EAAP 2009, Barcelona, Session 09,
Abstract 4149,valle@uni-hohenheim.de

University of Hohenheim, Germany
Institute of Animal Production in the Tropics and Subtropics
&
The Volcani Center, Israel
Institute of Animal Science

Socio-economic benefits from Bedouin sheep farming in the Negev

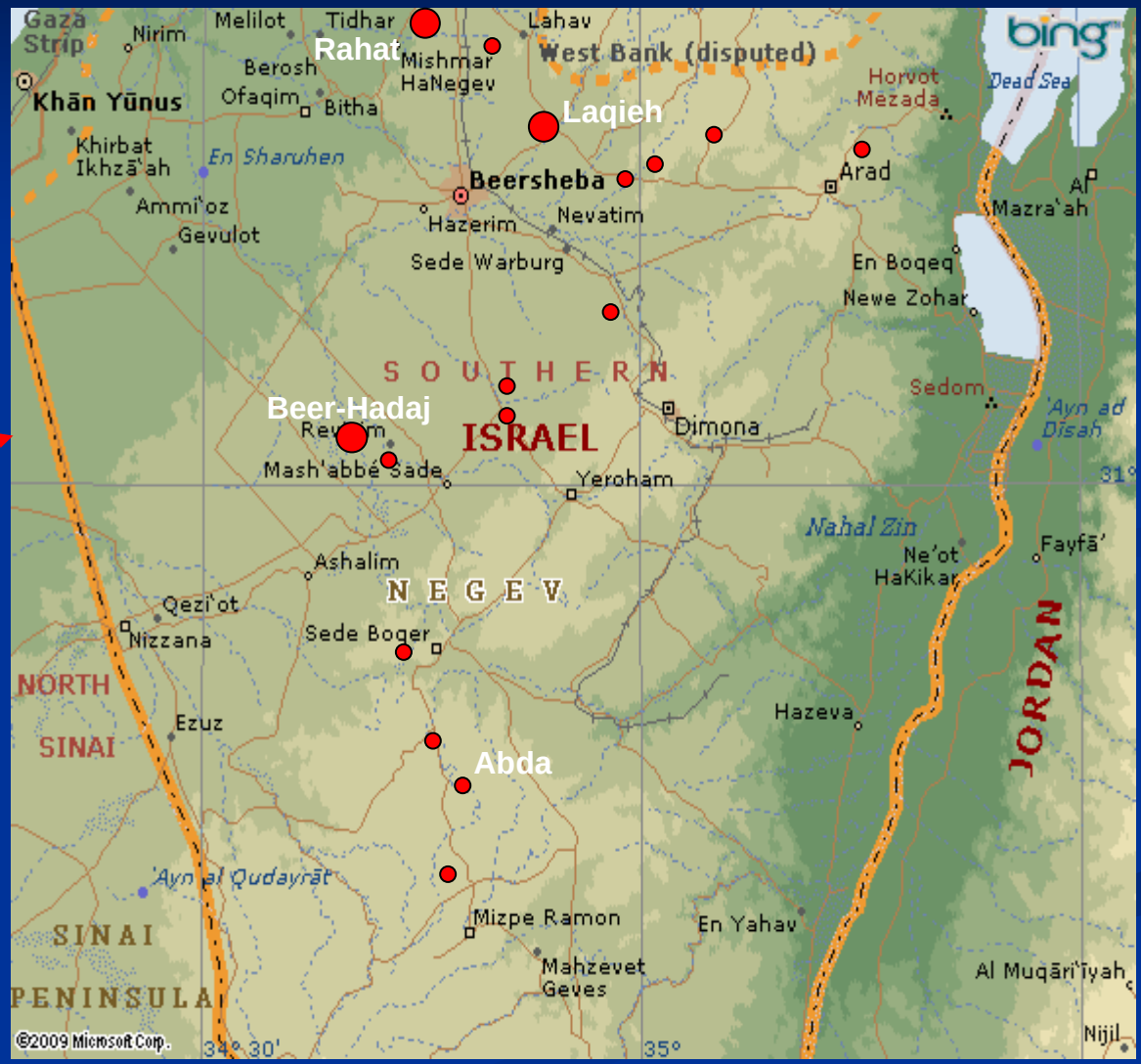


A. Valle Zárate, A. Al Baqain, E. Gootwine, P. Herold, M. Abu Siam, R. Al Baqain

Objectives

- To describe the socio-economic situation of Bedouin sheep keepers and their farming system
- To identify factors on the output and economic success of sheep keeping
- To compare successful and unsuccessful farms
- To valuate benefits of sheep keeping for family income, nutrition and culture

Study site



http://www.science.co.il/Israel-map-Carta.asp

http://encarta.msn.com/map_701515017/negev.html

Material & Methods

Framework:

- **Negev with 1,200 Bedouin sheep flock owners and 240,000 sheep**

Criteria for sampling:

- **Willingness to participate**
- **Minimum herd size (>50)**
- **Accessibility**
- **30 Bedouin farms throughout the Negev with different remoteness to the central market in Beersheva**
- **Total of 7,996 sheep**

Material & Methods, cont'd

Methods of data collection:

- Semi-structured interviews with head of household and wife, key person interviews, market surveys, participatory observation and spot-checks
- Snowball sampling due to difficult access

Methods of data analysis:

- Descriptive: arithmetic means and ranges
- Statistical: multi-factorial analysis of variance (GLM) with SAS 9.1 (2002)

Socio-economic parameters of Bedouin households in the Negev 2007

Household structure	N	**Mean**	Range
Household size (n)	30	**10**	2-27
Number of children (n)	30	**7.1**	0-22
Number of wives (n)	30	**1.4**	0-4
Labor availability			
Actual labor used in sheep farming (ME)	30	**1.9**	1-4
Household members with off-farm work (ME)	30	**1.4**	0-5
Surplus labor available (ME)	30	**0.8**	0-4
Land availability			
Distance to central market (km)	30	**31**	12-75
Own land (du)	3	**113**	20-200
Land for cropping (du)	9	**150**	100-200
Common land (du)	28	**14**	1-100
Herd structure			
Total number of animals (n)	30	**306**	63-1110
Herd size goats (n)	25	**43**	1-140
Herd size sheep (n)	30	**266**	51-1106

Housing, occupation and education in Bedouin households

Municipal services and housing	(N=30)	**%**
Access to public water line		**87**
Electricity		**100**
Access to the national power line		**17**
Connection to school bus		**87**
Paved road		**13**
Stone house		**53**
Fixed/ semi-open stable for sheep and goat		**67**
Education		
Head of household attended school		**63**
Wives attended school		**12**
Occupation		
Head of household full time farmer		**67**
Head of household in seasonal off-farm work		**27**
Head of household full time in off-farm work		**7**
Sons (>18 years) in off-farm work		**93**

Output

Output from sheep flocks	N	**Mean**	Range
Marketed lamb meat (kg/ ewe/ year)	30	**30**	11-55
Marketed mutton (kg/ ewe/ year)	30	**4**	0-19
Lamb meat equivalent (LME) (kg/ ewe/ year)	30	**32**	13-58
N° of sheep used for home consumption + gifts (herd/ year)	30	**14**	1-52
Wool offtake (kg/ herd/ year)	14	**107**	44-270
Milk offtake (l/ herd/ year)	17	**1133**	14-3120

Structural impact factors on the output

Effect	Lamb Meat Equivalent (kg/ ewe/ year)		
Tribe & distance & climatic zone	N	**LSM**	s.e.
Tribe 1	9	**29.5** [a]	4.4
Tribe 2	5	**48.3** [b]	4.7
Tribe 3	6	**31.8** [ab]	5.1
Tribe 4	10	**19.7** [a]	4.2
Time on pasture			
<= 3 months	17	**38.8** [a]	2.8
> 3 months	13	**25.9** [b]	3.1

Education, age and off-farm income: n.s.

Technical impact factors on the output

Effect	Lamb Meat Equivalent (kg/ ewe/ year)		
Breed composition	N	**LSM**	s.e.
100% local Awassi	9	**20.1** [a]	2.7
< 100% and ≥ 50% local Awassi	11	**36.1** [b]	2.5
< 50% local Awassi	10	**32.0** [b]	3.2
Selling age of lambs			
< 4 months	12	**21.1** [a]	2.5
≥ 4 months	18	**37.7** [b]	2.0

Genotype x selling age:
For flocks with 100% local Awassi no higher output with later selling age.

Herd size: n.s.

Impact factors on economic success

	Tribe 1 N=9		Tribe 2 N=5		Tribe 3 N=6		Tribe 4 N=10	
	LSM	s.e.	LSM	s.e.	LSM	s.e.	LSM	s.e.
Gross margin (NIS/ ewe/ year)	**80** [ab]	39	**180** [a]	42	**100** [ab]	39	**-52** [b]	39

	Selling age of lambs					
	< 4 months			≥ 4 months		
	N	LSM	s.e.	N	LSM	s.e.
Gross margin (NIS/ ewe/ year)	12	**-12** [a]	28	18	**102** [b]	22

Characteristics of farms with negative net benefit from sheep

- Smaller flocks, mainly local Awassi
- Lower prolificacy
- Higher ewe and lamb mortality
- Limited fattening, no of use of hormonal synchronization
- Low meat output with or without fattening
- Lower variable costs for labour and feeding
- Lower prices for lambs

Characteristics of farms with positive net benefit from sheep

- Larger flocks with > 50% crossbreds and exotic breeds
- Higher prolificacy
- Lower ewe and lamb mortality
- More frequent fattening and hormonal synchronization
- Medium meat output without and higher output with fattening
- Higher variable costs for labour, feed, breeding and veterinary
- Higher prices for lambs

Valuation of benefits for family income, nutrition and culture

- 43% of farmers with negative net benefit from sheep raising
- Only 10% of households with higher consumption of own meat
- 60% of families with occational milk offtake, only 13% with milk sale
- Sheep still of high cultural value for Bedouins

Outlook

- Supporting change: introduction of prolific lines along with other technical innovations in Bedouin flocks in the Negev (following presentation)

- Region wide comparison of Bedouin sheep production including sheep farmers in the Palestinian Territories and Jordan (next event)



Acknowledgements

- for financial support to the German research foundation (DFG)
- to the Bedouin sheep farmers for sharing their knowledge
- for the attention to the audience