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# Labour Time Requirements in Broiler Enterprises

*With the help of a computer-supported time recording system the basic data on labour time requirements in broiler enterprises was reviewed and re-calculated to suit current procedural solutions and enterprise sizes. The resultant plan times of 25.03 to 28.99 working minutes/100 birds per broiler production cycle were, because of the adopted technical advancements, substantially under the calculation data timing used up until now. Mechanised catching technology was also investigated and this led to a further reduction in labour time requirements.*

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## Keywords

Broiler fattening, labour time requirement, time calculation data, catching machinery

In Germany 4.0 m t of broiler meat is produced annually, 17.9% of which is exported. Self-sufficiency is 64.6% [1]. As a result of structural development, the technology in broiler production, and with it also the labour requirement, has continually changed. Because of this, it has no longer been possible to find reliable calculation data in the literature. Because labour time requirements are used by several occupational insurance organisations as a basis for the calculation of premiums, the data so used should be regularly updated in order to take into consideration the technological advances. This avoids right from the start any misunderstandings when it comes to calculation of insurance premiums. Under commission from the Federal Union of Agricultural Broiler Producers e.V. in Bonn, and the KTBL in Darmstadt, the labour time requirements in broiler enterprises in Baden-Württemberg, Bavaria and Lower Saxony were investigated as presented in this study. The aim of the investigation was not only to determine labour requirements in broiler production but also to highlight current modern production methods and their importance for labour efficiency.

### Level of information

As can be seen from *table 1*, values recognised in the literature for the normal flock sizes in commercial production sometimes differ greatly. Through improvements in production techniques and larger flocks, the working conditions and labour input requirements have altered continuously.

### Determination of labour requirements

Working together with the Erzeugergemeinschaft Südwest e.V. (poultry producers' organisation southwest) in Weilheim, Baden-

Württemberg six broiler enterprises allowing a representative overview of current husbandry and feeding systems were chosen. These comprised three open house (Louisiana) systems and three closed house systems with, in each case, different flock sizes and production parameters.

Labour input (in terms of man , or working person, hours or minutes) were assessed through observation of work done in the various units. Here, the working person – every person that carries out a job, regardless of individual productivity – was observed. The total working time is broken-down according to the part-time method for recording. Hereby, broiler production is regarded as the total work and this is divided into separate tasks such as “mucking out”, “cleaning and disinfecting”, “house preparation”, “housing birds” and “bird removal”. Further, these operations are again divided into procedures as in bird catching as part of bird removal, for example. According to this approach, the procedure “bird catching” would be split up into “walking”, “catching five birds”, “walking with birds” and “placing birds in container”. At this level of measurement the actual recording of work times takes place, whereby the values involved here are only in the region of a few minutes.

The time recording technology featured a UNIDAT M16 (System Mitterhauser) with associated PC software IPAS WIN 32.02. With this software it was possible to prepare for the time recording on the PC and also to process the time recording data. The RAM cards of the UNIDAT M16 are additional data storage facilities and enable the necessary data security in that intermediate storage is able to take place during the time recording. The direct observation of labour input was supplemented through the evaluation of work log books distributed to the respective farmers. With these, the work procedures mucking-out, cleaning and disinfecting, chick care, repairs, medication, wheat distribution and management were to be recorded. Thus the input of working time in the investigated enterprises could be comprehensively calculated. For the actual analysis, a statistical evaluation of the recorded values was carried out. Hereby were production system and farm specific peculiarities taken account of. After the statistical evaluation one arrives finally at the labour requirement (in man hours), the objective necessary amount of

*Table 1: State of knowledge concerning labour time requirement for broiler fattening depending on flock size*

Source	Labour time requirements [working minutes/100 birds]		
	Flock size		
	6000	20000	40000
Köhne, 1992 [2]	102	66	54
KTBL Taschenbuch 1998/99 [3]	100	64,5	54
LWK Hannover, 1990 [4]		37,2	

work, the calculated (theoretical) time for each task. These calculation parameters represent a plan or project value for a suitable, capable and healthy person which then serves as a calculation principal.

## Results

### Labour requirement

The results from the series of recordings were definite in their message. Depending on the broiler enterprise involved, the recorded plan times ranged from 25.03 to 28.99 work minutes per 100 birds in a production cycle.

An example of the break-down in percentage terms of the total work requirement for a broiler production cycle is presented in *fig. 1*. According to this, the tasks with the most time demands are clear: cleaning and disinfecting including the preparation of the housing, daily control tasks with chick care as well as bird removal.

The characteristic fluctuations in the daily work requirements for broiler production during a production cycle of around 45 days (with cleaning and disinfecting) in no way emerge from the total time requirement presentation (*table 2*), however.

The work peaks in the daily labour time requirements were caused through cleaning and disinfecting on day 1 (with 6.0 to 7.7 working minutes/100 birds, according to the size of enterprise) and through bird removal at the end of the cycle (5.7 to 6.0 working minutes/100 birds). The one-time or repeated tasks of preparation of the houses, housing, medication, wheat distribution as well as management tasks are considerably less time-demanding. The daily tasks such as bird and technology controls can be calculated with 0.11 to 0.16 working minutes/100 birds.

The figure that was assessed by the Chamber of Agriculture in Hanover in 1990 of 37.2 working minutes per 100 birds indicates the trend towards further reduction in labour time requirement. This, therefore, would have had a direct effect on the insurance premium

*Table 2: Labour time requirement (calculated) per growth period for broiler fattening depending on the flock size*

Flock size [no. of birds]	15000	26000	30000
Feeding system	All-in-all-out	Selective catching	All-in-all-out
No. of feed lines	3	2	2
No. of drink lines	4	4	4
<b>Work description</b>	Labour requirement per production cycle [minutes/100 birds]		
R&D	7,70	5,99	6,48
Littering	1,63	1,51	1,63
House preparation	1,20	1,11	1,20
Housing of birds	0,38	0,54	0,46
Care of chicken	0,17	0,04	0,04
Daily work	9,36	7,61	6,44
Medication	0,20	0,12	0,10
Management	1,94	1,94	1,94
Wheat distribution	0,40	-	0,77
Repairing	0,27	0,27	0,27
Removing birds from house	5,74	6,00	5,70
<b>Total</b>	<b>28,99</b>	<b>25,13</b>	<b>25,03</b>

structure of the respective professional insurance organisation. The much higher, although still able to be used, calculation data are in this case no longer current in that they do not any longer reflect practical reality.

### Comparison and analysis of the weak points between recorded and calculated figures

Alongside the determination of the actual calculation data, working time observations should also serve the improvement of working procedure. Through comparing recorded and calculated values work procedure can be analysed for possible weak points.

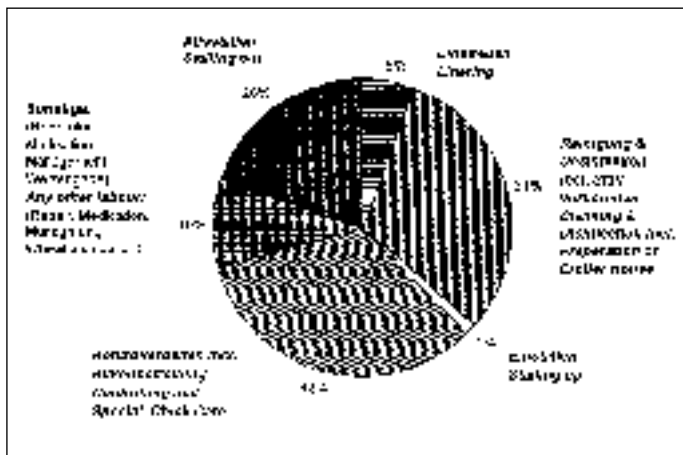
Calculated times present an objective statement on the standardised length of the task to be carried out. In general, these are less than the recorded times. In the six enterprises investigated, of the recorded times, which are not to be revealed in detail here, three lay in the vicinity of the calculated values (between 25.03 and 28.99 working minutes/100 birds) with values of 26.05, 28.55 and 29.89 working person minutes/100 birds (Table 2). For the other three enterprises, recorded values of over 30 working person minutes/100 birds were determined, however. In these enterprises, the increased length of time involved in the removal of broilers was noticeable. These lay either twice as high as the calculated times or even more than that. The findings here can be based on the too high staffing on the individual farms. Apart from the mentioned differences in bird removal, no other weak points of importance were identified.

bird and staff and also, through sharing of the equipment between poultry farms, help to sink costs. Through the mechanised system the necessary labour time requirement is halved. In the total process time it brings a reduction of a further 3 working minutes/100 birds. Compared with manual catching the proportion of the actual task "catching" increased from 42 to 44% up to 46 to 55% in the three model enterprises whereas the task "walking" disappeared completely. In the manual procedure this task had, after all, represented a 41 to 45% share of the procedure "bird removal". On the other hand, a proportionately greater share of time must be calculated for management of the transport container, for the machinery servicing and for preparation work.

Additionally, the notable stress on the working personnel during manual catching in a bent position can be reduced or done away with. This hard manual work near the floor level – a level where amounts of ammonia and dust are especially high and where therefore health is threatened – is thus removed. In that such machines should also reduce the stress factor for the birds, their shared use between farms should be considered in southern Germany too

## Literatur

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*Fig. 1: Breakdown of total labour time requirement per growth period for broiler fattening (model farm 1, all-in-all-out, 15 000 broilers)*