Angela Reichel, Markus Maier, Hermann Wandel and Thomas Jungbluth, Hohenheim

Cattle Husbandry in Small Stocks in Baden-Wuerttemberg

On many smaller dairy farms, especially in higher elevations, cows are still kept in tying stalls. Since tying stalls are neither animal-friendly nor labour-easing or labour-saving, they are not subsidized any longer and will possibly - at least for organic farming - be forbidden after a transition period. Within the framework of the investigation presented here, economically viable and farm specifically meaningful alternatives to the current, mostly tying stall systems on farms with small dairy herds, is presented.

The new regulations within the framework of the agricultural reform also greatly influence small-scale cattle farms. Additionally the regulations concerning animal welfare within the framework of the 'agricultural investment aid programme' in Baden-Württemberg, in parts clearly exceed the legal requirements. In order to continue making a living from small-scale farming without substantially increasing the number of livestock, it is important to fulfil the legal requirements concerning animal welfare, environmental protection and nature conservation and to use potential subsidies being offered. Because of the modified economical conditions it will, moreover become necessary for many farms to investigate alternative sources of income in combination with their traditional production to increase their overall farm income. Especially in the Black Forest, which was selected as the focal point for our project, it is the central and overruling aim to keep the permanent grassland open and conserve the cultural landscape in this holiday region for economical reasons. The results of the survey having been led through on eleven pilot farms will be summarised in a study, which will be published in the autumn of 2005.

Housing of small dairy herds

According to our estimates about 60% of dairy cattle in Germany and in the EU are still tethered in their stables. Nowadays most of these stables do not fulfil the requirements. Nevertheless, many farmers do not accept the economic risks arising from the construction or structural alteration of their stables. The reasons mainly are: the high investment needed, stagnating or decreasing milk prices and in many cases it is uncertain who, if anyone at all, will later take over the farms. Knowing that the cubicle house is the preferred housing system, it may be necessary to continue the farm in its existing structure. In these cases the tying stall must be effectively renewed by reasonably priced renovations and subsequent improvements in labour conditions.

Renovation of tying stalls for dairy cattle

In order to adapt the single stalls to the size of the cows, two thirds of the grid can be covered by a soft rubber mattress or with a litter cushion to lengthen the lying area. Stalls with a dunging passage can be lengthened by attaching a piece of square-shaped timber in the dung ditch and, for mechanical mucking out, by way of a cantilever construction (*Fig.1*). Existing tying stalls may be improved by the following measures:

- replacement of rigid neck frames and Grabner chains by articulated yokes,
- use of nylon straps or synthetically covered cow collars,
- cantilever stall partitions and side sleepers between the stands,
- substituting massive separating bars by flexible straps,
- installing rubber crib walls,

Dr. Angela Reichel, Dipl.-Ing. agr. (graduate in agricultural engineering) Markus Maier, and Hermann Wandel are scientific co-workers at the department of "Livestock Systems Engineering" (Head of department: Prof. Dr. Thomas Jungbluth), Institute of Agricultural Engineering, University of Hohenheim, Garbenstrasse 9, 70599 Stuttgart; e-mail: *reichel@uni-hohenheim.de*
The research was undertaken for the Ministry of Nutrition and Rural Areas, Baden-Württemberg.

Keywords

Small dairy cow houses, solutions for structural alteration, animal-friendly keeping, maintaining open landscape

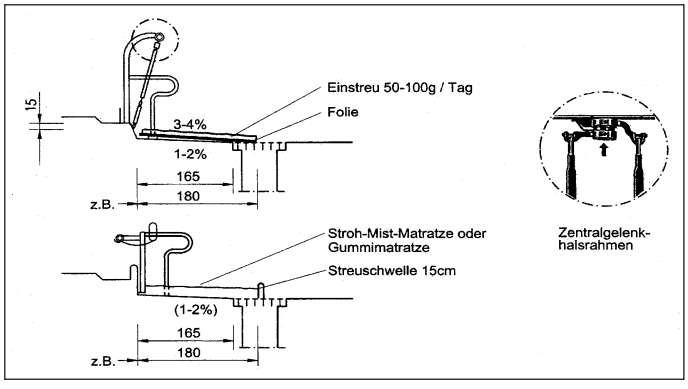

Fig. 1: Lengthening of the lying area in the tying stall

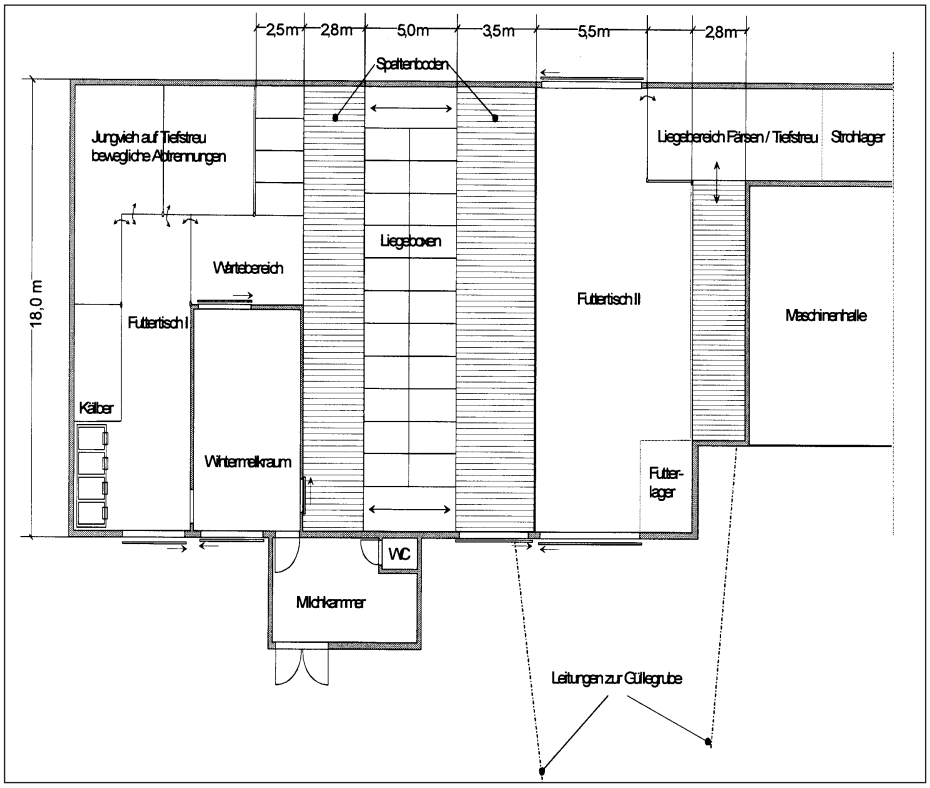

Fig. 2: Ground plan of exemplary farm

- daily exercise in courtyard with drinking trough and (electrical) cow brush,
- enlarging feeding periods,
- unlimited access to fresh drinking water,
- improvement of indoor climate through open side walls (cross ventilation),
- sufficient daylight through additional windows and keeping the windows free from dirt and shade.

From tying stall housing to small cubicle house

Tying stalls show distinct disadvantages concerning animal health, animal behaviour and labour. The cubicle house, on the other hand, offers improved animal welfare and health, as well as better performance. It also offers the livestock owner a better overview because of separate functional areas and reduced labour time requirement with less physical stress. Small-scale dairy farms, which aren't in a position to increase their livestock considerably, choose to reconstruct their tying stalls into a cubicle house rather than to completely rebuild it. Producing more milk with the same number of cows because of better housing conditions and controlled feeding leads to an increase of income in comparison to an increase in the number of cows without increased performance. The saving of work capacity resulting from this system can now be channelled to alternative sources of income.

Selected small-scale dairy farms in the Black Forest

The small-scale pilot dairy farms with cubicle houses in the Black Forest, having been selected for this survey, are run either conventionally or ecologically. All of them were recently converted from tethered stabling to loose housing. In most of the cubicle houses, alterations incorporated the former buildings for the housing of calves, young stock or for milking. Only a few farmers have built a new cubicle house. Even though not all of the solutions of these pilot farms can be taken over, they offer suggestions and ideas on how to run small-scale dairy farms through simple and reasonably priced reconstructions or alterations, as well as ideas for combinations in order to increase income.

On the following example of an organic dairy farm 25 Hinterwälder (a breed in the Black Forest region) and red Holstein Friesian cows are kept. The farm includes realigned land as well as a big share of pasture land. The grazing of the animals during summer and the use of the stable only in winter time turns out to be exceptionally economical. Additional income is generated by contract wood chopping.

The cubicle house is a post and beam construction, added as a winter stable to the existing machine hangar (*Fig. 2*). Outside the grazing period the cows are kept in this stable in littered cubicles with a flexible neck control and well-kept mattresses of straw and dung. The young stock and the calves are kept in deep litter pens. The stable has two feeding passages, whereby feeding passage II can be driven through. One part of the young stock stand at the gable end on deep litter has access to feeding table I. The rest of the young stock, as well as the heifers are fed at feeding table II. Concentrate feeding takes place at the self-catching feeding rack. Water is offered in animal friendly trough drinkers, positioned in the cross ways. The passages consist of slatted floors. The width of the passage at the feeding table is 3.5 m. In summer milking takes place on the pasture (*Fig. 3*), where the milk is also pre-cooled and fully cooled later in the milk room. In winter the mobile milking parlour is used in the insulated, frost-free milking room next to the milk room. The mobile herringbone milking parlour is single-sided with 5 places, with steps at the entrance and the exit. Mucking out takes place via slurry channels into the slurry pit. The ventilation is done by an eaves-ridge ventilation system. On the gable- and eaves sides the walls from 2 m upwards spaceboards were installed. The transparent light ridge is responsible for sufficient light in the stable.

Conclusion

With the selected small-scale dairy pilot farms it was shown that the reconstruction of tying stalls into a loose housing system can be successful with little financial means and that individual solutions can be found for small-scale dairy farms, which are in accordance with animal welfare and an acceptable labour time requirement. By combining sources of income (keeping a suckler cow herd, landscape cultivation and municipal contract work, holidays on the farm) or by establishing business co-operations, the total income can be increased whereby the economy of the enterprise will be ensured.

Fig. 3: Mobile parlour with five milking places