

# A free-range mobile system for laying hens with free-choice feeding

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Results are reported from ongoing farming system experiments at Ekhaga Experimental Farm, Uppsala, and participatory research with a farmer at Vattholma, Sweden. The research carried out at Ekhaga is experimenting with different group sizes of 30 to 120 hens and two different models of mobile hen houses. The research interest is focused on poultry production with low external inputs of grain and imported protein, the protein maintenance of the hen, the individual feed choice of layers and evaluation of cross-breeds for free-range products.

Mobile poultry houses and free-choice feeding appears to be an acceptable free-range system for egg production. The cornerstone of this system is the free-choice feeding and the flexibility this gives to the individual hen. The major principle is to give the hen a possibility to choose between different feed components and thereby the ratio of energy to protein. In practice this is made by offering the hen feed components in different containers; for instance, two varieties of grain, wheat and oats, seashells and a source of more concentrated protein, e.g. fishmeal. It is important that the more concentrated protein source has a mix of essential amino acids, especially methionine and lysine. One concentrated source used today is a mix of 70 per cent meat and bone meal and 30 per cent fishmeal. This functions well and also enables the maintenance requirements of phosphorus and calcium to be met. The hen can adjust her indoor feed intake depending on the amount of

fodder found on the grassland, number of eggs produced, physical activity and temperature. Free-range poultry farming exposes the hen to many more environmental changes than indoor production in relation to temperature, wind and rain.

The major advantages of this concept are the possibilities it offers for the use of fresh pasture, reduced fodder costs, higher self-sufficiency in fodder and the role of the hens in the crop rotation. The pasture contributes to the feed intake by providing clover, young grass and herbs but also worms and insects. The hens contribute fertiliser to the fields. By supplying cultivated whole grain instead of buying a compound feed, feeding costs can be reduced. If whole grains are given, the hens must also be fed grit to be able to grind the grains. Mobile houses also make it possible for the hens to participate in and contribute to the farming system more than by only producing eggs, e.g. by seeking their own feed at pasture, integration in crop rotation, fertilisation and to some extent weed control, and integration together with cattle or other animals, in manure spreading and parasite reduction. The principles are an age-old practice, and are still practised by smallholders to produce eggs for their own consumption and local sale. The challenge is to argue for wider use and its productivity whilst optimising its ecosystem services at scales of interest to the full-time farmer. Neither the economic viability nor the labour and management costs have been estimated so far.