



ICARDA

# Medicinal and Aromatic Plants as Alternative Livelihood Sources for Rural Communities in Afghanistan

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RALF Website: [www.icarda.cgiar.org/RALFweb/RALF.htm](http://www.icarda.cgiar.org/RALFweb/RALF.htm)

## Introduction

Afghanistan's diverse topography and microclimates favor an abundance of medicinal and aromatic plants including opium poppies (*Papaver somniferum*), which is now grown as an illicit crop on over 160,000 ha in 28 of the country's 34 provinces (UNODC, 2006). *Canabis sativa* is found as a wild plant in the eastern provinces but also cultivated as another illicit crop in Paktia Province. At least 65 of the medicinal and aromatic plant species that grow in Afghanistan could be exploited commercially as alternative livelihood sources for rural communities in Afghanistan. These types of plants are therefore the focus of four of the 11 projects managed by ICARDA under the Research in Alternative Livelihoods Fund (RALF), which is financially supported by the UK Department for International Development (DFID). These projects aim to raise incomes and create jobs by helping collectors, farmers and traders make greater use of the country's rich plant resources.

## Saffron: Sustainable Production, Processing and Marketing

Saffron (*Crocus sativus*) is a high value crop that is mainly harvested and processed by trained women and girls, who benefit from the income-earning opportunities the crop provides. Sustainable production, processing, and marketing of saffron is the aim of one of the RALF projects, led by ICARDA's partner, DACAAR. Co-implementing partners are Washington State University and the Ministry of Agriculture and Irrigation (MAI) Herat.

Since its introduction in 1991, saffron-growing has spread rapidly in Afghanistan—to 21 districts in seven provinces. In Pushtun Zarghun District of Herat Province alone, where DACAAR introduced saffron-growing in 1998, over 250 farmers are now involved in saffron production. To help them, the project has established three Saffron Associations and three Corm Banks (seed banks), which are providing saffron bulbs (corms) to new saffron growers. Around 30 ha of saffron are now being cultivated each year in Herat Province. Many farmers want to start growing saffron, which has led to a great demand for corms. Established saffron farmers are earning extra income by harvesting and selling the excess saffron corms they produce. The project is now focusing on improving production and identifying new market opportunities. As quality is the key to obtaining higher prices on international markets, growers and researchers have together worked out ways to meet ISO quality standards governing moisture content, flavor, and color. These include:

- Picking flowers early in the morning, before they wilt
- Carefully separating stigmas from flowers and styles
- Careful drying—to ensure that the final product only has 12% moisture content. Too much moisture causes spoilage and molding, while too little leads to brittleness and loss of weight.
- The use of proper packaging—to maintain moisture levels and attract consumers.



Afghan women and trained girls carefully separating stigmas from saffron flowers in Herat Province

Another RALF project, led by CRS in Herat, is studying agronomic issues using multiyear on-farm trials in Herat and Ghor. Results have shown that larger saffron corms produce significantly more flowers and corms, and that saffron grows best when corms are planted at a depth of 15-20 cm at a spacing of 15 x 20 cm. In some areas, such as Pashtun Zarghun, it is best to plant saffron in raised beds to ensure good drainage. The project has also shown growers that regularly digging up and replanting corms reduces the threat posed by pests and diseases. This also ensures that the best new corms are planted at the optimum depth—without regular replanting, corms eventually end up close to the surface because the new corms form above the older ones. Replanting also allows producers to gather surplus corms and sell them for additional income.

## Mint: Commercial Production and Value Addition

Commercial production of mint (*Mentha spp.*) as a viable alternative to growing opium poppies is the focus of another project implemented by ICARDA and Nangarhar University in Helmand, Kunduz and Nangarhar provinces. The project team has set up research/demonstration plots, trained farmers by organizing field days, and founded mint producers' associations. The project staff have also helped farmers to set up plastic houses so that they can produce mint using protected agriculture technology. This means they can sell the crop in winter when prices are very high. The team has also introduced mint growers to the dry mint trade, teaching them how to dry, package, and store the mint when prices are very low. Four mint water extraction plants have been installed in the target provinces. The mint producers' associations are marketing the mint water as an herbal remedy for common stomach problems. The oil content and the chemical composition of the oil have been determined for nine local varieties of mint. Germplasm accessions of mint from the neighboring countries are also being tested.



Training course on medicinal value of mint extract in Nangarhar Province

Commercial production of mint in Helmand Province

## Natural Active Ingredients as Sources of Food, Pharmaceuticals and Cosmetics

Liquorice (*Glycyrrhiza glabra*), cumin (*Cuminum cymium*), Devil's dung or 'hing' (*Ferula asa foetida*), caraway (*Carum carvi*), wormseed (*Artemisia cina*), and Indian jujube (*Ziziphus jujuba*) are the subject of a multi-stakeholder project led by Novib-Oxfam of Netherlands. Co-implementing partners are MAI, the Faculty of Pharmacy at University of Kabul, and three NGOs. In the nine provinces covered, the project partners are working with communities, collectors, farmers, and traders to find the best ways to collect, grow, process, and market these species. Efforts aim to add value, and include the development of harvest and post-harvest technologies and work to better understand the plants' properties—by analyzing and identifying bioactive compounds and other substances of interest. Researchers are also mapping the distribution of these species, and developing quality standards to ensure that products can be exported. This work is complemented by the project's efforts to build policy and legal frameworks.



Frequency of occurrence of the 6 target plant species in nine provinces of Afghanistan

Province	Medicinal Plants					
	Artemisia	Caraway	Cumin	Hing	Li liquorice	Jujube
Khost <sup>1</sup>	xx	xx	xx	x	x	
Paktia <sup>1</sup>	xx	x	x	x		
Badakhshan <sup>2</sup>	xxx	xxx	xx		xx	
Baghlan <sup>2</sup>	xxx	xx	x	xxx	xxx	
Bamyan <sup>2</sup>	xxx	x	x	x		
Herat <sup>3</sup>	xxx	xx		xxx	xxx	xx
Ghor <sup>3</sup>	xxx	xx	x	xxx	xxx	x
Farah <sup>3</sup>	xxx		x	xx	xxx	
Faryab <sup>3</sup>	xxx	xx	x	xxx	xxx	

NGO Implementing Partners: 1-Tribal Liaison Office, 2-Aga Khan Foundation, 3-Coordination of Humanitarian Assistance

**Capacity Building Linkages Developed:** The RALF projects are providing practical opportunities for capacity building at MAI provincial departments and Afghan universities. The students and faculty of Kabul University's Faculty of Pharmacy, for example, are directly involved in botanical, morphological, taxonomical and phytochemical investigations, resource assessments, and quality standards for the six species.

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