PHENOTYPIC PARAMETERS OF MILK YIELD IN ROMANIAN SPOTTED BREED DAIRY HEIFERS FROM S.C. AGROSEM S.A. PIŞCHIA, TIMIŞ COUNTY

PARAMETRII FENOTIPICI AI PRODUCŢIEI DE LAPTE LA PRIMIPARELE DIN RASA BĂLTĂTĂ ROMÂNEASCĂ DE LA FERMA S.C. AGROSEM S.A. PIŞCHIA, JUDEŢUL TIMIŞ

GHEORGHE NISTOR¹, ELEONORA NISTOR¹, V. BAMPIDIS², B. SKAPETAS²

¹Faculty of Animal Sciences and Biotechnologies, Timişoara, Romania
²Alexander Technological Educational Institute (A.T.E.I.) of Thessaloniki, Greece
gelu_nistor@yahoo.co.uk

Milk production and milk composition were studied in a population of 95 Romanian Spotted breed in the first lactation. Data were taken from the evidence of Timişoara Center of improvement and reproduction and were statistical work out for estimation of: arithmetic mean (X), sum of the squares of the values (Sx²), variance of a set of sample values (S²), standard error of the mean (SX) and the coefficient of variability (CV). The average milk yield of primiparous cows was of 4523.84 ± 86.85kg; average fat yield was of 176.44±3.44kg, while protein mean yield was 147.21±2.98kg. Results obtained shows that, in the farm there is group of primiparous cows with very good yield of milk, fat and protein that can became dams. The high potential for milk, fat and protein yield estimated in studied dairy heifers' population make up the base for genetic improvement of the Romanian Spotted breed from the west of the country.

Key words: primiparous, milk, fat, protein, selection

Introduction

The value of milk is based on its composition. This is not only true from the producer side, but the consumer side as well. Consumers are looking for milk that's nutritious, has good flavor, and is low in fat. Protein is a component that can contribute flavor and nutrition without increasing the fat or calorie content of milk (Dechow et al., 2007). There are a large number of factors, which influence milk yield and milk composition. These can be divided into genetic or environmental (management) components. It has been estimated that genetics are responsible for 45-55% of the variation that exists in milk composition. The heritability of milk fat % and milk protein % is 0.5 to 0.6 (Chase, 2000). The aim of this work is to jointly study different milk production traits (milk, fat and protein yields).
Material and Methods

The study was conducted for 95 Romanian Spotted breed primiparous dairy cows from Pischia farm, Timis County. Milk was collected from all cows using a single-unit vacuum milking machine and data were collected from cattle database of the farm. The animals utilized in these experiments were cared for by acceptable practices as outlined in the Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching. Data were statistical work out for: arithmetic mean (X), sum of the squares of the values (Sx²), variance of a set of sample values (S²), standard error of the mean (SX) and the coefficient of variability (CV).

Results and Discussion

A critical evaluation of production in first lactation heifers once they reach the milking herd is important to determine the effects of the heifer rearing program. On the whole data set, phenotypic performances for milk, fat and protein yield in primiparous, are displayed in table 1.

<table>
<thead>
<tr>
<th>Phenotypic traits</th>
<th>n</th>
<th>Mean X</th>
<th>Variance</th>
<th>Standard deviation</th>
<th>Coefficient of variability</th>
<th>Standard error ±Sx</th>
<th>Limits of variability</th>
<th>M.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk yield</td>
<td>95</td>
<td>4523.8</td>
<td>716634.4</td>
<td>846.54</td>
<td>18.71</td>
<td>86.65</td>
<td>2035 - 6886</td>
<td>5491.9</td>
</tr>
<tr>
<td>Fat yield</td>
<td>95</td>
<td>176.44</td>
<td>1128.6</td>
<td>33.594</td>
<td>19.03</td>
<td>19.03</td>
<td>81.0 - 258.9</td>
<td>214.19</td>
</tr>
<tr>
<td>Protein yield</td>
<td>95</td>
<td>147.21</td>
<td>845.4</td>
<td>29.07</td>
<td>19.74</td>
<td>2.98</td>
<td>73.20 - 221.3</td>
<td>178.71</td>
</tr>
</tbody>
</table>

Dairy farmers tend to increase the volume of milk while dairy processors on the other hand, need milk containing higher fat and protein percentages to reduce the production cost of dairy products. Farmers increase the volume of milk through better feeding and genetics by increasing the average milk yield of cows in the herd or by milking a larger number of cows. Milk yield mean in the whole population of 95 individuals was of 4523.84kg, with the lowest value of 2035 kg and the highest of 6886 kg. Variability coefficient for this trait was of 18.71% while standard error registered was 86.85 kg. Analyzing the results it can be ascertain that the primiparous population have a middle variability for this trait and is recommended to be chosen only the individuals with a yield over 4000 kg milk. If the estimation for the yield maximum capacity is made, result a potential for the group of 5491.94 kg milk/lactation. A heifer should be considered as a herd replacement only if the milk production of the dam is above the herd average. Herds that are already above average may have better success by focusing on increasing milk yield, which will increase the total amount of fat and protein produced.

There are many factors that can affect milk fat and protein, and many of them can be manipulated to enable farmers to achieve higher than average levels of milk components. Genetics and inheritance account for 55% of the difference between cows in protein and fat content of milk (Heins et al, 2006).
For the same population the average milk fat yield was of 176.44±33.594 kg, with the lowest yield/cow of 81 kg and the highest of 258.9 kg. Variability coefficient for this trait was 19.03% while the standard error had a value of ±3.44 kg fat. With a heritability of 0.90 this trait can be improved by selection.

Protein yield is considered – especially in the last decades - a very important trait for dairy cow selection programs (Kuczaj, 2002). In the studied population the average protein yield was of 147.21 kg ±29.07 kg. The lowest protein yield recorded was of 73.20 kg and the highest of 221.30 kg. Variability for this trait in the primiparous population was high, with a consistent coefficient of variability of 19.74% and the standard error of ±2.98, which means that the results obtained can be used for selecting the candidate dams.

First-lactation heifers may have a slightly higher true milk protein percent. This may be due to lower incidence of or exposure to mastitis compared to older cows, but in the same time heat stress in the summer tends to reduce true milk protein as well as milk fat percent (Linn et al, 1999).

**Conclusions**

1. The average mean milk yield in the population of 95 dairy heifers studied of 4,523.84 kg allows the selection of individuals which are over 4000 kg milk yield.
2. From the population of 95 heifers, 43 individuals are over 4000 kg milk yield, while 27 are over 5000 kg and only two are over 6000 kg.
3. The average mean of fat yield for the same population was of 176.44 kg; 15 individuals had over 100 kg fat and 60 over 150 kg which mean 63.15% from the entire population.
4. The average protein yield in the studied population was of 147.21 kg; 88 individuals had over 100 kg of protein among which 48 had over 150 kg protein yield.
5. The high productive potential of dairy heifers from the studied population is a warrant for genotypic improvement of Romanian Spotted breed, by bringing them up as future dams.

**References**

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