

## Cereals instead of milk substitutes in the diet of the veal calves: an opportunity in organic farming?

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### Introduction

The use of milk substitutes in the diet of the veal calf is prohibited in organic agriculture. The additional feeding of cereals such as barley and maize in order to correct the low energy content of diets based on whole cow milk could be an interesting alternative to the use of milk substitutes.

### Material and methods

Three feeding trials with 224 male calves were conducted between 1998 and 1999. The animals in the experimental groups received either rolled barley or whole grains of maize *ad libitum* in addition to whole milk containing added minerals and vitamins which was either fed in buckets twice a day or was constantly available via automatic milk feeders. In each trial the control animals received a standard diet of whole milk plus a milk substitute (representing about 70% and 30 % of the dietary DM) which was rationed and was fed in buckets.

### Results and discussion

Between barley and maize, the average consumption during the whole fattening period did not differ a lot. The mode of distribution and therefore consumption of milk had a much greater influence on cereal consumption. Groups fed with automatic milk feeders had the lowest consumption of milk and the highest consumption of cereals and vice versa. This is shown in figure 1. Individual consumption measured in individually kept calves varied between 58 and 416 g of maize per day and calf and between 105 and 457 g of barley per day on average for the whole fattening period. Groups which consumed a lot of milk (bucket feeding) had similar fattening performances as the control group with milk substitute. In groups with a low milk consumption (automatic milk feeder), however, the higher cereal intake was not sufficient to compensate for the lack of energy. Thus, growth rate decreased significantly compared to the same diet fed with buckets and to the control group. In groups fed whole milk and cereals, the lack of milk substitute had a negative effect on fleshiness, but this effect occurred only as a light tendency when high amounts of milk were consumed. Except for the group with the highest cereal consumption (415 g/calf/day), no significant negative effect could be observed regarding meat colour, which was defined using different parameters. Barley and maize contain little iron (20-30 mg/kg DM). Cereal consumption resulted in a less pronounced reduction of blood hemoglobin concentration as shown in fig. 2, which could be a positive aspect for animal welfare. Economically, the reduction of feeding costs due to the replacement of milk substitute by cereals was less relevant than expected.

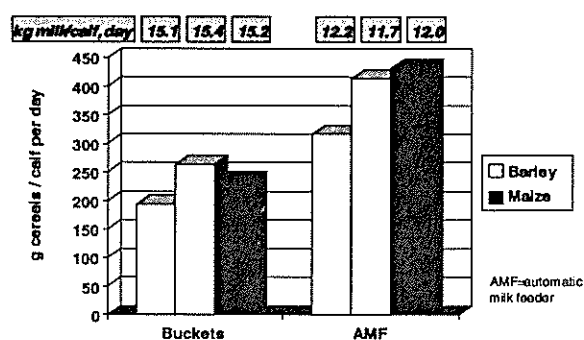


Figure 1. Average cereal and milk consumption during the whole fattening period

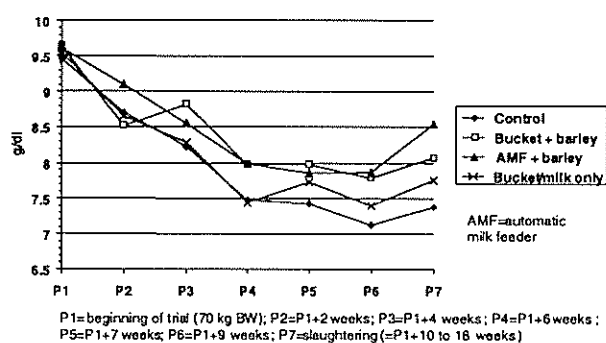


Figure 2. Hemoglobin values

### Conclusions

The feeding of cereals is not recommended if the reduction of the feeding costs is the only objective. It may be interesting in organic farming where bucket feeding is practised. The fact that cereal intake resulted in a slightly less pronounced reduction of blood haemoglobin levels may on the other hand improve animal welfare and the image of veal production among the consumers.