Productivity of Slovenian Alpine goat in the conventional and organic farming system

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Sustainable farming system

Goat production can be considered as a valuable part of this

Furthermore, integration of livestock can increase economic and environmental benefits as well as diversity thereby making important contributions to the farm's sustainability.
Goats can be used for the control of weeds and bush to help utilize a pasture's diversity, as long as they are not allowed to overgraze.

**Controlled grazing** is to use livestock as a tool to manage forage growth. Animals use up very few of the nutrients from the plants they eat; most minerals are returned in animal wastes and can be considered as part of a **natural cycling** of nutrients.

This are some goals for rearing and breeding of goat in small (hobby) herds:

Many organizations have adopted goal statements that focus on achieving a sustainable future:

Show a surprising degree of convergence around several key ideas:
- **Whole-systems thinking**—the integration of social, environmental, and economic forces, also known as the triple bottom-line;
- **Long term thinking**—understanding the consequences of actions over time, and preserving choices and opportunities for future generations;
- **Recognizing limits**—an acknowledgement that people, economies, and the entire life depend on healthy functioning ecosystems; and
- **Improved livelihoods**—a better “quality of life,” both today and for future generations.
Comparison cattle milk production
organic vs conventional

Some studies were done on dairy cattle and conclusions are maybe applicable also on dairy goats. Results are different from case to case. Nauta et al. (2006) found the production of \textbf{6,440 kg} of milk per cow and lactation in organic and \textbf{7,156 kg} milk in conventional management in the same geographic area. Farms which are in the phase of conversion from conventional to organic farming had an average production of \textbf{6,622 kg} per cow and lactation.

Comparison cattle milk production
organic vs conventional

The total production of \textbf{fat and proteins} per cow and lactation in conventional production was larger mostly because of larger milk production and not because of different milk composition. Toledo et al (2002) didn’t find the differences between the milk composition in conventional and organic farming in Swedish conditions.
The productivity of dairy goat reared in organic farming was not very widely studied.

The aim of this study is to find out the differences between two production systems and if the special selection program for the organic farming is necessary.

In Slovenia milk recording of goats using A4 method was practiced in the years 1996 to 2002. The AT4 method has been used since 2003. Till the year 2000 there were no officially recognised organic goat farms in Slovenia. The selection procedure and the selection criteria do not differ between the organic and conventional farming system.
Our research focuses on goat farms that have been included in selection programme since 1999 or before.

In 2002 the rural development programme was initiated, followed by the subsidies offered to certain kinds of sustainable agriculture, among them the ecological farming.

In 2007 milk yield and milk composition were compared between the flocks of Alpine goats in organic and in conventional farming system.

Another comparative study was conducted in 1999 when flock results were compared between those that stayed in the conventional system, and those that were later changed to organic farming.
Model

\[ Y_{ijklm} = T_i + F_{ij} + L_k + b(\bar{x} - x_{ijklm}) + e_{ijklm} \]

Where:
- \( Y_{ijklm} \) = ijk-th observation of studied trait;
- \( T_i \) = i-th farming (conventional, organic);
- \( F_{ij} \) = j-th farm (flock) nested in breed I;
- \( L_k \) = k-th lactation; \( b \) = regression coefficient
- \( x_{ijklm} \) = ijk-th observation of lactation length
- \( e_{ijklm} \) = residual for observation ijk-th.

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<tbody>
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### Analysis of variance

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#### Year 1999

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Analysis of variance

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<td>dry matter (%)</td>
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The major variability source was a flock, which had a statistically significant effect on all the studied traits. Different farming system (organic, conventional) statistically significantly affected only the percentage of fat and dry matter in 2007.
The change to organic system was performed mostly by producers who already had poor production results beforehand.

The entry to organic system made the production method »formal«, although it had been practiced previously, but not formally yet.

Conclusions

Composition of milk indicate that some traits such as milk yield and milk fat content are lower in organic farming system compared to the conventional one. Most parameters the differences are not significant.

Apparently, even the conventional systems have low input (lower quantities of concentrates).

It is evident that mostly those farms with relatively extensive production decided to change to organic farming. According to our results we can conclude that the recording methods and breeding goals can be the same for both production systems. Therefore, the differentiation of selection index is not necessary.
Thank you