

## PhD Thesis proposal<sup>1</sup>

General Information		
<b>PhD Thesis Title</b>	<b>Ethnobotanical Survey of Useful Plants and Valorization of Selected Medicinal and Aromatic Species Growing Wild in the Shouf Biosphere Reserve, Lebanon</b>	
PhD Doctoral Degree	PhD in Agriculture and Food Sciences	
Research Unit		
Laboratory	Agriculture laboratories	
Axis	Environment, biodiversity, agriculture	
PhD Supervisor 90%	Name & Title : Nelly Arnold . Apostolides Pr Dr Dr., Professor Emiritus Email : nellyarnold6@gmail.com	University Address : Holy Spirit University of Kaslik-USEK
Co-supervisor (if applicable) 10%	Name & Title : Nabil Nemer, associate Professor Email : nabilnemer@usek.edu.lb	University Address : Holy Spirit University of Kaslik-USEK
Location (s)	Location 1: USEK	Work shift calendar /per year (%) : 2-3 months/year
	Location 2: Shouf Biosphere Reserve	Work shift calendar /per year (%) : 6 months/year
Potential funding and scholarship	Shouf Cedar Society	

Applicant Profile and/or Special Requirements	<ul style="list-style-type: none"> <li>- Applicant should have an Agricultural degree or its equivalent in related agricultural fields</li> <li>- Preference to applicants who have experience in the work of Shouf Biosphere Reserve and/or have worked in related fields at the Shouf Biosphere Reserve</li> </ul>
---	--

Subject's national or worldwide Context, Objectives & Research lines
<p>Plant biodiversity is essential for human well-being. Since ancient times, people have derived a significant part of their subsistence and income from plant products. This long-standing experience has resulted in an intimate interaction between people and plants and the development of a valuable ethnobotanical traditional knowledge (TK). Such knowledge is today worldwide recognized as relevant to preserve plant biodiversity. Wild plants are a rich source for a wide range of valuable products including food, fibers and wood, animal forage, bee keeping and a wealth of secondary metabolites that serve as medicines, perfumes among others. They also provide unique identity of societies and cultural services. More specifically,</p>

<sup>1</sup> Thesis proposal should not exceed two pages

medicinal, aromatic plants (MAPs) have gained high importance as they benefit virtually everyone mostly developing through the treatment of a wide arrange disease and providing natural products for health and nutrition.

The Shouf Biosphere Reserve (SBR) was declared a natural reserve in 1996. It is the largest reserve of the country including the communal land of nine villages and located in Mount Lebanon. In 2015 UNESCO designated the reserve and its surrounding area as “Biosphere SBR”. It harbors a rich flora including a high rate endemics and a number of rare and threatened species. The TK of SBR community is foreseen as a key element for its management and community development.

**Objectives**

This study is designed to assess ethnobotanical knowledge of SBR community and valorize a selection of important MAPs for conservation, utilization and development. The specific objectives are:

- 1- Assessment of ethnobotanical and traditional knowledge of local community of SBR;
- 2- Valorization of important MAPs in terms of chemical composition and antimicrobial activity of essential oils and potential to generate economically valuable natural products;
- 3- Development of a set of relevant recommendations for the SBR management.

**Research lines**

- I- Field ethnobotanical survey by personal interviews of local informant of SBR using semi structured survey questionnaire and determination of priority MAPs by quantitative data analysis;
- II- Voucher plant samples collection, herbarium development and identification;
- III- Morphoanatomical study of selected priority MAPs;
- IV- Phytochemical analysis of essential oils of priority MAPs;
- V- Assessing the antimicrobial activity of essential oils of priority MAPs;
- VI- Examine the commercialization potential of priority MAP products;
- VII- Development of relevant management recommendations.

<b>Outcomes (OCs) : What do we wish to achieve?</b>	
OC1:	A comprehensive ethnobotanical TK of the local community of the SBR documented and priority MAPS species for sustainable use identified and scientifically evaluated.
OC2:	A contribution to the sustainable management of SBR, community development and the new Lebanese National Biodiversity Strategy and Action Plan (NBSAP) of CBD made.
OC3 :	Scientific knowledge useful for future scientific research generated.

<b>References (R) ( 5 most recent peer-reviewed publications)</b>	
R1:	UN CONVENTION ON BIOLOGICAL DIVERSITY (1992). <a href="https://www.cbd.int/doc/legal/cbd-en.pdf">https://www.cbd.int/doc/legal/cbd-en.pdf</a>
R2:	FAO (1999). Use and potential of wild plants in farm households. <a href="http://www.fao.org/docrep/003/w8801e/w8801e02.htm">http://www.fao.org/docrep/003/w8801e/w8801e02.htm</a>
R3:	FAO (2011). Health and wealth from Medicinal Aromatic Plants. <a href="http://www.fao.org/3/a-i2473e.pdf">http://www.fao.org/3/a-i2473e.pdf</a>
R4:	Mouterde, P. (1966 ; 1970 ; 1983). Nouvelleflore du Liban et de la Syrie[Newflora of Lebanon and Syria], Vol. 1 ; 2 ; 3. Beyrouth: Dar El-Machreq (Imprimerie Caholique).