THE GROWTH INTENSITY OF ABERDEEN ANGUS IN ORGANIC FARMING

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Abstract: This studies was focus on compare growing abilities of aberdeen angus which are bred on four organic farms. All these organic farms are situated in region Zlin in area The White Carpathians. Compared were weights of animals at birth and weight in 120, 210 and 365 days. Weights of animals at birth were in all breeds quite balanced and reached 38.38 ± 3.57 kg. The average weight of calves in 120 days was during the years conclusively the lowest on the C farm and it was 177.93 ± 25.06 kg. The same situation happened (p < 0.05) at weighing in 210 days when distinctly (p < 0.05) the lowest weight in watched breeds was on the farm C. On annual weighing were the heaviest animals which were bred at farm C 416.28 ± 97.29 kg. Distinctly (p < 0.01) the lowest annual weight had animals from farm D 336.13 ± 47.12 kg although in 120 days animals had the highest weight most of all farms. Interesting was weight progression at farm C which as just the only one farm applied winter calving and animals could fully utilize pasturage. On this farm was supplemented feeding by concentrates.

Key Words: aberdeen angus, organic farming, growth, birth weight, 120, 210 and 365 days

INTRODUCTION
Aberdeen angus breed is second the most widespread in Czech republic. In 2013 were bred in our country 3719 cows of this beef cattle type (Kvapilík et al. 2015). Undemanding breeding conditions are one of the reasons why popularity of this breed is growing for beginning breeders. Aberdeen angus is very often bred in organic breeding.

Aberdeen angus is typical for his good growth abilities and daily average gain of male is 1000–1100 g/day and dam gain of weight is 850–950 g/day (Louda et al. 2000). Zahrádková et al. (2009) described this breed as undemanding, constitutionally solid with possibility breeding outside during whole year without stabling. Meat of Aberdeen angus breed is for his really specific properties high valuable (fragility, juiciness, marbling and typical flavour). Aberdeen angus is early breed and that’s why this breed store fat really early.

Growth potential of cattle has big influence on economic efficiency of breeding. Šiler et al. (1980) consider growth as a basic measure of profitability. Large number of aspects have a big influence on growth. Nutrition and feeding technology in individually period of breeding play the most important role from external factors. The main internal factors include genetic predisposition of individual (breed, genotype, sex, mother, father, etc.). Ruminants have the slowest growth intensity but by modern genetic techniques is possible to achieve an increase of growth on valuable parts of cattle (Šubrt and Hrouz 2009). On the other hand increasing level of growth intensity can cause negatively affect on quality of beef (Mlynek et al. 2014).

MATERIAL AND METHODS

Farm descriptions
Animals have been reared on four organic farms. All the farms are situated in the Zlin region relatively near each other. Climatic and geographic conditions are almost similar. On farm A, B and D are used natural breeding. On the farm C was used natural breeding and artificial insemination. The Individual farms are marked by letters A - D, because breeders wanted to stay anonymous.
Beef cattle is breeding on the farm A since 1997. Animals are during whole year on pasture even in winter. In summer matter ration composed of pasture vegetation, water and mineral block. During the winter are animals fed by hay, water and mineral block. Calving are realized on pastures from late March to middle of June.

The farm B is situated near to town Zlin. This farm began breeding beef cattle in 2003. Animals are during whole year on pasture. Summer matter ration is same as on the farm A. Winter matter ration composed of hay, haylage, water and mineral block.

The farm C is situated in the White Carphathians. This farm is breeding aberdeen angus for 12 years. Calving of cows are realized on wintering ground from January to middle of April. During the winter is cattle fed by hay, haylage, concentrates (mixture of wheat and oats), mineral block and water. Summer matter ration is same as on the farm A and B.

Last farm D is the youngest. Beef cattle is breeding on the farm D since 2008. Breeding was set up buying heifers from farm A. Summer and winter matter ration are same as on the farm B. On this farm strive to increase number of animals.

Methodology of experiment

On farms were compared weight of animals at birth and weight in 120, 210 and 365 days. Data were obtained from yield control of cows without market production of milk which is provided according to the Methodology yield control of cattle without market production of milk. This methodology was published by Czech beef breeders association. To analyse weights were used data from set up the breedings until 2015.

RESULTS AND DISCUSSION

Figure number 1 displayed average weights of animals on individual farms at birth, 120, 210 and 365 days. The final weights are average weights of heifers and bulls obtained during the whole time of farming. Weighing animals in year of life is little bit distorted because of number of checked animals in this period and this is in table number one. Birth weight of calves in organic breeding farms was balanced. An interesting fact was progress of average birth weight at all farms during the last 10 years. Figure number 2 shows an increase of birth weight of calves almost up 4.5 kg during 10 years. How is it show in table number 2 increases of birth weight in latest years could be caused by higher number of dams with more than 5 births. Koch and Clark (1955) published that cow's older than six years usually have calves with higher birth weight.

On the farm C was significantly (p < 0.05) the lowest weight of progeny in 120 days. This result was not expected because this farm exercised winter calving. Animals have while moving to pasture fully developed proventriculi and can take advantage of young pasture vegetation. The animals are supplementary feeding by concentrates. The highest weight in fourth month of calves life was on farm D 192.36 ± 36 kg. Weighing in 210 days was the lowest (p < 0.05) on the farm C 265.04 ± 39.55 kg. On the farm A in this control period animals reached an average weight 92.65 ± 39.16 kg. Animals which were breeding on the farm B had weight of 3.5 lower than animals from farm A. On the farm D was difference almost 6.5 kilograms.

The annual weighting of animals shows that significantly (p < 0.01) the lowest weight of breed was noted on the farm D (336.13 kg). According to my opinion this fact was caused because the fast growing animals was sold too early and before checkweighing in one year of life. Most of the animals which were weighted in life were heifers to renewal of herd. Heifers have lower intensity of growth than bulls. On the farm D was in year of life weighted a low number of animals and it could caused distortion of annual weight. In rest of the farms were weights in 365 days more than 400 kg (A – 404.09 kg, B – 416.18 kg, C – 416.28 kg). On the farm C is interesting increase of weights where animals in 120 and 210 days reach the lowest weights from all farms. Increase of weights in year of life could be caused by regular supplementary feeding by concentrates.

From results is obviously that all farms realize selection of animals with appropriate level of growth. Heifers have good growth properties and constitution properties and that is reason why are kept on the farm to recover herd. From gained weights during the last 10 years is obviously that aim of
breeders is choose heifers with bigger body frame. This aim of breeders has positive influence on increasing weights of posterity in individual years of breeding.

Figure 1 The average weights of animals in breeds

![Figure 1: The average weights of animals in breeds](image1)

Figure 2 The progress of birth weight

![Figure 2: The progress of birth weight](image2)
Table 1 The average weights of the animals on farms

<table>
<thead>
<tr>
<th>Farm</th>
<th>Count N</th>
<th>Birthweight</th>
<th>Weight of animals (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>120 days</td>
</tr>
<tr>
<td>A</td>
<td>664</td>
<td>37.28</td>
<td>4.41</td>
</tr>
<tr>
<td>B</td>
<td>565</td>
<td>38.55</td>
<td>2.57</td>
</tr>
<tr>
<td>C</td>
<td>415</td>
<td>38.31</td>
<td>4.15</td>
</tr>
<tr>
<td>D</td>
<td>527</td>
<td>39.37</td>
<td>2.26</td>
</tr>
<tr>
<td>Total</td>
<td>2171</td>
<td>38.38</td>
<td>3.57</td>
</tr>
</tbody>
</table>

Different letters between the levels of each of these factors mean statistically significant difference (a, b = p < 0.05; A, B, = p < 0.01).

Table 2 The number of cows depending on the number of calves born

<table>
<thead>
<tr>
<th>Categories of cows</th>
<th>Farm A</th>
<th>Farm B</th>
<th>Farm C</th>
<th>Farm D</th>
</tr>
</thead>
<tbody>
<tr>
<td>to 5 calves</td>
<td>75</td>
<td>51</td>
<td>77</td>
<td>97</td>
</tr>
<tr>
<td>6–10 calves</td>
<td>37</td>
<td>33</td>
<td>30</td>
<td>34</td>
</tr>
<tr>
<td>over 10 calves</td>
<td>15</td>
<td>12</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>127</td>
<td>96</td>
<td>107</td>
<td>131</td>
</tr>
</tbody>
</table>

CONCLUSION

The results show that in organic farming is possible to achieve very good weight gains without concentrated feedingstuffs. On farms A, B and D calves weighed at 120 and 210 days more than calves from farm C although there were feeding provided by concentrates. On farms A and B are the cows which had more than 10 calves during their life. This testifies to the longevity of cows and very good level of breeding on these farms. Their progeny can have better growth predispositions than dams with less than 5 calves. Farm D is the youngest farm and there is a lot of cows with less than 5 cows but young cattle has a very good intensity of growth.

Zlin region is suitable for grazing method of livestock because there is an optimum altitude and amount of precipitation. This region is very typical for breeding of beef cattle as for breeding a sheep.

REFERENCES

Koch, R. M., Clark, R. T. 1955. The influence of sex, season of birth and age of dam on economic traits in range beef cattle. Journal Animal Science, 14: 386–397


