publications, PP 107-123, Amman, Jordan, 2000.
57. *University Learning and Contemporary Requirements : Future Overview*, Abdul Hameed Shoman Foundation Publications, PP 277-288, Amman, Jordan, 2001.
58. *Biotechnology and Developing world*. Electronic Journal of Biotechnology, Vol.5 No.1, Issue of April 2002. (Coauthor)
59. *Status of Science & Technology in the Arab Region*. UNESCO Science Report, 2004.
60. *Jordanian Universities and Scientific Research vs. International and Arab Universities Scientific Research*, Scientific Research Friends Magazine, 2004.
61. *Higher Education: Reality and vision*. Shoman Foundation, pps 31-41, Amman, 2006.

### **Trans and Interdisciplinary Papers Presented:**

62. *Higher Education and Community Development*, American Universities Alumni, Amman, Jordan 1988
63. *Access to Higher Education*, IAU-ArAU, Amman, Jordan 1988
64. Address, Regional Conference on Progress in science and technology for development in West Asia region, UNCSTD, ESCWA, Amman, Jordan, 1988
65. Address, Regional Conference on Pharmaceutical industry development in the Arab World, Amman, Jordan, 1988
66. *Role of International Cooperation in the Development of Software Computer Technology*, Saqre Conference, Amman, Jordan, 1989
67. *New Approaches in Science and Technology*, UNCSTD, DES, Feldafing, Germany, 1989
68. *Science and technology in economic and social development*, Kias, Kuwait, 1989
69. *UNESCO and Science and technology for development*. Paper presented at UN meeting of Intergovernmental Committee on Science and Technology, New York, 1991
70. *New Trends in Higher Education in the Middle-East*, Paper presented at Harvard Middle-East Centre, 1991.

71. *Toward a sustainable use of energy*, UNESCO, Paris, 1992
72. *Higher Education and S & T Policies in the South*, UNESCO, Paris, 1993
73. Keynote address to the World Summit on Medical Education: *World Federation for medical education proceeding*, University of Edinburgh, Medical Education Journal, Vol. 28, supp. I, pps. 15-16, 1994
74. *Science and technology for sustainable development: Commission on S & T for sustainable Development in the South (COMSATS)* Islamabad, October 1994
75. *Contemporary science for 2000+: Challenges and vision*, ASTA Congress, Amman, July 1994
76. *Fundamental sciences for the 21th century: prospects and challenges*, International Conference on Romania and Romanians in Contemporary Science, Bucharest, May 1994
77. Opening address: *Capacity building in science : prospects for development*, Third World Academy of Sciences Congress (TWAS), Abuja, Nigeria, 18 September 1995
78. *The Academic Exchange: Propects for mutual understanding between Europe and the Middle East*, UNESCO, Paris, 1995
79. Keynote address: *Global civilization and cultural roots: Bridging the gap and the place of International University Cooperation*, International Association of Universities (IAU) Conference, New Delhi, February 1995
80. *Israeli and Arab Waters: Key issues for peace*, UNESCO, Paris, 1995
81. Keynote address: *Health education for all: ministerial consultation on medical education and health services*, WFME, WHO, UNESCO, Cairo, December 1995
82. Opening address: *Science networks for peace and development*, The Hebrew University of Jerusalem, UNESCO Center for Science for Peace, 1995
83. *Basic and applied sciences in the world : past strategies and present status - Role of UNESCO*, Paris, 1995
84. Keynote address: *From xenophobia to tolerance : Jews and Moslems*, Simon Wisenthal Center - Europe, Paris, October 1995
85. Keynote address: *Sharing knowledge for globalization and social development*, International Congress of Engineering Deans and Industry Leaders, Melbourne, Australia, July 1995
86. Keynote address: *Narrowing the gap: developed and developing: South-South cooperation and international development. Special reference to Latin America*, IBN-COSTED : ICSU, UNESCO, Mexico City, 1995
87. Keynote address: *University, industry science partnership in Africa (UNISPAR)* Accra, Ghana, September 1995
88. Keynote address: *Solar Energy: The World Solar Summit Process*, ISES Congress: *In search of the Sun*, Harare, Zimbabwe, 11 September 1995
89. Keynote address: *Solar energy for rural Africa*, University of Readings, U.K., 1995
90. Keynote address: *Re-orientation of engineering education to local environment and priorities of development*, World Federation of Engineering Congress, Cairo, 1995
91. Opening address: *3rd East-West Congress on Engineering Education*, Gdynia, Poland, Australian Journal of Engineering Education, Vol. 7, September 1996
92. Keynote paper: *Science for sustainable food security*, M.S. Swaminathan Research Foundation, Science Academies Summit, Madras, India, 18 June 1996
93. Keynote address: *Future challenges for development in an interdependent society*, the Graduation Ceremony of the European University, Paris, June 1996
94. Symposium International: *From partial insecurity to global security*, UNESCO, Paris, June 1996
95. Keynote paper: *Challenges to science in a globalized free market-economy*, Congress of the Encyclopedia of Life Support Systems, Bahamas, May 1996
96. Keynote paper: *Status of higher-education teaching personnel*, UNESCO, Paris, 8 October, 1996
97. Keynote paper: *Science for sustainable development in the South: Challenges ahead*, TWAS, Trieste, Italy, 24 November 1996

98. Keynote paper: *Charting new directions for international business in the Middle East. Peace Dividends: Impact on Regional and Global Business.* Bar-Ilan University, Tel-Aviv, Israel, 1996
99. *Reforms in higher education for the Palestinian self-rule,* Najah University, Nablus, 1996
100. *Presentation of the status of science in the World - UNESCO World-Science Report,* 1996. The Royal Society, London, 15 April 1996
101. *Globalization: the challenge to science - International Conference on Molecular & Cellular Aspects of Plants Cell Differentiation,* Beirut, 24 September 1996.
102. Keynote address: *Science and Mathematics Education Investment in future generations for a new era of globalization.* Sao Paulo, Brazil, 6 March 1997.
103. Keynote address: *Bio-informatics as a dynamic network for developing countries.* International Centre for Co-operation in Bio-informatics. The Weizmann Institute of Science. Rehovot, Israel, 31 March 1997
104. Keynote address: *The future of technological and vocational education - UNESCO's perspective.* The Higher Colleges of Technology (TEND 97) Abu Dhabi, United Arab Emirates, 6 April 1997.
105. Keynote address: *Bioinformatics: Dynamic network for training and research in the developing countries.* Oxford International Biomedical Centre, Worcester College, Oxford, 15 April 1997.
106. *The United Nations: Challenges facing UNESCO in a world of transition.* The Opening Session of the International Leadership Conference (UNU), Amman, Jordan, 1 June 1997.
107. Keynote address: *Science, Technology and Mathematical Education in an era of economic globalization: Special reference to developing countries.* CASTME-RAST International Symposium, Headquarters of the Commonwealth, London, 27 June 1997.
108. *What a higher education needed for 21<sup>st</sup> Century,* Shoman Forum, Amman, May 2000.
109. *Arab Science Profile: Comparative Analysis.* Damascus, September 2001.
110. *Science and Technology : Arab World Reality Perspective ,* Oct. Amman, Jordan, 2001.
111. *Science Arab Prospects in the 21<sup>st</sup>. Century ,* Amman, Jordan, 2001.
112. *Arab R&D Profile: Comparative Analysis & Capacity Building.* Trieste-Italy, March 2003.
113. MIT Arab Alumni 4th annual Conference "Human & Economic Development" Dubai, June 2003.
114. *Higher Education in the Arab World ... where to?,* Damascus, 2003.
115. *Capacity Building in Science and Technology in the Arab Region.* IAS 13th Science Conference. Sarawak – Malaysia, October 2003.
116. *Strengthening Research and Development Capacity for Industrial Development in the Arab Region.* OIC Science Conference, Kuala Lumpur-Malaysia, October 2003.
117. *Pure and Applied Sciences in Jordanian Universities, Science 1<sup>st</sup> Conference,* Amman, Oct. 2003
118. *Science Profile of the Arab Region: Building Potentials,* IUBS. Cairo-Egypt, January 2004.
119. *Modernity and Arab Modernism: towards a learning educational system in a changing world,* Launch of Arab Institute for Intellectual Modernization Conference, Beirut, Lebanon, April 2004.
120. *Role of Education in Social, Economic and Political Development :Mechanisms of Implementing Sustainable development Strategies,* Irbid , Jordan, June 2004.
121. *Tertiary Education, Research, Science & Technology Development,* Workshop in Higher Education Reform/World Bank, Beirut, June 2004.
122. *Higher Education Policy,* Abdul Hameed Shoman Foundation, Amman, Jordan, 2004.



123. *Conducting a Comparative Study on Existing Management Structures at Tertiary Education Institutions (TEIs) with the Aim of Improving Their Governance and Management*, UNDP, Pal. 2005.
124. *Cultural Heritage Law*, Abu Dhabi, 2006.
125. *What is What in S&T and Higher Education in the Arab Region*, IAS, Ankara/Turkey, 2006.
126. *Where are we in S&T & Higher Education in the – Arab Region*", Kuwait Ministerial Conference ISESCO, Kuwait 2006.
127. *Education & Democracy in Building Security & Stability in the Region*, A. Badran, Parliamentaria Conference, Dead Sea, 2007.
128. *e-Learning: A Global Revolution*, MIT LINC Conference: Dubai Executive Session, Dubai, UAE, 2007.
129. *The STI Landscape in the Arab World, Third World Science Forum*, STI in Achieving MDGS, UNESCO – TWAS, Budapest, 2007.
130. *Role of Education in Combating Terrorism*, International Conference on Terrorism: Impacts, risks and remedy, ISESCO, Tunisia, 2007.
131. *Higher Education Accreditation and Quality Assurance*, 6<sup>th</sup>. Quality Assurance Conference , Jordan, Health Care and Education Quality Assurance, Dead Sea , Jordan, ٢٠٠٧.
132. *Annapolis Peace Process: where to*, Lions Club, Jordan, 2007.
133. *Science Parks*, AAS La meridian Hotel, Amman, Jordan, 2007.
134. *Role of Education in Eradicating Poverty*, Irbid Chamber of Commerce, Jordan, 2007.
135. *UNESCO Mission and to its impact on Society*, Isra University, Amman, 2008.
136. *University Youngsters and Generation Gap*, 2<sup>nd</sup>. Cultural Conference (University Youngsters and The challenges of modernity and tradition, Princes Summayah University of Technology (PSUT). Amman, Jordan, 2008.
137. *Mobilization, Consensus, and Rationality*, Morocco, ATF, Rabat, 2008,
138. *Palestine and Annapolis : Reds and Greens in the Peace Process*, Salt Charity Society Orthodox Club, Amman, Jordan, 2008.
139. *Biotechnology: New Horizon*, College of Science, University of Jordan, Amman, Jordan, 2008.
140. *The STI Landscape in the Arab World*, ISMA 08, PSUT, Amman, Jordan, 2008.
141. *Middle East Political Landscape; Present and Future*, Lions Club, Amman, Jordan , 2008.
142. *Peace & Beyond, Nobel Laureates Conference*, Petra, Jordan, 2008.
143. *Biotechnology and Society: Prospects and Challenges*, Yarmouk University, 11/2008, Irbid-Jordan.
144. *Science, Technology and Innovations for Sustainable Development in the Islamic World: Policies and Politics Rapprochement*, IAS, Kazan, 2008.
145. *Political Parties and Parliaments in the Arab World*, Dead Sea, Jordan, 2008.
146. *Rights to Water & Water Rights*, 5<sup>th</sup> World Water Forum, Parliamentarian Conference, Istanbul, 2009.

## **Major Contributions of Significant Application Impact:**

### **1. In Research and Development (R&D) International):**

- a) *After extensive research on banana metabolism and ethylene Biogenesis, an environmental technique was developed to suppress respiration and ethylene evolution-extend the shelf life and delay the ripening process. Fruits were harvested at large caliber, without being at risk of turning ripe during shipping. This lead to quality bananas branded Banavac (Chiquita), shipped all over the world from central America (1963-1966).*

- b) *After extensive biochemical and histological research on the mechanism of Polyphenoloxidase and identifying substrate (L-dopamine) and inhibitors of high molecular weight (tannins) A technique was developed to control the core browning and the peel scars of bananas and elucidating the mechanism of core browning and chilling injury . The outcome has lead to quality bananas branded " Chiquita", free of core browning and dark scars (1963-1966).*

## **2. In Institutional Building, (National):**

- a) *Establishing and managing a university of two campuses:  
The 1st campus for arts, sciences, humanities, social sciences, education, economics and administrative sciences, fine arts, physical education, mass communication, and continuing education and community services with general and physical facilities and students dormitories and staff housing. This campus houses now 16,000 students with faculty of 850 Ph.D. and 1200 of technical and administrative staff (110,000 m2 construction space - 200 acres), 1976-1986.  
The 2nd campus for science and technology, which houses faculties of medicine, dentistry, pharmacy, public health and allied health sciences, nursing, engineering, agriculture, and veterinary medicine. Staffing development of faculty and technical staff was undertaken, and a campus of 500,000 m2 on 1200 hectares was constructed. The campus houses 6000 students currently. 1976-1986.*
- b) *Building up and managing a faculty of science for graduate and undergraduate students, teaching and research, University of Jordan, Amman, 1966-1976.*
- c) *Establishing the Higher Council for Science and Technology to manage research and development in Jordan, 1987-1988.*
- d) *Developing and expanding Philadelphia University as its president, from small college of 3000 undergraduate students to a comprehensive university of 8000 under & graduates students of high standards.*
- e) *Developing and expanding Petra University as its president from 3200 to 6000 students and improving quality and standards.*

## **3. In Building Science Curriculum & Textbooks:**

- a) *Science curricula for Jordan and Arab region (ALECSO) and Oman were developed with complete textbooks in biology for secondary education were authored. In addition, curricula and textbooks for community colleges - higher education in Oman.*
- b) \* *Co-chairman of **UNESCO – EOLSS** Joint Committee for the Development of "**Encyclopedia of Life Support Systems**" of 200 volumes written by 3000 scientists world- wide, published electronically. 2006.  
[www.EOLSS.Net](http://www.EOLSS.Net)*
- \* *President AAS who published "**Encyclopedia of the Arab Region**", 4 volumes. 2007.*

#### 4. **In Formulating Science and Technology Policies (National, Regional)**

- a) *As a member of the executive committee for science and technology strategy in the Middle East, supported by ALECSO, a strategy was developed and published in 1988.*
- b) *Also, an institutional framework for National Science and Technology policies priorities of R&D for implementing programmes, at the national and regional levels.*

#### 5. **In Multilateral Cooperation for Development:**

- a) *As **Assistant Director-General for Science** (1990-1994) at UNESCO, responsible for the Science Sector programme at UNESCO: (1) Science and technology for development; (2) Environment and development. The Science Sector comprising 280 professionals and administrative staff at Headquarters, Paris and six regional field science offices in Asia, Africa, Eastern Europe, Latin America and biennial regular budget of \$55 million and \$60 million extrabudgetary. Science has achieved a high multiplying effect on concentrating on priority areas for developing human resources and national capacities on which science and technology depend; and increasingly is being harnessed for sustainable development*

*The mode of action is mobilization and facilitating partnerships with NGOs and international centers and fostering on cooperation research and enhancing intellectual cooperation. Interactive multimedia and information technology in frontier areas which have greater impact on development have yielded very positive results at the grass-roots level.*

- b) *As **Deputy Director-General** (1994-1998):*
  - *UNESCO, an International Intergovernmental Organization (185 Member States), with a wide mandate on Education, Science, Culture and Communication and a regular staff of 2200--almost half of whom are at Headquarters, Paris, while the remainder are spread over 60 Field Offices covering all regions and subregions of the world. Operates with a biennial regular budget of \$518 million and extrabudgetary of \$290 million.*
  - *To be cost-effective, time-effective and relevant, and efficient in delivery to Member States, UNESCO has undergone a strong reform and renewal in order to adapt to new realities of a rapidly changing and complex world.*
    - . *Rationalization of permanent staff and development of high calibre rotating rosters of experts in every region of the world to carry out the programme*
    - . *Decentralization and mobilization of other resources*
    - . *Concentration and prioritization*
    - . *Seed-funding partnership (i.e. African Technology Fund, etc.) and increasing extrabudgetary resources.*
    - . *Fund raising, Delivery of high quality services.*