Farm Standards are recommendations for design and construction of agricultural buildings based on EU requirements, findings from research and farming experience. Farm standards are developed on housing systems for cattle, pigs, poultry, sheep and horses and storage facilities for feed and manure.
Housing System for Poultry Farm Standards

Publication prepared and published with financial support from the European Union. This publication reflects the point of view of the implementing organisations and does not necessarily represent the official position of the EU.
Team of Polish authors:

Joanna Sobczak, PhD
Institute of Building, Mechanisation and Electrification of Agriculture, Poznan, Poland

Tadeusz Waligora, PhD
Institute of Building, Mechanisation and Electrification of Agriculture, Poznan, Poland

Team of Danish authors:

Senior Adviser, Palle Vinstrup, MSc
Danish Agricultural Advisory Service, National Centre, Poultry

Adviser, Niels Finn Johansen, MSc
Danish Agricultural Advisory Service, National Centre, Poultry

Adviser, Brian Eskildsen, MSc
Danish Agricultural Advisory Service, National Centre, Poultry

Adviser, Hans Peter Soeberg, MSc
Danish Agricultural Advisory Service, National Centre, Poultry

Technical Adviser, Bent Lindskov
Danish Agricultural Advisory Service, National Centre, Poultry

When referring to the handbook the following literature reference must be stated:
Preface

This handbook gives an extensive presentation of recommendations for design, building and construction of modern housing systems for production of broilers and layers. In the handbook the newest findings from international recommendations are combined with expected future legal requirements as well as experience from practical farming. All presented recommendations will therefore fulfil the EU requirements on animal welfare, hygiene and environmental issues.

The presented examples and solutions are recognised as modern, efficient and profitable housing systems. Special efforts have been made to present solutions that will protect the animals from acquiring different diseases and ailments; also, practical solutions for implementation of efficient daily working routines and a lot of practical details are presented.

The handbook is addressed mainly at farmers, agricultural advisers, designers and the authorities that approve the constructions.

In a handbook like this, it is not possible to present all the different solutions that can be implemented in Poland. Therefore, included instead is a presentation of the key issues and subjects that farmers have to be aware of. Also, examples that meet the requirements have been added.

As the legal requirements on farm buildings differ within Poland, it is not possible to provide the final solutions with all the construction details (for example the foundation or the calculations of statics). However, the examples are described in so much detail that farmers can evaluate the different solutions, decide on the adjustments they would like to make, and then hand over the proposal to engineers, who can take care of the final calculations. The handbook can therefore be used as an inspiration and guide in the planning phase. Farmers planning individual constructions have to consult the relevant advisers and experts in order to check that the regional requirements as well as the newest legislation are observed.

EU and the Polish Ministry of Agriculture and Rural Development, within the Phare Twinning Project Farm Standards, have funded elaboration of the handbook. The elaboration has taken place in close co-operation between Polish Experts from Institute of Building, Mechanisation and Electrification (IBMER) and Danish Experts from The Danish Agricultural Advisory Service, National Centre (DAAS).

More than 15 persons have contributed to the elaboration and finalising of this book: Polish and Danish experts, editors, administrative staff, interpreters and translators. It is not possible to mention all the names, but without their help the preparation of this publication would be impossible. However, special thanks go to Joanna Krahelska, who translated all materials. Her input significantly helped with the elaboration of this publication.

The materials were elaborated during 2003 and finalised by the end of the year. We realise that over the years to come, both Polish and EU legislation is bound to grow and change. Hence the user of the handbook has to be aware of later changes in the legislation.
The objective of the Farm Standards project is to elaborate recommendations for housing systems for cattle, pigs, poultry, sheep and horses as well as storage facilities for fodder and manure. The proposed recommendations fulfil all EU requirements and also make it possible for the farmers to run an efficient and profitable production. The other materials developed within the project will be published during the summer of 2004.

Elaborated in addition to this handbook has been a Construction Example Handbook, which shows how the recommendations presented in this handbook can be implemented in different production systems. I would advise the readers to use the construction example handbook as a supplement.

Questions to the handbook and suggestions of improvement for the next edition can be directed at the authors.

The handbook may be quoted with indication of sources.

July 2004

Henry Joergensen
PAA
Contents

1. Legal requirements on poultry production (general issues) ......................... 9
   1.1 Introduction .......................................................................................................... 9
   1.2 EU Standards .................................................................................................. 9
   1.3 Polish law ........................................................................................................ 10

2. Production types, basic technological and production data ...................... 12
   2.1 Structure and present situation in Poland ........................................................ 12
   2.2. Polish climate .................................................................................................. 12
   2.3. Broilers ......................................................................................................... 15
   2.4. Layers kept in floor systems (Barn eggs) ...................................................... 20
   2.5. Layers kept in enriched cages ...................................................................... 24
   2.6. Rearing of pullets ......................................................................................... 27

3. Design of poultry houses ............................................................................... 30
   3.1. Introduction ..................................................................................................... 30
   3.2. General rules and regulations ....................................................................... 30
   3.3. Building construction of poultry houses - general ........................................ 34
   3.4. Broiler houses ................................................................................................ 34
   3.5. Layers kept in floor systems (Barn eggs) ...................................................... 56
   3.6. Layers kept in enriched cages ...................................................................... 68

4. Management of a poultry farm ..................................................................... 76
   4.1. Introduction ..................................................................................................... 76
   4.2. Broiler production .......................................................................................... 76
   4.3. Rearing of pullets for egg production ........................................................... 89
   4.4. Laying hens ................................................................................................... 93

5. Environmental protection ............................................................................ 104
   5.1. EU legislation .................................................................................................. 104
   5.2. Polish legislation ............................................................................................ 104
   5.3. Best Available Techniques .......................................................................... 105
   5.4. Handling of manure ..................................................................................... 106

List of literature ..................................................................................................... 113