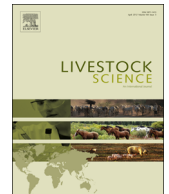




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# Differences in preferences for breeding traits between organic and conventional dairy producers in Sweden



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## ABSTRACT

Development of sustainable breeding goals for dairy production has to consider the producers' preferences which are likely to differ between production systems. The number of dairy producers with herds certified according to the standards of organic production has increased during the last decades. Traditionally, organic producers use animals selected in conventional production systems but the traits important in organic herds have been suggested to differ due to the different production conditions. The aim of this study was to assess what traits Swedish organic and conventional dairy producers consider to be important for the cows in their herds, and the relative importance of traits in the two production systems.

An advanced web questionnaire with an underlying selection index was developed. The selection index was not shown to the respondents but it enabled them to weight traits against each other based on the genetic progress obtained. The questionnaire also included questions about what traits the producers intuitively considered important for the cows in their herds and how they ranked 15 given production and functional traits. The questionnaire was answered by 468 Swedish dairy producers of which 122 had a certified organic herd and 346 had a conventional herd.

The results of this study show that the trait longevity was ranked first by both organic and conventional Swedish dairy producers. However, the ranking differed to some extent between the production systems for other traits, e.g. mastitis resistance and milk production. Swedish producers with organic herds tended to desire a higher genetic gain in disease resistance, including mastitis and parasite resistance, compared with producers with conventional herds. The results also reflect a somewhat lower interest in milk production level among producers with organic production. However, as the traits most important for Swedish producers with organic herds are already considered in the current Nordic breeding goal they can continue the use of this animal material.

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## 1. Introduction

The development of sustainable breeding goals for dairy production has to consider the producers' preferences because they have unique insight into what characteristics

are important for the cows in their herds. Differences in production environments, markets and values among producers influence their preferences, and we argue that this needs to be considered by breeding organizations when estimating economic weights for selection traits. Breeding goals in the developed world have become broader, i.e. including both production traits and functional traits such as health and fertility. However, these breeding goals target a broadly defined group of producers where sub groups of

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producers (e.g. producers from different countries or regions, or organic producers) might have different preferences regarding breeding traits.

In current breeding goals the relative importance of different traits is determined by their economic weights, but there are important aspects of dairy production that are difficult to measure in monetary terms, e.g. animal welfare and environmental impact. Considering this, strategies to weight traits that also consider non-economic values are under development. For example, it has been shown that animal health and welfare could be improved, using such non-market weights, but at the cost of lower progress in production traits (Gourdine et al., 2010; Nielsen et al., 2006). The value of traits, both economic and non-economic and thus the desired gain of the traits, are likely to differ between production systems due to different production conditions. Hence, the knowledge about dairy producers' preferences considering goal traits in different production systems is insufficient.

The interest in organic products and thus the production is increasing in Sweden (KRAV, 2013) and in Europe (Eurobarometer, 2010). Organic production aims for a sustainable use of resources, balance between plant and animal production on farm level, and a high animal welfare (IFOAM, 2012). In Sweden, more than 10% of the dairy herds are certified by the national certification organization for organic agriculture, KRAV, and this figure has constantly increased the last decades. The production environment of these herds differs from that in conventional herds in five main aspects: (1) large proportion homegrown feed, (2) roughage-based feed rations, (3) loose-housing systems, (4) pasture and outdoor access (except during winter), and (5) limited use of antibiotics and anthelmintics (KRAV, 2012).

Traditionally, organic producers use the same animal material as conventional producers i.e. animals bred for high profitability in a conventional production environment (Nauta, 2001). It is, however, likely that different values among organic producers, together with different production conditions, make the breeding preferences different in organic production than in conventional production. For example functional traits, such as reproduction, health and longevity, have been suggested to be of higher importance in organic herds (Bapst, 2001; Pryce et al., 2004). However, reports from scientific studies about breeding objectives in organic production have been scarce.

The overall aim of this study was to compare Swedish organic and conventional dairy producers' preferences concerning cow breeding traits. The specific aims were to investigate (1) what traits organic and conventional dairy producers intuitively think are important in cows in their herds (2) how organic and conventional dairy producers rank various traits against each other, and (3) what genetic gain organic and conventional dairy producers prefer for various traits.

## 2. Material and methods

A web questionnaire about traits relative importance for cows in dairy production was developed and tested on a group of producers and animal keepers. Then, dairy producers

with e-mail addresses registered in either the Swedish Dairy Association's or the Swedish organic certification organization KRAV's database were invited to answer a web questionnaire about traits important for cows in dairy production. Invitations were sent to 1481 producers, i.e. one-fourth of all dairy producers in Sweden. The invitation was followed by two reminders with approximately two weeks interval, and the questionnaire was open from February 23 until March 30 2012. The aim of the questionnaire, expressed in the invitation, was to assess traits of importance for sustainable dairy production. Our specific interest in organic production was not mentioned. The invitation included a farm-specific link to the questionnaire that anyone with access to the e-mail account could use. The respondents could enter the questionnaire several times as long as they had not submitted it. Once the respondent had finished and submitted his/her answer, the farm-specific link to the questionnaire was closed.

### 2.1. Web-based questionnaire

The questionnaire developed consisted of four steps:

- (1) The producer states what traits they intuitively consider important (what immediately came up in their minds) in their herd.
- (2) The producer ranks 15 given traits against each other.
- (3) The producer weighs traits against each other given the estimated genetic gain (based on selection index theory).
- (4) The producer answers general questions about him/herself and the herd he/she works in.

We estimate that it took between 15 min and 45 min to answer the questionnaire.

#### 2.1.1. Part 1

In the first part of the questionnaire the respondent was asked to state what traits he/she intuitively considered most important in the herd. The question was: What traits do you consider important for the cows in your herd? The respondents used their own words to describe the traits in 10 separate textboxes. The characters described were later transformed into 24 binary trait classes (mentioned/not mentioned) that included all information given by the respondents. The reason for using open-ended questions in the first part of the questionnaire was to enrich the data and allow the respondents to express interest for all possible traits without being influenced by the questionnaire outline (Foddy, 1993).

#### 2.1.2. Part 2

In the second part the respondents were asked to rank 15 given traits against each other, from most important (1) to least important (15). This task was formulated as follows: Please rank the traits in the list below. The headline was followed by a short explanatory text. The traits (Table 1) were chosen so that they represented both production traits and functional traits important for profitability, animal welfare and the environment. Traditional and potential future breeding traits were included and

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