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**LESSONS LEARNED FROM PILOT PROJECTS FOR
IMPLEMENTING SUSTAINABLE LIVELIHOOD APPROACHES
IN SOUTH LEBANON**

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Lessons Learned from Pilot Projects for Implementing Sustainable Livelihoods Approaches in South Lebanon

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Outline of Presentation

- Vulnerability Context
- Zaatar Pilot Projects
- Sumac Pilot Facility
- Micro-Credit Fund

With focus on Lessons Learned

Vulnerability Context



- **Natural Capital Constraints: Water Resources**

Water Scarcity & Mismanagement

- Limited quantity
- Water use inefficiency and overuse
- Reduction in annual precipitation levels: Climate Change

- **Natural Capital Constraints: Land Resources**

Land Degradation & Parcelization of land

- Urban encroachment
- Degradation of terraces and Land abandonment
- Informal ownership & contractual arrangements: Limits potential for long-term cultivation planning

- **Technological & Financial Constraints**

- Inadequate agricultural extension
- Poor access to modern technologies
- Investment risks, mostly due to **insecurity & instability**
- Limited access to credit; seasonal needs

- **Skewed Markets & Poor Infrastructure**

- Import competition / tariffs linked to agricultural calendars
- Limited market information
- Poor roads (particularly after July 2006)
- Insufficient water reservoirs and dams
- Market distorting tobacco subsidies

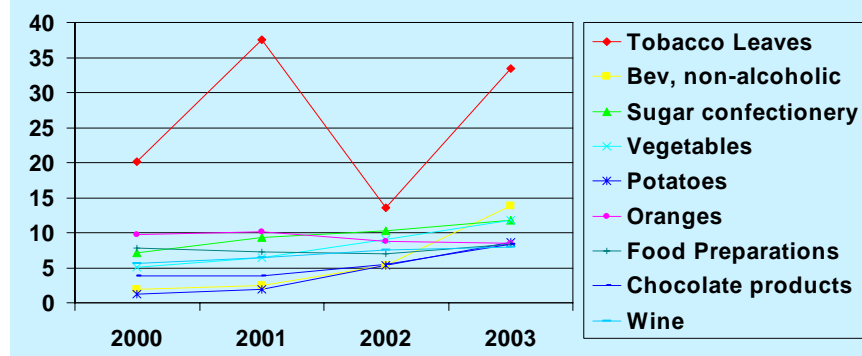


Bint Jbeil, South Lebanon

Volatility of the Tobacco Market



**Lebanon: Selected Agricultural Exports
(US\$ million)**



http://www.fao.org/es/ESS/compendium_2005/pdf/ESS_LEB.pdf

Volatility in Agricultural Output Levels; Export Levels; Subsidies contributes to Uncertainty

Skewed Markets Encourage Tobacco Production: *Reduces Resilience by Preventing Diversification*



Background:

- Tobacco cultivation concentrated in Bint Jbeil
- Sector growth due to the subsidized price of sorted tobacco leaves sold to the Regie (state-owned monopoly)
- Subsidies continue to be given despite the fact that Regie regularly experiencing annual losses and loss of market share

Tobacco cultivation
nutrient-depleting
for soils

Farmers are
risk-averse and
continue cultivating
tobacco for subsidy

Challenges:

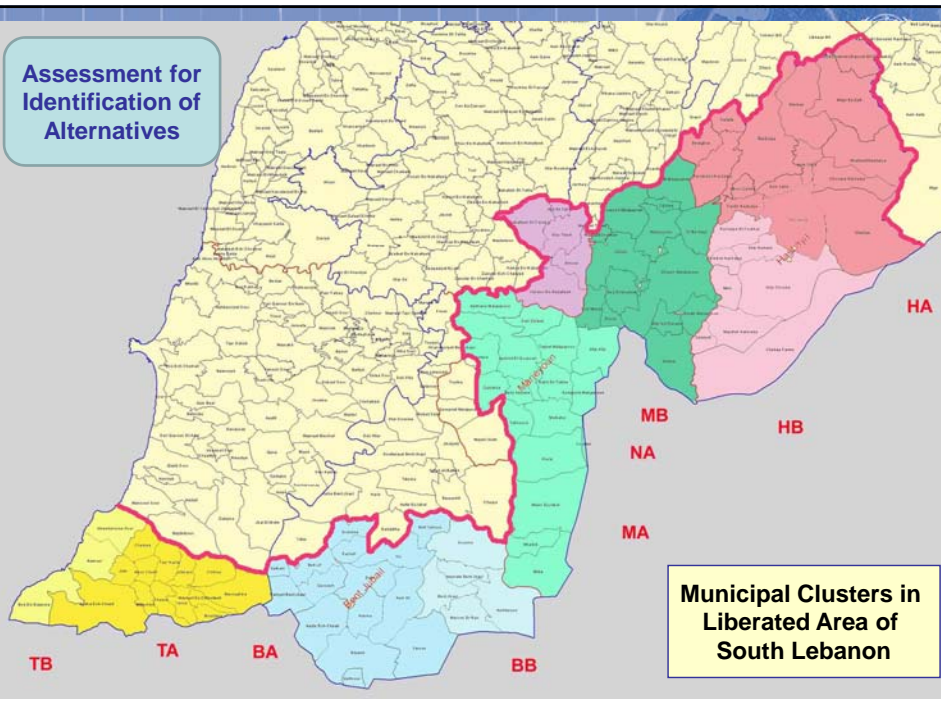
- Tobacco as source of income is unsustainable due to:
 - Growing national budget deficit,
 - Increasing supply of tobacco from other regions of Lebanon that also benefit from tobacco subsidies,
 - Decreasing demand for tobacco products in traditional markets due to changing consumer preferences
- Regie prohibits farmers from processing tobacco into value-added products, such as tobacco used in water pipes (*argyleh*)
- Nutrient depleting, limits diversification, occupational health risks

Tobacco harvesting
& drying is
hazardous to
health, particularly
women & children



Source: International Labor Organization (ILO), International Programme on the Elimination of Child Labour (IPEC), *Child labour on tobacco plantations: a rapid assessment*, number 17, Geneva, May 2002.

Assessment for
Identification of
Alternatives



Municipal Clusters in
Liberated Area of
South Lebanon

South Lebanon: Pilot Project Assessment



Long-list of potential products and production in associated clusters

Products	BA	BB	HA	HB	MA	MB	NA	TA	TB
Wheat-based items (bread, borghol, freek, kechek)	X	X	X	X	X	X	X		
Herbs (dried spices: zaatar, sumac)	X	X	X	X	X				
Olive oil, olive pressing residues	X	X	X	X	X	X	X	X	X
Soap (olive oil, laurel)	X		X	X	X				
Jams, dried fruits, dibs, molasses			X	X	X				
Pickles (olive, mekta, aubergine)			X	X			X		
Vinegar (apple, grape)			X	X	X				
Honey, beeswax, royal jelly	X	X	X	X		X		X	
Laban, labneh, traditional cheeses	X		X	X	X	X	X		

SWOT Analysis of Zaatar & Zaatar By-Products



Strengths

1. Low risk for plant diseases
2. No need for mechanization
3. No stringent standards or norms
4. It can be harvested 2-3 times/year if irrigated
5. Possible to dry and conserve the product for a longer shelf life
6. Production practices easier than tobacco
7. Particularities of the area: zaatar products well known in the South and has reputation of high quality as compared to other areas in Lebanon
8. Does not require highly skilled human resources

Opportunities

1. Possible to cultivate several types and varieties
2. Zaatar has several uses: cosmetics (creams), perfumes (essences), Medicinal use
3. Can replace tobacco as zaatar is more profitable (and this has been demonstrated)
4. Nurseries to grow the seeds/seedlings
5. Possibility of packaging the product to increase its value
6. There may be synergies with the production of honey and sumac

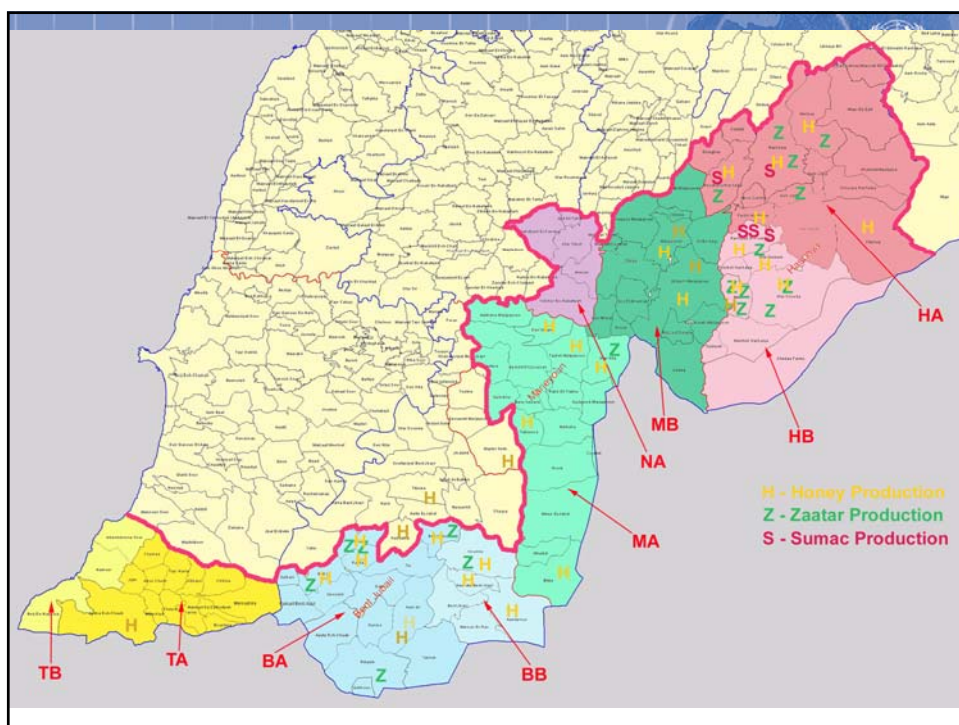
Weaknesses

1. Production is mainly wild
2. Need to introduce cultivation and propagation methods through seeds and/or seedlings
3. Lack of good quality seeds available locally (prior to start of pilot projects)
4. Farmers are not sufficiently aware of the market opportunities of zaatar and its by-products
5. Water and irrigation networks required if to be harvested three times a year

Threats

1. Random harvesting from Bedouins and local population who sell them for low prices not caring for the reproduction
2. Lack of enforcement of government regulations regarding the early harvesting of wild zaatar
3. Poor quality zaatar sold on the market due to weak standards and lack of enforcement

# 7 Criteria Clusters for Assessing Potential Pilot Projects		Weight
A Human Resources		5
1	Employment generation potential: Scale of potential new employment opportunities, especially for women	5
2	Ability to improve technical skills of local workforce for product development	5
3	Ability to improve management skills of local workforce for product development (e.g., management, entrepreneurship skills)	5
B Income Generation		5
4	Income generation potential/ Short-term (0-2 yrs): Size of potential new income generated for women & small-scale producers	5
5	Income generation potential/ Long-term (2+ yrs): Size of potential new income generated for women and small-scale producers	4
C Production/Technology		4
6	Simplicity of the product development process : (10 being the most simple/easiest to pursue)	4
7	Opportunities to improve the product (in view of quality improvements, potential for technology transfer and innovation)	4
8	Opportunities for productivity and efficiency improvements	4
9	Potential for product diversification in the sector and/or development of higher-value goods within the sector	4
10	Availability of raw materials and inputs needed for product development	5
11	Potential linkages with agriculture and industries already operating in the South	4
12	Availability & capacity of needed environmental resources & infrastructure (e.g., water, sanitation, electricity, transport needs)	4
D Food Safety/Conformity Assessment		4
13	Potential for improving food safety/consumer safety of final product	5
14	Potential for improving conformity assessment compliance and certification of final product	3
E Marketing and Packaging		4
15	Potential market demand for final product	5
16	Marketability of final product (e.g., advertising, labeling schemes)	4
17	Access to packaging services	3
18	Ability to improve packaging of final product	4
F Investment Needs		4
19	Ability to make minimal investments to achieve high gains in the <i>short-run</i>	4
20	Ability to make minimal investments to achieve high gains in the <i>long-run</i>	3
G Sustainability of the Activity		5
21	Potential for economic sustainability of the activity	5
22	Environmental sustainability of the activity	4
23	Social sustainability of the activity (e.g., ability to ensure consideration of gender dimensions as well as small-scale producer needs and potentials)	5



Zaatar: Pilot Projects+Post-Harvest Facility for Income Generation & Employment Creation



- **Debel 1 Cluster (Bint Jbeil)**
 - Launched in August 2005 & On-Going (women & men)
 - 14.5 dunums on rocky soil
 - Greenhouse for propagating seedlings
 - Partners: ESCWA, ILO, UNIDO
- **Debel 2 Cluster (Bint Jbeil)**
 - Launched in June 2008
 - 8.5 dunums of land previously cultivated with tobacco
 - Pursued on request of self-composed cluster who witnessed success of Debel 1
 - Partner: ESCWA, AFESD, ADR
- **Ein El Deleb Cluster (Outside of Saida)**
 - Launched in October 2007
 - 6.5 dunums surface area
 - Inter-cropping between olive trees
 - Partners: ESCWA, ILO, WorldVision
- **Debel Drying and Post-Harvest Facility**
 - Drying facility
 - Post-Harvest Facility for preliminary processing
 - Based on development and use of innovative and appropriate technologies



Approach has been to foster clusters not cooperatives to generate economies of scale (for production and marketing)

Zaatar: Lessons Learned 1



Profitability

- Existing know-how helped to quickly introduce zaatar cultivation projects
- Cultivated zaatar is more marketable than zaatar picked from the wild: particularly in large quantities
- Profitability surpasses that of tobacco, even with tobacco subsidy
- **1 kg dry zaatar = \$10**
(LP13,000 - LP20,000)
- **1 kg (with stems) = \$4.50**
(LP6,500 - LP7,500)
- **Debel 1 Results** (Despite water constraints & post-war impacts):
400 kg/dunum x \$5 = \$2,000 / dunum (low estimate)



Under good conditions 1 dunum can produce 1 tonne of dry marketable zaatar (leaves & flowers)

Debel, Bint Jbeil,
May 2008

Zaatar: Lessons Learned 2



Irrigation needed

- Zaatar perennial plant with increasing productivity up to year 7
- Productivity can be high in dry & rocky soils, provided that there is water for irrigation
- Drip Irrigation schemes highly recommended
- Fertigation results in greater yield than what is possible with organic agriculture; compliance with international organic standards rigorous
- Irrigation investment risks associated with uncertainty and insecurity
(Damage to Debel 1 Pilot Project from July 2006 War)



Debel 1



Debel 2

Zaatar: Lessons Learned 3



Water & Energy Linkages / Groundwater v. Reservoir Under Dry Conditions, Cost of Pumping is High

Groundwater	350 m depth in Debel
Flow rate of Pump	70 m³/hour
Diesel use	40 liters/hour
Diesel needs	0.58 liters of diesel/m³ water
Price of Diesel (Aug 2009)	\$0.58/liter (\$1.29/l Summer 2008 peak)
Irrigation Needs	600 m³ for 1 dunum zaatar (dunum=1,000 m ³ of land)
Zaatar Output	600-1000 kg/dunum (moderate estimate)
Zaatar Revenue	\$3,400 - \$5,667/dunum
Diesel costs (fixed)	\$202/year/dunum
Share in Revenues	3.6 - 6 % (intermittency problem)
Irrigation Cost	\$23.50/dunum for electricity
Energy/Electricity	4.0 - 6.6 % of revenues

Source: ESCWA



Zaatar: Lessons Learned 4



Weeding

- Weeds are a major problem
- Weeding is highly labor-intensive and thus increases production costs
- Test Trial: Advantages of reduced weed growth from applying plastic mulching were found to be off-set by increased mold and rodent infestation under plastic sheath
- **Manual weeding thus remains necessary**
- Weed growth diminishes after first year of cultivation.



Zaatar: Lessons Learned 5



Inter-cropping

- Inter-cropping shows potential at Ein El Deleb pilot project
- **Allows for dual productivity gains with more efficient land use management**
- Possible dual benefits associated with irrigation and fertigation
- Weeds remain a problem, despite shading
- Ample water helped to increase productivity (World Vision pipe).
- Cluster first planted in March 2008 and was able to harvest and make a profit by late June 2008
- Challenge has been the division of labor in the cluster



Ein El Deleb

Zaatar: Lessons Learned 6



Propagation in Greenhouses

- Depending on scale of production, propagation of seedlings in greenhouses can be cost-effective
- Propagation of seedlings can be used to expand cultivated area or for sale
- **Sale of seedlings can generate secondary income source**
- Drip-irrigation installed in greenhouse increases productivity and quality



Biodiversity Links

- Greenhouse allows for targeted propagation of specific zaatar varieties
- Propagation and cultivation has positive implications for biodiversity by **preserving native varieties**; harvesting from wild damages plants
- Positive implications for marketability, i.e., farmers can respond to market preferences by cultivating certain varieties of local species:
 - Wholesalers look to weight and color
 - Consumers prefer different flavor intensities

Greenhouse (Debel)
March 2006 to May 2006

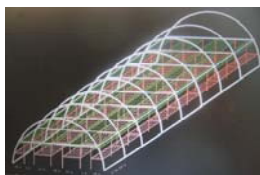


Zaatar: Lessons Learned 7



New appropriate technologies needed to increase productivity

- Modernization and mechanization possible through technological innovation and adaptation
- Time needed to develop and test new, appropriate technologies
- **Pursue local alternatives to imports:** Work with local suppliers and technology developers to enhance national capacity and local access to appropriate technologies.
- **Partnerships and private sector operation and ownership of technological assets** can enhance sustainability of initiatives beyond lifetime of time-bound projects.



Sumac: Pilot Facility



- **Cultivation**

- Sumac traditionally harvested from the wild
- Not cultivated; no traditional knowledge as with zaatar
- ESCWA conducted national survey of Sumac varieties in Lebanon, with testing conducted at USEK (Kaslik)



- **Propagation**

- No pre-established propagation protocols
- Different propagation techniques thus being tried and tested in greenhouse (from cuttings, seeds, suckers)
- Mother field ensures sustainability & propagation source (with drip irrigation network)



- **Training Program**

- Rehabilitated greenhouse and established training program for teaching small farmers and students about sumac propagation and cultivation techniques, since there is no existing knowledge base

Objective: To cultivate sumac on marginal lands and around zaatar fields to serve as a long-term, secondary income source for small farmers and reduce land degradation.

Sumac: Pilot Facility



- ESCWA worked with ADR/CASUR (Tyre) to rehabilitate greenhouse destroyed during July 2006 war.
- Greenhouse serve research, training & propagation purposes
- Training program launched January 2009. Includes theoretical and hands-on components
- 1st Workshop benefited members of local cooperatives for medicinal & aromatic plants & Nabatieh Agricultural School
- 2nd workshop: Jan 2010
- Trainees invited to take some seedlings for cultivation in own fields



Training Facilitated by
Dr. Jihad Noun for ESCWA
at ADR/CASUR Training Site

Sumac: Lessons Learned



1. Sumac cultivation could reduce **land degradation and soil loss**, but takes time
2. Good potential for domestication, but **propagation methods being tested**
3. **Training and technical assistance** necessary to ensure success
4. **Long-term commitment & project horizon** needed for **monitoring & follow-up**

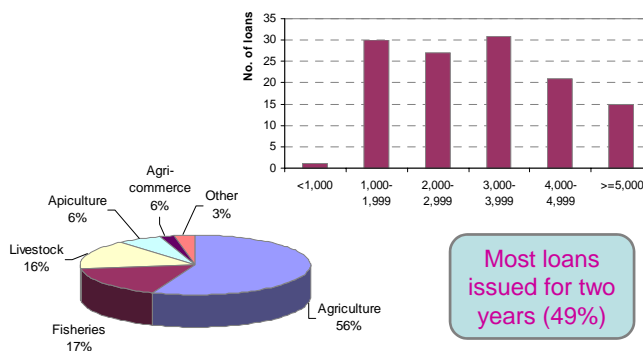


Micro-Credit Fund



Revolving Micro-Credit Fund for Small Agro-businesses in South Lebanon (ESCWA, AAAID, ADR)

- Program included:
 - \$210,000 revolving fund since May 2007 fully disbursed and issuing new loans (8% and 12% interest rates)
 - Training of trainers component for micro-loan officers
 - Training in business planning for borrowers



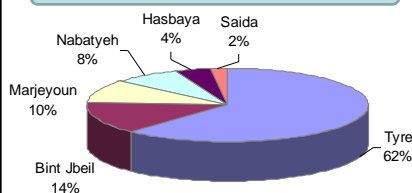
Most loans issued for two years (49%)

Micro-Credit Fund: Lessons Learned

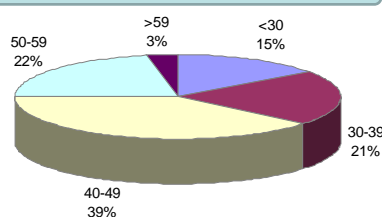


- Demand for micro-credit services is high in Lebanon
- Regular follow-up with borrowers necessary: Opportunity to provide increased business assistance support to borrowers
 - Need to train and motivate micro-loan officers to provide additional business support services with appropriate assistance & incentives.
- Diversification of borrows is difficult, despite targeted efforts to focus on rural and remote areas, women and youth.

Geographic distribution of loans



Distribution of loans by Age Group



14% of Borrowers were Women

Conclusions



- 1. Successful SLA interventions require time, commitment and financial resources**
- 2. Human Capital Development** is a central component, but must be pursued through hands-on, personalized learning opportunities and technical assistance
- 3. Overcoming Vulnerability & Achieving Resilience can be achieved through:**
 - Diversification of income sources
 - Generating employment opportunities, particularly for women and youth to reduce rural-to-urban migration patterns
 - More sustainable use of natural resources
 - Promotion of appropriate and innovative technologies

Thank you !



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