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Investment Requirements for Fattening Broiler Stables

Year-round stable housing is an important characteristic of modern intensive fattening broiler husbandry. Broiler fattening mostly takes place in large animal populations with floor keeping in Germany. Through changes in consumer behaviour and the increased significance of animal protection there has been an increasing trend toward alternative animal husbandry in the past several years. In addition to intensive floor keeping in buildings, husbandry forms with extensive floor keeping in buildings and on different-sized open areas have been developed. Within the framework of the KTBL Working Program Calculation Documents 2003: "Investment Requirements in Young Poultry Fattening," the cost factor values for the construction of new broiler fattening stables were calculated. Costs for fattening poultry stables were compared in regard to population size, type of housing and style of construction.

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Keywords

Broilers, construction costs

No legally binding specific requirements have been made for the fattening of broilers. Until an EU-wide law is passed for fattening poultry husbandry, nationally consistent specifications have been determined on the basis of a voluntary compliance in the Federal Republic of Germany [1].

Selection of Stable Systems

A selection of population sizes and a determination of the construction styles and type of stalls was made together with professionals from the KTBL Task Group, "Model Stables for Young Poultry Fattening."

Two types of stables were considered with three different population sizes each. Of these six alternatives, three present housing in a conventional stable with forced ventilation and three present housing in an open stable with free ventilation. In *Figure 1* the chosen examples are presented schematically.

In all variations a stocking rate of 23 broilers/m^2 is assumed. All stables are accessible with a tractor through the chosen eaves' s height of 4.00 m for the conventional stable and 3.5 m for the open stable.

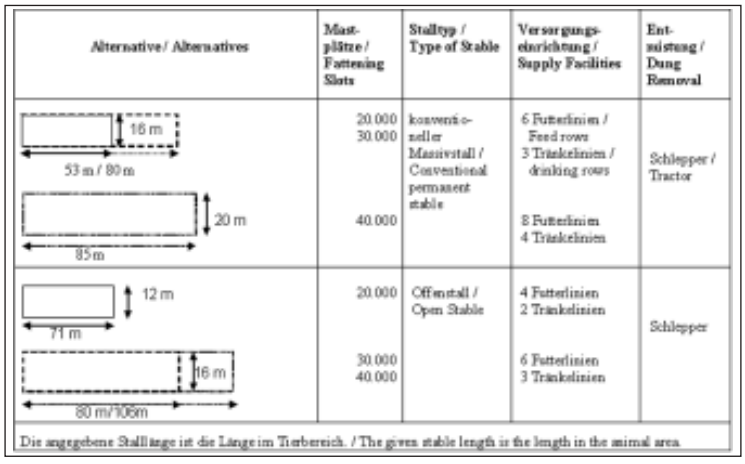
The conventional stable was built as a closed stable in a concrete masonry construction with cement ring anchors and nailed board trusses. The foundation is of cast-in-place cement, the masonry of "poroton" bricks. In the wall there are opening for air supply vents, which are covered with metal sheeting outside.

The building frame is made of triangular wooden trusses with insulation from underneath. Profiled fibre cement sheets were chosen for the roofing. The gutters and are of tin sheeting. The floor consists of a water impermeable cement B25 with slats while the upper surface was smoothed mechanically.

A fog sprayer was installed for cooling purposes. Hot air blowers and gas canons are used for heating. The ventilation equipment is an under pressured ventilation system with wall vents, air supply vents and roof ventilators, as well as an exhaust air channel with fans. A climate computer was installed to control the stable climate.

The open stable was built as an "open" steel frame construction with metal trusses as a frame. The foundation is of cast-in-place cement. The walls are made of sandwich elements with PUR insulation and bird protection screens attached to the steel frame. Plastic double web plates are placed in front of the openings. The outer doors and gate are made of wood. The interior walls are plastered sandy lime brick. The roof is covered with profiled fibre cement sheets and insulated from underneath. The gutters are of tin sheeting. The floor is the same as in the conventional stable. The open stable is heated with hot air blowers and gas heaters. The air supply is planned with air dampers and exhaust channels. Additionally, swinging fans support the movement of air.

The feed and water supply takes place with vertically adjustable feed and drink



Alternative / Alternatives	Mastplätze / Fattening Slots	Stalltyp / Type of Stable	Versorgungseinrichtung / Supply Facilities	Entmistung / Dung Removal
16 m, 53 m / 80 m	20.000 30.000	konventioneller Massivstall / Conventional permanent stable	6 Futterlinien / Feed rows 3 Tränkelinien / drinking rows	Schlepper / Tractor
20 m, 85 m	40.000		8 Futterlinien 4 Tränkelinien	
12 m, 71 m	20.000	Offenstall / Open Stable	4 Futterlinien 2 Tränkelinien	Schlepper
16 m, 80 m/106m	30.000 40.000		6 Futterlinien 3 Tränkelinien	
Die angegebene Stalllänge ist die Länge im Tierbereich. / The given stable length is the length in the animal area.				

Fig. 1: Fattening Broiler Stables studied: conventional permanent stable and open stable with three population sizes (23 broiler/m^2)

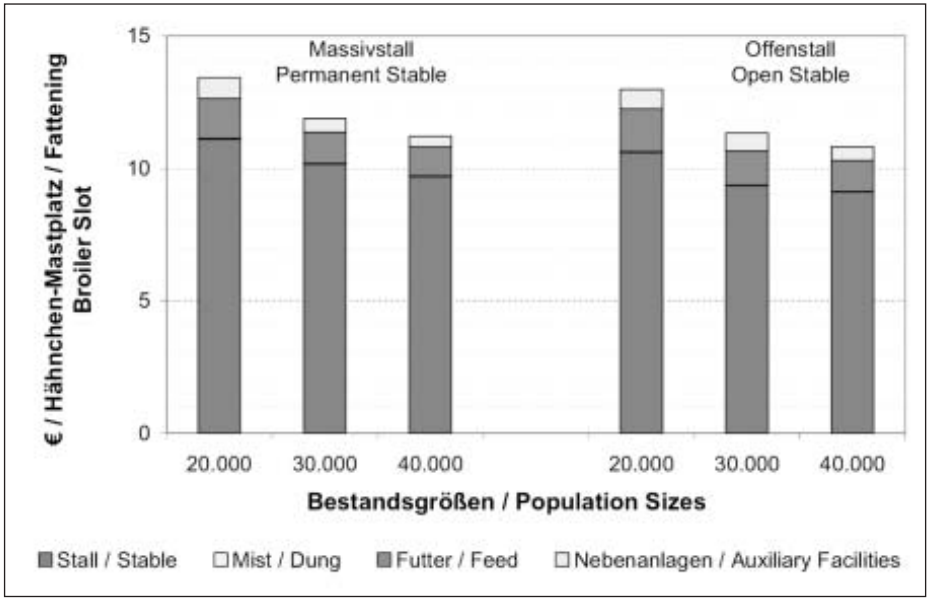


Fig. 2: Investment requirements for different population sizes and types of stables for fattening broilers divided into cost blocks

channels with round or long troughs or nipple drinkers in all stable variations. The feed is drawn from two feed silos into the feeding system in both stable variations. All stables have a solid area in their outer facilities as well as a collecting container for washing water as well as a propane gas facility.

Methods

The construction cost data were calculated by the institute with the Associated Building Cost System [2]. The data were derived from construction projects, which have already been completed and accounted for. The results are found from the 1. level of the DIN 276 "Construction Costs," the Cost group through to the third and most exact level, the elements with their specifications positions. In addition there was a division of the construction costs into cost blocks. Cost blocks are function-related construction parts or groups of parts. In broiler fattening, the cost blocks differentiated are stable, feed, dung and auxiliary facilities. The cost values are gross values and include 16 % value-added tax.

Investment Requirements

A cost degression from the smallest population size (20,000 fattening places) through to the largest population size (40,000 fattening places) is clearly discernible for both the conventional forms of construction as well as for the open stables.

The investment costs for the conventional permanent stable with ventilation were assessed at 11.20 € per fattening place for the 40,000 stable, and with up to 13.40 € per slot in the 20,000 stable (*Fig. 2*). The freely ventilated open stables were somewhat less expensive. Here, the investment requirements for a fattening place were 10.80 € for a 40,000 stable and around 13.00 € for a 20,000 stable.

The cost block "stable" comprises the largest portion of all solutions. The degression effect in dependence of the population size and thus with the building geometry are also present in the cost block "feed" and "auxiliary facilities." The cost block "dung" is limited to the collecting container for cleaning water. The percentage of these costs is less 1 % of the total costs and is therefore not evident in the graphic.

Summary

With regard to the economic viability, the population size plays a decisive role in poultry fattening since the profit per animal is so low that only a farm with high population size is profitable. German production competes with other major production countries including France, Denmark, and the Netherlands, which provide producers with a much less expensive environment for production.

Thus it is necessary that the costs for an individual fattening place be held very low. The freely ventilated open stable are somewhat less expensive than permanently constructed conventional stables in a cost comparison. The choice of stable type rests with the farm management.

Literature

[1] BML: Bundeseinheitliche Eckwerte für eine freiwillige Vereinbarung zur Haltung von Jungmasthühnern (Broiler, Masthähnchen) und Mastputen, 1999

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