The Newsletter of the **I**nitiative for **B**iodiversity **S**tudies in **A**rid **R**egions Issue No. 13 April 04

Editorial

A Holistic Landscape Approach to Biodiversity Use in Lebanon: Partnering with landowners

Biodiversity and landscape heterogeneity in Lebanon is a product of the region's geomorphologic and climatic diversity and equally of human use and management in one of the oldest, continually inhabited regions of the world. Traditionally, rural communities appreciate the potential and limitations of the mountainous terrain and its plant wealth and use their understanding to develop a landscape that is efficient, sustainable and beautiful. The question is whether we, as scientists, designers and entrepreneurs understand and appreciate the local know-how (native plant management, harvesting and use in culinary and medicinal purposes). The interdisciplinary expertise of IBSAR has the potential to play an active role in keeping alive the traditional Mediterranean rural heritage, both the physical landscape and cultural practices, by adopting a holistic, landscape approach to the sustainable utilization of the regional biodiversity. The chance to adopt such an approach presented itself when Mr Wasim Ezzedine, an accomplished businessman, approached IBSAR asking for an innovative alternative for the land he owns next to Deir Nbouh in Zgharta.

Credit Dr. Malek Batal and Dima Zoughaib

The site, 150 hectare in area, lies at 400-600 meters above sea level and affords a spectacular view of Tripoli in the distant horizon. The landscape is mountainous with a rich cover of pine woodlands, native shrubs and a rich variety of native herbs. The challenge is to utilize the unique qualities of the site to develop a model that would exemplify efficient use of natural and cultural resources on privately owned lands in Lebanon. The first step towards such a model was to adopt a holistic, landscape approach because it is inclusive of people and nature, integrative of ecological, environmental, economic and cultural concerns. Accordingly, a multifunctional 'model' was developed for the project that proposes a synergy between core activities and complementary ones.

The agreement with Mr Ezzedine was signed on Thursday, April 1, 2004 in the presence of Drs Salma Talhouk (IBSAR, Director) and Fadia Homaidan (Office of Grants and Contracts, Director). The project first phase duration is 12 months and the budget is 73,204 USD.

The core activity is the production of high quality essential oils, which utilizes herbs and plants native to the Lebanese mountains. A unit ensuring high quality oil production aims to satisfy national and international market demand, while involving local communities in harvesting the herbs and eventually growing them. Four fringe activities complement the core activity and are planned to ensure economic diversification. The first two are cottage industries, Goat Cheese Production and Honey Bee Keeping, which utilize traditional know-how & local practices in the project area capturing a thriving market for agricultural cottage industry and organic foods/products. A third component includes a Composting Facility that ensures the availability of good quality potting soil for herb planting, a sustainable recycling of waste generated from the different production activities. The fourth component of the project is an educational one, whereby the holistic, integrative project exemplifies a sustainable model of development that is rooted to people and place in the eastern Mediterranean. Local entrepreneurs, students and businessmen can visit the site to witness an alternative use of natural resources.

Underlying the proposed model is prudent landscape planning that ensures efficient utilization of land through the appropriate placement of activities, paths and roads, which aim to raise the profile of the project. A Landscape Master Plan utilizes views and vistas within the site to create a more attractive and marketable project, providing for tangible and visible manifestations of a sustainable utilization of biodiversity in the region.

It is interesting to note that Mr Ezzedine, though extremely open to the model proposed was skeptical about the landscape component, arguing that he was not interested in having a 'garden'. His skepticism reflects a general misconception about 'landscape' often equating it with a 'beautification' with ornamental plants, failing to realize that 'landscape' represents a way of approach that is holistic and integrative of people and place. The adoption of a landscape approach for Mr Ezzedine's project will hopefully serve not only to exemplify a new and sustainable utilization of Lebanon's rural and natural wealth but equally to contribute to a new understanding of landscape.

By Dr. Jala Makhzoumi

News

IBSAR presentation to AUB – Don't miss it!.

The Initiative for Biodiversity Studies in Arid Regions (IBSAR) will give a presentation to formally introduce IBSAR to the AUB community. All members will be introduced and the various activities presented. Invitations are being prepared. The scheduled date and time are *Monday 31 may, 5-6 pm. The venue College Hall auditorium B1*.

"IBSAR: Report of Research Committee"

*Meeting of April 19***.** Presentation by Dr. H. Mohtaseb, in which she gave an annual report about the different research projects ongoing under IBSAR (Presentation is on the web).

IBSAR meetings

Mark changes! IBSAR meetings were changed for the spring semester 2003-2004 semester, it is as follows:

Date*	Subject	Speakers
Mar. 15	IBSAR review	Dr. S. Talhouk.
Mar. 29	Bio-informatics	Dr. K. Khalaf. Dr. H. Khacfeh and Mr. H. Merheby
Apr. 19	Research activities and prospects	Dr. H. Mohtaseb
May 3	Outreach to the society**	Dr. J. Makhzoumi
May 10	Outreach to the society	Dr. J. Makhzoumi
May 17	Outreach to the private sector***	Dr. N. saliba and Dr. N. Kabbani
May 31	AUB presentation	IBSAR

*Time @ 4:20pm
**Postponed
***Cancelled

For your precious contribution to this invaluable newsletter ….., including the editorial section
contact M. Daouk at me11@aub.edu.lb
Submission deadlines 20th of each month.

Seminars

"Molecular modes and function of plant alkaloids and other plant secondary metabolites" by Prof. Micheal Wink, Director Institute of Pharmacy & Molecular Biotechnology, Faculty of Biosciences University of Heidelberg, Germany. April 7, 2004.

Dr. Wink gave a presentation in which he explained that multi functionality of plant extract is the rule and that scientists working in this field do not expect specificity of compounds, this is due to the powerful and predominant presence of secondary metabolites with unspecific interactions in plant extracts.

By Dr. N. Saliba.

1st National workshop: Introduction of the Cartagena Protocol on Biosafety

IBSAR has organized the 1st National Workshop to introduce the Cratagena Protocol on Biosafety and to present the workplan of the National Biosafety Framework project for Lebanon. The workshop was held in close collaboration with the Ministry of Environment, on April 23, 2004 at the Rotana Hotel, Gefinor. The main objectives of the workshop were to introduce the Cartagena protocol on Biosafety and the development of stakeholders' map to encourage the

participation of different sectors at the national level in the process of building the Lebanese NBF. The workshop included three sessions: the first session included opening statements and presentation of the project context, objective and teams. The participants were welcomed by Dr. Elsa Sattout, National project coordinator. The floor was given to Miss. Lamia Chamas, Head of Conservation of Nature Department at the Ministry of Environment (MOE) who stressed on the importance of public participation in the development of the NBF for Lebanon. Mrs. Dima Al-khatib, UNDP representative, gave basic information about the project which is funded by the Global Environment Facility through the United Nations Environment Programme (UNEP) and is implemented locally by UNDP Lebanon. She added that the project complements the numerous initiatives addressing the fulfilment of the Lebanon's commitments to the Convention of Biological Diversity (CBD). Mrs. Diane Klaimi-Ministry, MOE representative presented the context and background of the Cartagena Protocol. Dr. Salma N. Talhouk, IBSAR Director – talked about the importance of this project to our country looking at the regional level regarding trade of GMOs crops and development of modern biotechnology.

Two sessions followed whereas in the first session an introduction to the Cartagena protocol on biosafety and an overview on biotechnology and aspects of a national biosafety framework were given. The presentations given by IBSAR experts tackled subjects related to modern biotechnology, its safe use (Dr. R. Talhouk), GMOs products(Dr. R. Baalbaki) and the related Cooperative & Capacity Building Programmes (H. Mohtaseb) as well as policies (D. Jamali), administrative and legislative structure (Mr. W. Nasser).

The scope of work within the project implementation frame was presented. The activities to be undertaken under for the development of NBF for Lebanon project were listed as well as the aim of the project which is to prepare the national biosafety framework that includes the legislations and policies that regulate the safe use and handling of LMOs. The various components including awareness, capacity building, production of awareness material dissemination of information were presented. The creation of a list-server to ensure public participation in the development process is envisaged as well as the production of a "semestrial" newsletter NBFP@Lebanon.

In the second session, the participants were divided in several groups. They were invited to draw a stakeholders' map for public participation in the development of NBF for Lebanon including individuals & organizations was developed, these are:

- 18 Ministries and Governmental agencies
- 15 Universities and research centers
- 20 Agricultural syndicates and cooperatives
- 38 International organizations
- 22 Non-governmental agencies
- 44 Companies/institutes from the private sector
- 7 Legislation authorities

For more Information, please contact:
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"Anti-inflammatory properties in folk medicinal herbs"

Medicinal plants have in the last few decades been the subjects of very intense pharmacological studies. Natural products derived from these plants have contributed greatly to the development of modern therapeutic drugs. Many of these plant-derived secondary metabolites are known to interfere directly or indirectly with various inflammatory mediators, such as cytokines, prostaglandins, gelatinases and the key transcription factor NF-?B. Plants from Lebanon, particularly those used in folk medicine have not been studied for their anti-inflammatory effect. IBSAR at AUB has made major strides in this direction in the past two years to validate the claimed anti-inflammatory bioactivities in certain folk medicinal plants. Although many plants are claimed to be useful in the treatment of several inflammatory diseases, there is no scientific record to support that. Reviewing the local folk literature (Akeil, 1997; Mkarzel, 1997; Rowiaha, 1981), in addition to preliminary screening of twenty-nine indigenous medicinal plants, undertaken in the laboratories of Drs. Rabih Talhouk (Bio Dept, FAS) and Hala Mohtaseb (Bio Dept, FAS), it was proposed that at least four out of the twenty nine genera to have anti-inflammatory bioactivities. Malak Esseily, an MSc student working with Drs. Rabih Talhouk and Fadia Homeidan (FM), evaluated the anti-inflammatory bio-activities of two such genera using *in vitro* and *in vivo* models of endotoxin (ET)-induced inflammation in mammary epithelial SCp2 cells and in paws of male rats respectively. In the vitro model, ET induced makers of inflammation like NF-κB, gelatinases A and B and the cytokine interleukin-6 (IL-6), and suppressed makers of SCp2 differentiation such as ß-casein. Water extracts from either genera inhibited ET-induced IL-6 expression at the protein and mRNA levels, gelatinases (A and B) and NF-?B activation in mammary epithelial cells. However, the extracts did not reverse ET-suppressed ß-casein expression. On the other hand, the extracts exhibited significant anti-edematous effect in the *in vivo* model of ET-induced paw edema in male rats. The nature of these bio-active compounds and their mechanism of action will be subject of further investigations in coordination with the Chemistry Department and the Central Research Science Laboratory (CRSL) at AUB.

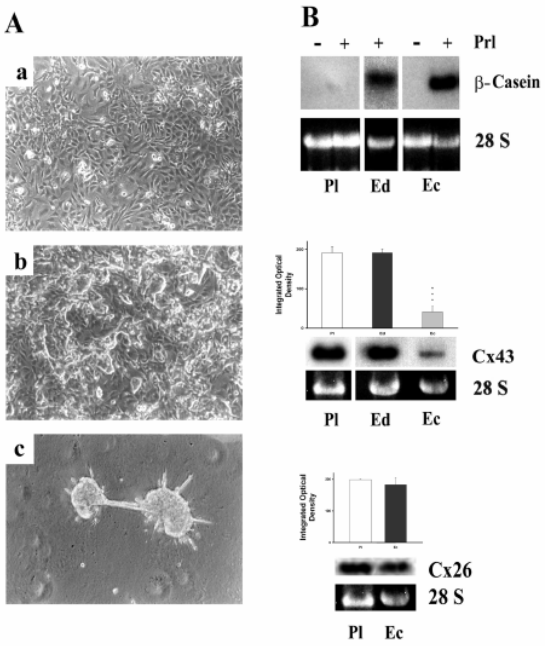


Fig. 1. Morphology, ?casein and connexin expression by mammary cells on day 6 of culture. (A) Morphology of cells cultured in differentiation medium on (a) plastic, (b) EHS-drip, and (c) EHS-matrix. (B) Northern blot analysis of ?casein, Connexin (Cx)43 and Cx26 by cells on plastic [Pl], EHS-drip [Ed] and EHS-matrix [Ec]. ?Casein expression was only evident in the presence of prolactin (+) and not in its absence (-).

This photomicrograph shows the mammary cell culture model (*J. Cell Science 116: 3531-3541*) used to monitor potential anti-inflammatory bioactivities described above. When such cells are treated with endotoxin (ET) they loose their differentiated phenotype, express cytokines, gelatinases and loose casein expression. Ideally plant extracts that can reverse this ET-induced effect may have anti-inflammatory bioactivities and are of potential value to drug industry.

By Dr. Rabih Talhouk

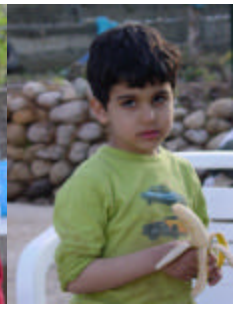
Fund raising

Funds Received

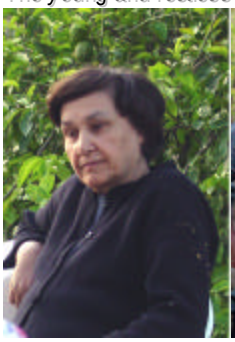
IBSAR has signed an agreement with Eng. W. Ezzeddine (private investor). Project title: "**A Holistic Landscape Approach to Biodiversity Use in Lebanon: Partnering with landowners" (**Members included Drs. R. Baalbaki, M. Batal, S. Hamadeh, N. Hwalla, Jala Makhzoumi, N. Saliba, S. Talhouk and Messrs. K. Sleem, I. Saliby and M. Ghosn (grant amount: 73,204USD for first year of project)

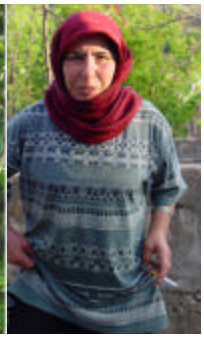
"Spring gathering: Damour" Dr. Saliba invited IBSAR members, spouses and children to a 'Saj feast' in the family owned banana plantation. The 'manager' of the event, Najat's mom made sure that everybody ate well and … that the children were safe! Needless to say that the weather was great and the company even better!

The grown ups



The young and restless …





The best manager: Najat's mother

The best saj maker

Lesson about the future … of IBSAR ☺