FACULTY OF AGRICULTURAL AND FOOD SCIENCES

ANNUAL REPORT OF SPONSORED RESEARCH PROJECTS AND SERVICE CONTRACTS
October 1, 2007 – September 30, 2008

PREPARED BY

FAFS Research Committee:
Yusuf Abou-Jawdah (Chairperson)
Nadim Farajalla
Lara Nasreddine
Omar Obeid
Executive Summary

The Faculty of Agricultural and Food Sciences has attracted substantial funding during the academic year 2007-2008. Five service contracts of USD 369,495 were signed. Additional six internationally funded grants were secured at USD 701,695; while the number of locally funded grants was 19 with a total budget of about USD 112,730. The total number of publications in refereed international journals during this year was 36 articles, in addition to one book, 6 chapters in books/manuals and 40 abstracts, proceedings, posters and presentations. During this academic year 15 theses were completed.

Research activities 2007 – 2008

In 2007-2008, FAFS was engaged in sponsored research and service contract activities with a total budget of USD 1,183,920 (Table 1). Research funds from the Lebanese National Council for Scientific Research (LNCSR), University Research Board (URB), Service Contracts and Regional & International Agencies accounted for 3, 7, 39 and 59 % respectively of the received support. (Figure 1)

Table 1. Total funding for research and services at the Faculty of Agricultural and Food Sciences for the academic year 2007 – 2008

<table>
<thead>
<tr>
<th>Service Contracts</th>
<th>Research</th>
<th>Regional and International Funds</th>
<th>URB and other AUB funded research</th>
<th>LNCSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>$369,495</td>
<td>$701,695</td>
<td>$82,300</td>
<td></td>
<td>$30,430</td>
</tr>
</tbody>
</table>

Overall 30 research projects were operational in 2007 – 2008. These are divided into 5 service contracts, 6 internationally supported research grants and 19 locally supported grants by LNCSR and URB. As shown in Table 2, all departments were active in research with the AGSC department attracting the largest research funds from international agencies ($578,199). The service grants secured by other Programs and Centers amounted to $350,895 (see Table 2).
Table 2. FAFS Grants by Departments/Centers and Donors 2007 – 2008

<table>
<thead>
<tr>
<th></th>
<th>Animal &amp; Veterinary Sciences</th>
<th>Agricultural Sciences</th>
<th>Nutrition and Food Sciences</th>
<th>Environment and Sustainable Development Unit (ESDU)</th>
<th>Landscape Design and Ecosystem Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Contracts</td>
<td></td>
<td>$18,600.-</td>
<td></td>
<td>350,895</td>
<td></td>
</tr>
<tr>
<td>Regional and International Research Funds</td>
<td>$29,750.-</td>
<td>$578,199.-</td>
<td>$30,746.16</td>
<td>$63,000</td>
<td></td>
</tr>
<tr>
<td>URB and other AUB Funded Research</td>
<td>$11,600.-</td>
<td>$28,750.-</td>
<td>$34,350.00</td>
<td>$7,600.00</td>
<td></td>
</tr>
<tr>
<td>LNCSR</td>
<td>$9,663.-</td>
<td>$9,500.-</td>
<td>$11,267.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$51,013.-</td>
<td>$635,049.-</td>
<td>$76,363.16</td>
<td>$350,895</td>
<td>$70,600</td>
</tr>
</tbody>
</table>

FAFS was also active in partnering with local and international organizations to engage in community development sponsored projects. The service contracts covered areas in community development and soil science. The donors were: the Food and Agriculture Organization (FAO); the International Development Research Centre (IDRC), Canada; Resource Centers on Urban Agriculture and Food security (RUAF) Foundation, Netherlands; the Association for Volunteers in International Services (AVSI) and the International Fund for Agricultural Development (IFAD).
Research grants covered areas in integrated pest management, clinical nutrition, agronomy, irrigation, soil science, weed science, animal nutrition, animal diseases, sensory evaluation, and food safety. The donors were: United States Agency for International Development (USAID), International Atomic Energy Agency (IAEA), United Nations Human Settlements Programme (UN-HABITAT), LNCSR and URB.

A detailed listing of service contracts and international, regional and local research grants is included in Appendix 1.

FAFS Faculty members published 36 articles in international refereed journals, 3 articles in local and regional journals, 1 book and 6 chapters in books/manuals published by international press (see Table 3). In addition, faculty members completed six technical and consultancy reports and their contribution to international and regional meetings and forums was recognized through 39 published abstracts or papers in proceedings (see Table 3). All four departments contributed to this research output (see Table 4).

Table 3. Publications of the Faculty of Agricultural and Food Sciences for the academic year 2007 – 2008

<table>
<thead>
<tr>
<th>Refereed articles</th>
<th>Books</th>
<th>Proceedings and Abstracts</th>
<th>Reports</th>
<th>Chapters in Books or Manuals</th>
<th>Articles in Local and Regional Journals</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>1</td>
<td>39</td>
<td>6</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 4. FAFS publications by department for the academic year 2007 – 2008*

<table>
<thead>
<tr>
<th></th>
<th>Animal &amp; Veterinary Sciences</th>
<th>Agricultural Sciences</th>
<th>Nutrition and Food Sciences</th>
<th>Landscape Design &amp; Ecosystem Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refereed articles</td>
<td>5</td>
<td>11</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Articles in Local &amp; Regional Journals</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Books</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proceedings and abstracts</td>
<td>9</td>
<td>8</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>Reports</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chapters in Books or in Manuals</td>
<td>3</td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

* including publications shared between departments; for example the apparent total number of refereed articles is 42; however the actual total number is 36, thus indicating a good level of interdepartmental cooperation.
## Appendix 1

**Detailed Local Research Grants, International, Regional and Service Contracts**

Table 5. Funded Research 2007- 8: Lebanese National Council for Scientific Research (LNCSR)

<table>
<thead>
<tr>
<th>Research Area</th>
<th>Title</th>
<th>Dept.</th>
<th>Investigator (PI)</th>
<th>Budget USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation</td>
<td>Modeling the effects of Deficient Irrigation and Depth of Root Wetting on Irrigation Saving</td>
<td>AGSC</td>
<td>M. Nimah</td>
<td>4,000</td>
</tr>
<tr>
<td>Agronomy</td>
<td>Preliminary Evaluation of Conservation Tillage in Lebanon</td>
<td>AGSC</td>
<td>S.K. Yau</td>
<td>5,500</td>
</tr>
<tr>
<td>Animal Nutrition</td>
<td>Fat Mobilization and Some Hormonal Changes in Dry Awassi Ewes in Response to Water Stress and Vitamin C Supplementation (Renewal)</td>
<td>AVSC</td>
<td>S. K. Hamadeh</td>
<td>5,333</td>
</tr>
<tr>
<td>Animal Nutrition</td>
<td>Nutritional values of dehulled safflower meal for poultry</td>
<td>AVSC</td>
<td>M. T. Farran</td>
<td>4,330</td>
</tr>
<tr>
<td>Clinical Nutrition</td>
<td>Postprandial variation in appetite hormones in response to macronutrient composition of meals in male subjects with metabolic syndrome.</td>
<td>NFSC</td>
<td>N. Hwalla</td>
<td>6,667</td>
</tr>
<tr>
<td>Clinical Nutrition</td>
<td>Comparative Analysis of Body Composition Assessment Methods in Lebanese Children: Anthropometry, Bioelectrical Impedance, and Deuterium Dilution Method</td>
<td>NFSC</td>
<td>L. Nasreddine</td>
<td>4,600</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>30, 430</strong></td>
</tr>
<tr>
<td>Research Area</td>
<td>Title</td>
<td>Dept.</td>
<td>Investigator (PI)</td>
<td>Budget USD</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>--------</td>
<td>-------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Agronomy</td>
<td>Effects of Rotation: Comparing Barley Performance After A Previous Crop of Safflower, Chickpea, or Barley</td>
<td>AGSC</td>
<td>S.K. Yau</td>
<td>4,500</td>
</tr>
<tr>
<td>Integrated Pest Management/Molecular Biology</td>
<td>Cucurbit Yellow Stunting Disorder Virus: Sensitivity of Detection Methods and Development of Resistant Transgenic Plants</td>
<td>AGSC</td>
<td>Y. Abou-Jawdeh</td>
<td>7,400</td>
</tr>
<tr>
<td>Irrigation</td>
<td>Effects of Deep Root Irrigation, and Strip Irrigation on Yield and Irrigation Efficiency</td>
<td>AGSC</td>
<td>M. Nimah</td>
<td>5,550</td>
</tr>
<tr>
<td>Soil Science</td>
<td>Efficacies of Ammonia Gas, Ammonium Hydroxide and Metham Sodium as Alternatives to Methyl Bromide in the Control of Root-Knot Nematodes (5,600 USD budget).</td>
<td>AGSC</td>
<td>I. Bashour</td>
<td>5,600</td>
</tr>
<tr>
<td>Weed Science</td>
<td>Mapping of Invasive Weeds in the Beqa'a Plain Agroecosystem</td>
<td>AGSC</td>
<td>M. Haidar</td>
<td>5,700</td>
</tr>
<tr>
<td>Animal Nutrition</td>
<td>Response to Aspirin administration in water and feed restricted Awassi ewes</td>
<td>AVSC</td>
<td>S. K. Hamadeh</td>
<td>7,100</td>
</tr>
<tr>
<td>Animal Diseases</td>
<td>Impact of Nutrient synergy on prevention of E. coli induced pathology in chicken</td>
<td>AVSC</td>
<td>E. K. Barbour</td>
<td>4,500</td>
</tr>
<tr>
<td>Agriculture</td>
<td>Improving Water Productivity in Lebanon-Aquaculture and Irrigation: A Case Study of Tilapia and Radish Production – URB</td>
<td>LDEM</td>
<td>N. Farajalla</td>
<td>7,600</td>
</tr>
<tr>
<td>Clinical Nutrition</td>
<td>Comparative Analysis of Body Composition Assessment Methods in Lebanese Children: Anthropometry, Bioelectrical Impedance, and Deuterium Dilution Method</td>
<td>NFSC</td>
<td>L. Nasreddine</td>
<td>6,800</td>
</tr>
<tr>
<td></td>
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<td></td>
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<tr>
<td>--------------------------------------</td>
<td>-----------------------------------------------------------------</td>
<td>-----</td>
<td>-----</td>
<td>-----------</td>
</tr>
<tr>
<td>Clinical Nutrition</td>
<td>Effect of lysine and vitamin B6 supplement on male subjects with hypertriglyceridemia.</td>
<td>NFSC</td>
<td>O Obeid</td>
<td>7,500</td>
</tr>
<tr>
<td>Cereal Science</td>
<td>Determination of sensory thresholds of selected iron compounds and formulation of iron-fortified Arabic bread</td>
<td>NFSC</td>
<td>I. Toufeili</td>
<td>5,350</td>
</tr>
<tr>
<td>Sensory Evaluation</td>
<td>The characterization of the physicochemical and sensory properties of full-fat, reduced-fat and low-fat ovine and bovine Halloumi Cheese</td>
<td>NFSC</td>
<td>A. Olabi</td>
<td>8,200</td>
</tr>
<tr>
<td>Food Safety</td>
<td>Antibiotic Residues in Milk, Poultry and Eggs in the Middle East: Case study Lebanon</td>
<td>NFSC</td>
<td>Z. Kassaify</td>
<td>6,500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>82,300</strong></td>
</tr>
</tbody>
</table>
### Table 7. Funded Research: Regional and International Agencies (Active grants during 2007-2008)

<table>
<thead>
<tr>
<th>Research Area</th>
<th>Title</th>
<th>Dept.</th>
<th>Investigator (PI)</th>
<th>Funding Agency</th>
<th>Period of Grant</th>
<th>Amount in USD as of Oct. 1, 07</th>
<th>Total Approved Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Pest Management/ Molecular Biology</td>
<td>Development of tomatoes with combined resistance to Tomato yellow leaf curl virus (TYLCV) using both virus-derived resistance and molecular marker assisted breeding</td>
<td>AGSC</td>
<td>Y. Abou-Jawdah</td>
<td>USAID</td>
<td>June 30, 2004-June 30, 2009</td>
<td>69,000</td>
<td>$249,290</td>
</tr>
<tr>
<td>Integrated Pest Management/ Molecular Biology</td>
<td>Development and Improvement of Local Seed Potato Production in the Middle East</td>
<td>AGSC</td>
<td>Y. Abou-Jawdah M. Nimah</td>
<td>USAID</td>
<td>December 15, 2007-December 31, 2010</td>
<td>180,180</td>
<td>$180,180</td>
</tr>
<tr>
<td>Agricultural Higher Education</td>
<td>Agricultural Higher Education And Development Project</td>
<td>AVSC</td>
<td>S. K. Hamadeh and E. K. Barbour</td>
<td>USAID/HA WAI University</td>
<td>October 1, 2008-March 31, 2009</td>
<td>29,750</td>
<td>$29,750</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$701,695</td>
</tr>
</tbody>
</table>
Table 8. Service Contracts to FAFS for the academic year 2007-2008

<table>
<thead>
<tr>
<th>Research Area</th>
<th>Title</th>
<th>Department</th>
<th>Coordinator</th>
<th>Funding Agency</th>
<th>Period of Grant</th>
<th>Amount in USD as of Oct 1, 07</th>
<th>Total Approved budget USD</th>
<th>Total Approved budget €</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil Science</td>
<td>Training of Litani Water Authority on Analysis of Soil and Water funded by AVSI cooperation</td>
<td>AGSC</td>
<td>I. Bashour</td>
<td>AVSI</td>
<td>March 19, 2008-August 15, 2008</td>
<td>18,600</td>
<td>18,600</td>
<td></td>
</tr>
<tr>
<td>Community Development</td>
<td>Communication for Development: Regional Capacity Building- Phase II</td>
<td>ESDU</td>
<td>S. K. Hamadeh</td>
<td>FAO</td>
<td>December 26, 2007-December 15, 2008</td>
<td>80,000</td>
<td></td>
<td>80,000</td>
</tr>
<tr>
<td>Community Development</td>
<td>Cities Farming for the Future</td>
<td>ESDU</td>
<td>S. K. Hamadeh</td>
<td>IDRC-RUAF</td>
<td>January 1, 2007-December 31, 2008</td>
<td>152,951</td>
<td></td>
<td>152,951</td>
</tr>
<tr>
<td>Community Development</td>
<td>Outcome Mapping: Regional Capacity Building</td>
<td>ESDU</td>
<td>S. K. Hamadeh</td>
<td>IDRC</td>
<td>November 9, 2006-April 30, 2008</td>
<td>41,834</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Development</td>
<td>Assessing the Training Needs of Rural Development Projects in Lebanon</td>
<td>ESDU</td>
<td>S. K. Hamadeh</td>
<td>IFAD</td>
<td>November 21, 2007-June 30, 2008</td>
<td>3,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>143,434</strong></td>
<td><strong>152,951</strong></td>
<td></td>
</tr>
</tbody>
</table>

* All amounts in Euros were converted to USD using AUB’s conversion rate: 1 USD = 1.478 Euros
Appendix 2

Publications, Theses and Reports

1. Refereed Journals

Agricultural Sciences


* indicates collaborative publications listed under more than one department.

Animal and Veterinary Sciences


Nutrition and Food Sciences


* indicates collaborative publications listed under more than one department.


Landscape Design and Eco-Management


* indicates collaborative publications listed under more than one department.


2. Books

Animal and Veterinary Sciences

3. Edited Journals

**Animal and Veterinary Sciences**


4. Abstract, Proceedings, posters and presentation in International Conferences

**Agricultural Sciences**


* indicates collaborative publications listed under more than one department.


**Animal and Veterinary Sciences**


* indicates collaborative publications listed under more than one department.


**Nutrition & Food Sciences**


* indicates collaborative publications listed under more than one department.
conference on hypertension, lipids, diabetes and stroke prevention, Abstract. Prague, Czech Republic, March 6-8.


* indicates collaborative publications listed under more than one department.
Landscape Design and Eco-Management


5. Manuals and Chapters in Manuals

Agricultural Sciences


Landscape Design and Eco-Management


* indicates collaborative publications listed under more than one department.
6. Publications in local or regional journals

**Agricultural Sciences**


7. Published Research Reports

**Agricultural Sciences**


**Nimah M. N**, Jamous C. A. 2007. Master Plan for the availability of water resources for irrigation management at AREC.


**Nutrition & Food Sciences**


8. Theses

**M.S. Theses Submitted**

**Agricultural Sciences**

Bou Azza Karma: February 2008. Characterization and genomic variations among Verticillium populations in Lebanon. **Major:** Plant Protection. **Advisor:** A. **Saad**.

* indicates collaborative publications listed under more than one department.


Animal and Veterinary Sciences


Nutrition & Food Sciences


* indicates collaborative publications listed under more than one department.


**PhD Theses Supervision**

**Animal and Veterinary Sciences (December 2008).**


**Nutrition and Food Sciences**

Chamieh M.C : Dietary and socioeconomic determinants of overweight and obesity in Lebanon. Advisor: N. Hwalla.

Tannous D : Effect of macronutrient composition of males on postprandial ghrelin response in hyper-insulinemic male subjects. Advisor: N. Hwalla


Tannous Dit El Khoury D : Influence of Dietary Carbohydrate, Protein and Lipid on Metabolic and Hormonal Parameters of Metabolic Syndrome (Ms): i) Postprandial Study in Human Subjects; ii) Long-Term Response of a Murine Model for Ms-Like Dyslipidemia. Director of the thesis: N. Hwalla.

**9. Technical and Consultancy Reports (services to community)**

**Agricultural Sciences**

- **Y. Abou-Jawdah**

Abou-Jawdah Y, Sobh H, Atamian H, Dagher R, Gerges E, Talhouk R. 2007. Lebanon PROGRESS REPORT on Development of tomatoes with combined resistance to Tomato yellow leaf curl virus (TYLCV) using both virus derived resistance and molecular assisted breeding.

- **I. Bashour**


*indicates collaborative publications listed under more than one department.*
• **M. N. Nimah**


• **A. T. Saad**


**Animal and Veterinary Sciences**

• **E. Barbour**

Monthly investigations on 60 poultry farms and 15 imported goat farms at the WRF-funded project in the South of Lebanon. Technical reports related to each monthly investigation are prepared and forwarded to the director of the project namely, Mr. Gilbert Aoun.

**Nutrition & Food Sciences**

• **Z. Kassaify**


• **N. Hwalla**

Appointed by DG of WHO as a member of the “WHO Expert Advisory Panel on Nutrition” for four years 2004-2008.


• **O. Obeid**


* indicates collaborative publications listed under more than one department.