

Economic development and conservation through MAPS cultivation in the Swat Valley, Pakistan

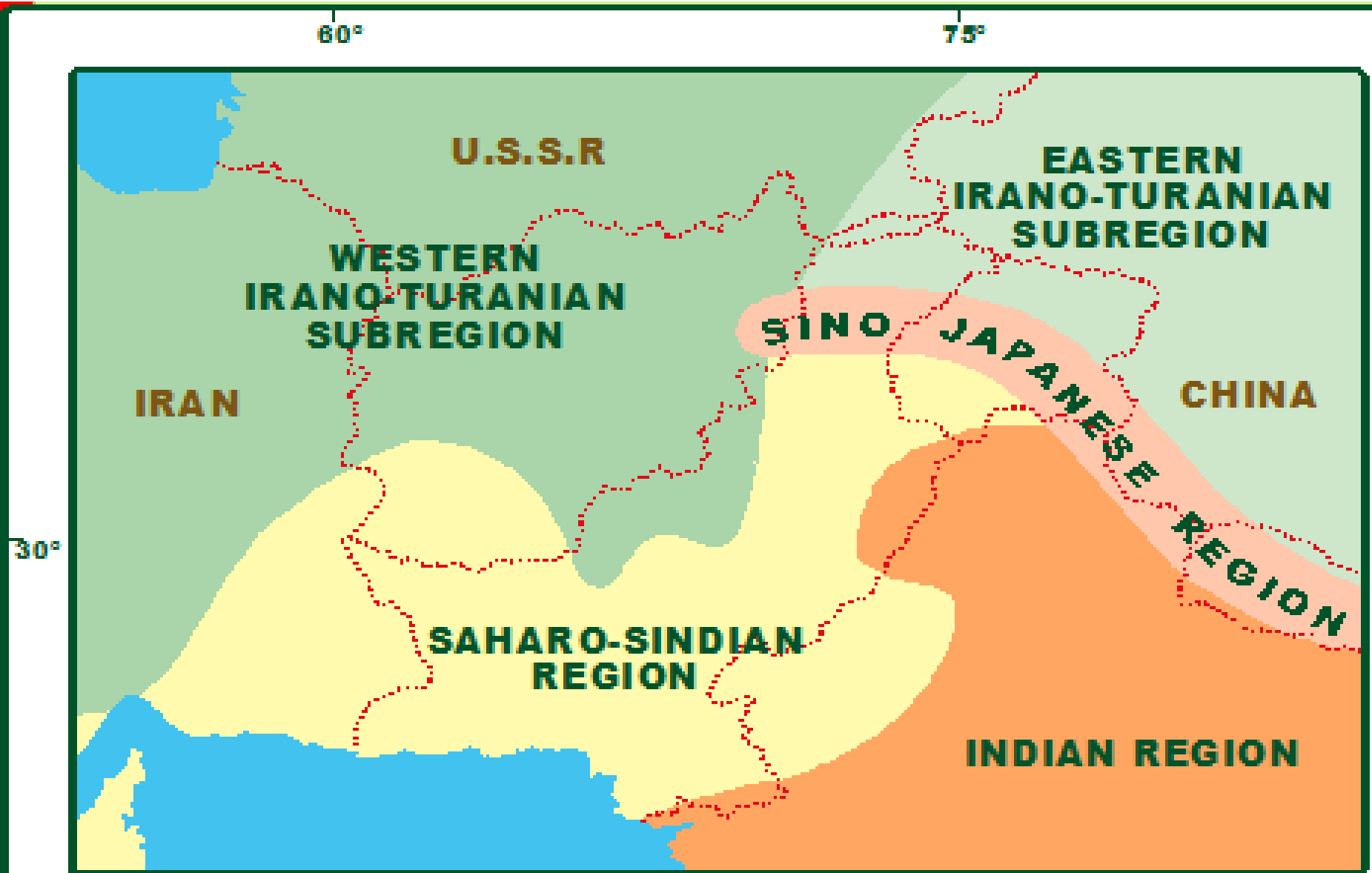
An aerial photograph of a village in the Swat Valley, Pakistan. The village is nestled in a valley, surrounded by steep, forested mountains. The houses are mostly multi-story buildings with flat roofs, some with colorful facades. The surrounding landscape is lush green, with many trees and some open fields. In the background, the mountains are covered in dense forest, and some peaks are visible through the haze.

Hassan Sher, Center for Plant Sciences and Biodiversity, University of Swat, Khyber-Pahtunkhwa, Pakistan

Mary E. Barkworth, Intermountain Herbarium, Utah State University, Logan, Utah, U.S.A.



PHYTOGEOGRAPHICAL REGIONS OF PAKISTAN AND SWAT.



Swat Pakistan

- **70% of people below poverty line (\$0.50/day);**
 - poorest in remote valleys
- **Narrow agro-pastoral economic base**
- **Biodiversity hot spot**
 - 2000 species of flowering plants (Pakistan has 6000)
 - Many high value medicinal and aromatic plants (MAPS)
- **Significant number of people gather medicinal plants**
 - Home use
 - Sale
 - 95% of material harvested from wild
- **Potential for improving income from MAPS is high**
 - Pakistan exports \$10.45m/yr, increasing 5% annually
 - Pakistan imports \$130m/yr, increasing 10% annually
 - Worldwide trade \$60b annually, growth rate 5-10%





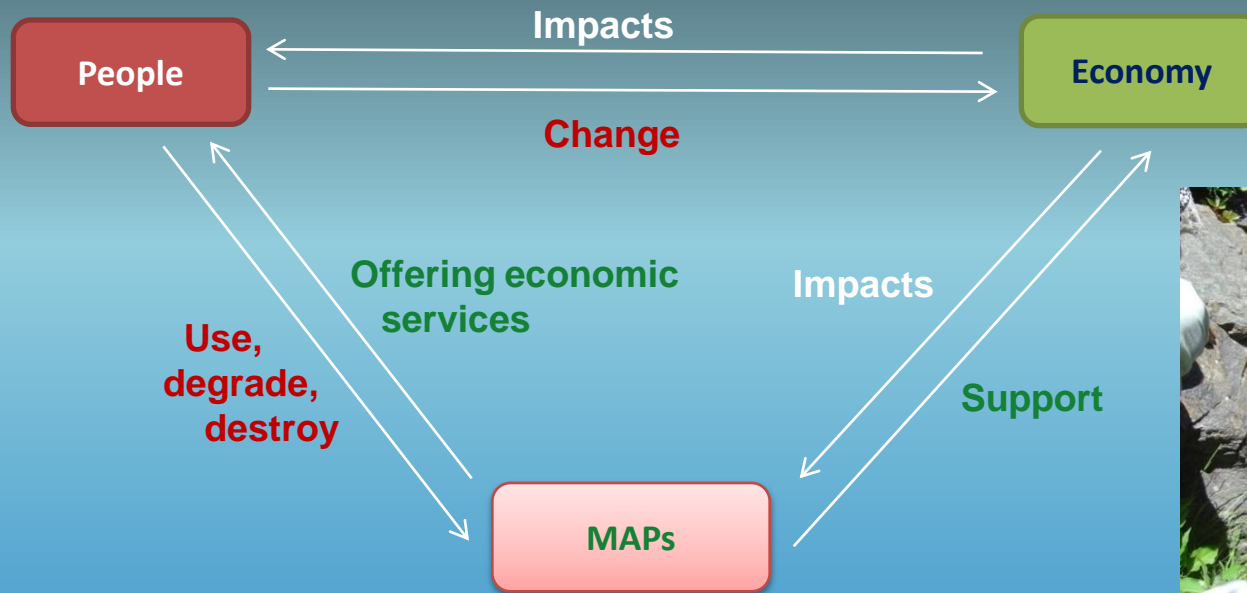
THIS PROJECT

- Conduct research in 3 villages on
 - Achieving economic development by
 - providing high quality products
 - collaborating in planning, growing ,and marketing
 - acquiring skills in plant identification and monitoring
 - sustainable harvesting of native species
- Strengthen the fabric of Pakistani society by:
 - building on knowledge of traditional uses of plants
 - fostering collaboration among different parts of society

Potential of MAPs

- Increasing gap between supply and demand
 - Both domestic and global
- Requires reliable sources of high quality material
- Combines preservation of cultural knowledge with methods of using unique aspects of environment to provide better livelihood
- Create new jobs

MAPs have been important in improving the living standards of in South Asia



Local, national, and global demand is such that they can serve a similar function in Swat District

Why MAPs Cultivation & Biodiversity Monitoring & Sustainable Collection?

- **Maps cultivation**
 - Fits into existing cropping systems
 - Ensures quality product
 - Can help development of business infrastructure
- **Biodiversity monitoring & sustainable collection**
 - Enhance knowledge of potentially valuable plants
 - Engages more family members
 - Expands opportunities



Impediments

- **Inadequate knowledge of market needs**
- **Lack of processing facilities**
- **Lack of connection to major purchasers**
- **Lack of access to and experience with credit**
- **Domination of local market by local traders**
- **Lack of long term support for systemic development of agricultural economy**

Project interventions (2012-2013)

- Market survey and value chain analysis of MAPs potential
 - (Working paper No. 011- posted on www.pssp.ifpr)
- **Provided extension services to community**
 - Capacity building training
 - Community mobilization
 - Awareness development
- **Ex-situ Cultivation of ten MAPs in four locations**
 - Hands on training
 - Cost benefit analysis
 - Identification of some impediments

Process

- Workshops
 - About MAPS and potential value
 - How to plant, cultivate, record development
- Choose species
 - Availability
 - Suitability
 - Desirability
 - Economic value
- Grow crops
- Determine economic return



- 13 species
 - 1 critically endangered, 7 endangered, 5 vulnerable
 - Price range 150 – 1200 Rs/kg
- Four locations

Location	Distance (km,) Driving (time)	Precip. (mm)	Frost-free months	Avg. July temp. °C
University	0 km, 0.00 hr	1020	9	37
Khwaskhela	27 km, 0.50 hr	1142	8	30
Behrain	41 km, 1.25 hr	1458	7	25
Kalam	30 km, 1.40 hr	2002	6	20

The Plan

- Four locations
 - Mingora (800 m)
 - Khwazakhel (1100 m)
 - Miandam (1500 m)
 - Behrain (2000 m)



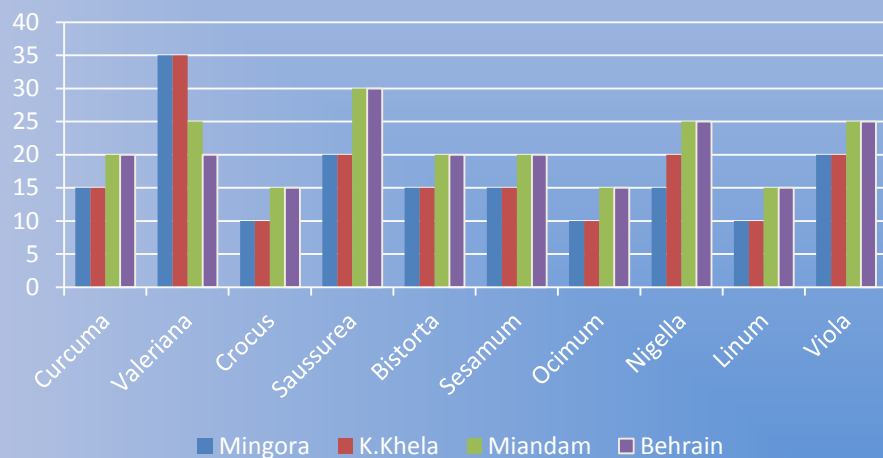
Ten Species	
<i>Curcuma longa</i>	Turmeric, Curcumin
<i>Valeriana jatamansi</i>	Medicinal
<i>Crocus sativus</i>	Saffron
<i>Saussurea lappa</i>	Medicinal
<i>Bistorta amplexicaulis</i>	Curing ulcers
<i>Sesamum indicum</i>	Oil seed, edible
<i>Ocimum basilicum</i>	Culinary herb
<i>Nigella sativa</i>	Cure all
<i>Linum usitatissimum</i>	Flax, fibre, oil seed
<i>Viola pilosa</i>	Medicinal

Each location

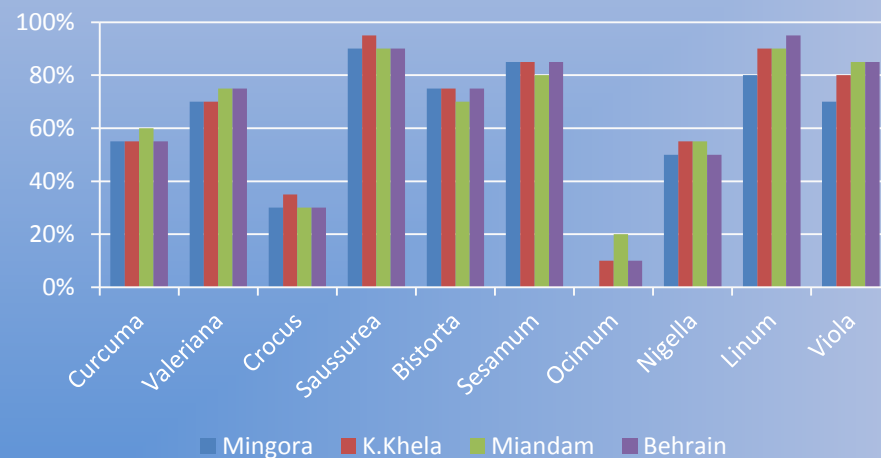
- Ten plots 100m², 1 per species
- Record growth, events
- Record marketable biomass
- Sell
- Record prices obtained
- Calculate economic benefit



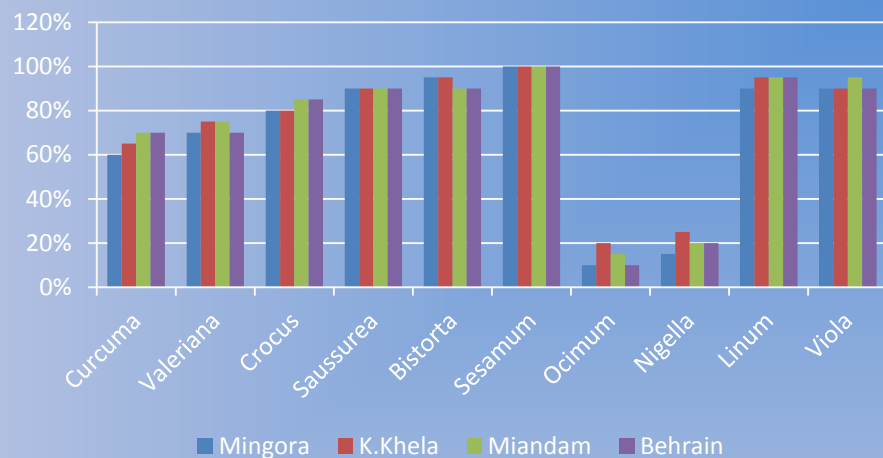
Emergence Time



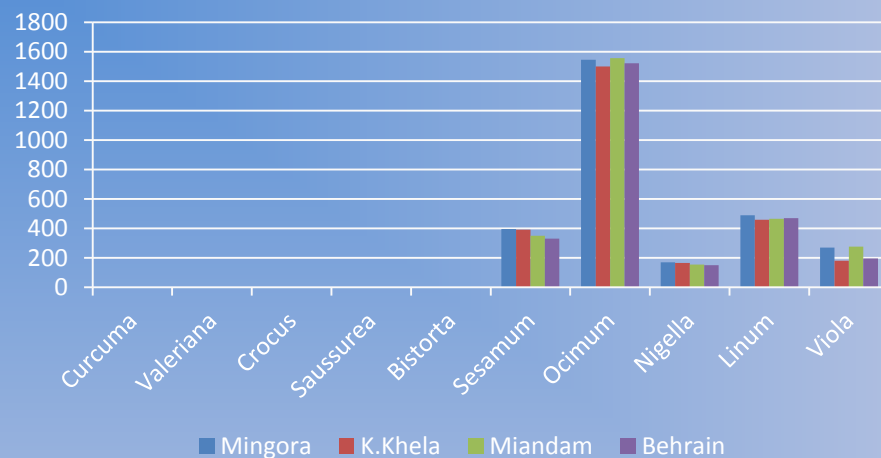
Emergence Success



Survival



Marketable Biomass



Economic Analysis

	Market Value per kg	Value per hectare	Production cost per hectare	Net Earnings per hectare	Net Earnings per plot
Sesamum	\$ 2.91	\$ 1063.74	\$ 367.82	\$ 695.93	\$ 1.74
Ocimum	\$ 1.56	\$ 2382.21	\$ 367.82	\$ 2014.39	\$ 5.04
Nigella	\$ 5.19	\$ 830.40	\$ 367.82	\$ 462.58	\$ 1.16
Linum	\$ 2.70	\$ 1268.44	\$ 367.82	\$ 900.62	\$ 2.25
Viola	\$ 10.38	\$ 2387.40	\$ 367.82	\$ 2019.58	\$ 5.05
Tomatoes	\$ 0.62	\$ 1307.88	\$ 674.70	\$ 633.18	\$ 1.58

The extra earning enabled me to support my two children who are school going



Traditionally I used to collect MAPs species. The USAID Entrepreneurs/HDOD Project trained me for better collection.



I applied the learning in the field



Towards Prosperity

The superior quality of material fetched very high in the market and earned me more than I used to earn



My husband/sale agent linked me to the market



My collection was clean, selective and based on the market demand



Proper post harvesting techniques resulted into better quality of collected materials



Benefits

- Economic
- Knowledge
- Connections



Much to do -
But a step
towards a
prosperity



Use of Results

- Determine the relative importance of various impediments to strengthening and diversification of economy in villages of Swat valley
- Help villagers think strategically about their farming activities
- Improve reputation of Swat valley as a reliable source of high quality MAPs
- Aid re-development of tourism industry based on the area's natural beauty
- Develop ability of villagers to guide tourists interested in natural history
- Foster collaboration among different sectors of society

Thank you

