



# The economics of sheep farming in marginal areas of Jordan and the Palestinian Territories

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## Introduction and Objective

The marginal areas in the Middle East region face harsh ecological conditions causing poor pastures and short grazing periods. Bedouin communities, living in these areas, practice livestock farming as major source of income for living. Sheep farmers were recently also confronted with high production cost due to increases in feed prices.

The study aims to compare the economic performance of sheep farming in Jordan and the Palestinian Territories (PA) under these circumstances.

## Methods and materials

Farm and market surveys were conducted for the season 2007/2008 in Jordan and in the PA covering a range of production conditions. Eighty three sheep keepers from Jordan (n=44) and the PA (n=39) were interviewed.

•T-Test and non parametric tests were applied to test the differences between the regions.

•Net Benefit (NB) from sheep farming was calculated for both regions. NB per ewe and per flock was estimated using the following formulas:

$$NB1 = \Sigma TR - \Sigma TVC$$

$$NB2 = \Sigma (TR + Nm + F + S) - \Sigma (TVC + I)$$

Where TR = total cash revenues; Nm = value of non marketable part of production; F = finance; S = insurance; TVC = total variable costs and I = value of interest rate on fixed capital. For NB2, values of non marketable production and the socio-economic benefits have been added to the total cash revenues while interest rate on fixed capital has been added to total variable cost.

## Results

• Sheep comprised more than 97% and 71% of the total flock size of the interviewed farmers for Jordan and the PA, respectively. Sheep flocks in Jordan were with 376 head significantly larger than in the PA (159 head) at (p=0.001).

• NB1 values per sheep and flock show that Bedouin sheep keepers in Jordan and in the PA achieved negative values.

• As for NB2 values, where value of non-marketed production was considered, only sheep keepers in the PA generated positive values with 8.7JOD and 862.7JOD per ewe and per flock, respectively, compared to negative values generated in case of Jordan. Values of NB1 and NB2 per ewe were significantly different with (p<0.0001) between Jordan and the PA.

• Low revenues generated in the season 2007/2008 in Jordan were due to the fact that breeding ewes and new lambs were sold at lower prices than in the PA.

• 56.4% of Bedouin sheep keepers in the PA practiced fattening and sold lambs at high prices compared to only 18% in Jordan.

• 79.5% of Bedouin sheep keepers in the PA owned improved sheep breeds beside the local Awassi breed compared to 15.9% in case of Jordan.

## Discussion

Bedouin sheep keepers in the PA managed to obtain better incomes than their associates in Jordan. The proximity of sheep farmers in the PA to the Negev and other sheep markets in Israel facilitate the process of procuring improved sheep breeds along with practicing fattening, as a step towards the intensification of production. Also the higher meat prices were fundamental reasons for better economic results in the PA.

Table 1: Socio-economic characteristics of Bedouin sheep keepers in Jordan and the PA for the production season 2007/2008

|                                 | PA |        |        | JORDAN |        |         |
|---------------------------------|----|--------|--------|--------|--------|---------|
|                                 | N  | Mean   | SD     | N      | Mean   | SD      |
| <b>Family</b>                   |    |        |        |        |        |         |
| Age of head of family (year)    | 39 | 52.9   | 12.8   | 44     | 50.4   | 13.2    |
| Family size (person)            | 39 | 12.1   | 4.9    | 44     | 9.5    | 3.7     |
| <b>Herd</b>                     |    |        |        |        |        |         |
| Total flock size (head)         | 39 | 222.8  | 133.0  | 44     | 385.5  | 334.2   |
| No. of sheep (head)             | 39 | 158.9  | 86.0   | 44     | 376.6  | 331.4   |
| No. of goat (head)              | 31 | 80.5   | 71.1   | 29     | 27.3   | 25.5    |
| No. of breeding ewes (head)     | 39 | 132.2  | 75.3   | 44     | 296.6  | 271.6   |
| <b>Land resource</b>            |    |        |        |        |        |         |
| Owned land per household (du*)  | 09 | 6.8    | 5.9    | 33     | 140.6  | 356.9   |
| Rented land per household (du)  | 20 | 101.7  | 107.4  | 36     | 277.7  | 284.2   |
| Grazing land per household (du) | 08 | 134.3  | 98.7   | 43     | 340.4  | 392.3   |
| <b>Other selected variables</b> |    |        |        |        |        |         |
| Distance to next main city (km) | 39 | 14.9   | 8.1    | 44     | 34.9   | 24.6    |
| Off-farm income (JOD**)         | 14 | 9241.6 | 5003.6 | 28     | 6227.1 | 3923.8  |
| Value of debt (JOD)             | 23 | 6264.1 | 6669.4 | 17     | 5931.4 | 11580.5 |

Area differences significant at z = - 2.8, p=0.005 (family size), z = - 2.28, p=0.023 (flock size), z = - 3.4, p=0.001 (no. of sheep), z = - 2.98, p=0.003 (no. of goat), z = - 3.2, p=0.001 (no. of breeding ewes), z = - 2.5, p=0.011 (own land), z = - 2.7, p=0.006 (rented land), z = - 3.96, p=0.0001 (distance to next main city), z = 2.15, p=0.031 (off-farm income) (Wilcoxon-Mann-Whitney U test).

No significant differences (n.s) were found for age of farmer t-value = 0.46, area used for grazing z = -1.2.

Off-farm income<sup>1</sup> = income from salary and earnings, pension and governmental allowances  
\* 1 du = 1000 m<sup>2</sup>

\*\* JOD = Jordanian Dinar ≈ 1.4 US\$

Table 2: Economic success parameters of sheep farming of sheep keepers in Jordan and the PA in season 2007/2008

|                          | PA<br>N=39 |          | JORDAN<br>N=44 |          |
|--------------------------|------------|----------|----------------|----------|
|                          | Mean       | SD       | Mean           | SD       |
| Price of sold ewe (JOD)  | 130.6      | ± 65.3   | 64.7           | ± 16.9   |
| Price of sold lamb (JOD) | 129.7      | ± 32.2   | 56.7           | ± 19.6   |
| NB1/flock (JOD)          | -442.9     | ± 8344.2 | -3643.0        | ± 8921.6 |
| NB1/ewe (JOD)            | -0.5       | ± 49.4   | -6.2           | ± 26.4   |
| NB2/flock (JOD)          | 862.7      | ± 8304.1 | -2704.2        | ± 8960.6 |
| NB2/ewe (JOD)            | 8.7        | ± 51.2   | -2.5           | ± 27.1   |

NB1 = Net Benefit including only marketed value of production

NB2 = Net Benefit including both marketed and non-marketed value

Area differences significant for price of sold ewes (p=0.01), price of sold lamb (p<0.0001), NB1/ewe and NB2/ewe (p < 0.0001) whereas NB1/flock and NB2/flock were n.s.



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