Challenges in organic egg-production related to the nutritional quality of foraging material and introduction of 100% organic feeding.

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Organc hens have daily access to foraging material and the quality are important for egg-production due to varying contents of amino acids (aa) and dietary fibres (Hammershøj and Steenfeldt, 2005; Steenfeldt et al., 2007). Supplying organic hens with appropriate amounts of protein and aa can become problematic with the introduction of 100% organic feed from 2012. The interest in growing protein sources nationally has increased in Denmark in consideration of the environment. Growing soybeans nationally would reduce import. Present hen genotypes used in organic egg-production have high nutrient-requirement, so using genotypes with lower protein-requirements could have some interesting perspectives.
Lohmann Silver (LS, 600) and New Hamshire (NH, 600) hens were reared in-door from 0-15 weeks of age, where they were transferred to out-door experimental units. A complete block design was used (12 treatments, 4 replicates) with two genotypes, three diets, and supplementation of either maize silage (MS) and carrots (CAR) or alfalfa silage (AS). The experiment lasted 24 weeks (hen age: 18-41). Diet A) control based on raw material grown nationally and imported protein sources: 17-18% protein, B) raw materials grown nationally including soybeans, quinoa and lupine: 17-18% protein, C) based on raw materials as in diet B but with 16-17% protein. Registration of different production parameters were performed each week.
The protein content of soybeans grown in Denmark in 2007 was around 40% DM, the methionine content 5g/kg DM. This means that there is a potential for growing a valuable protein source for organic layers as well as for other animals in Denmark. The protein content in AS is generally higher (around 20% DM) than found in MS (around 10% DM), and the content of dietary fibre comparable (around 45 % DM). The overall feed intake of diets A, B and C during the experimental period did not differ significantly between the genotypes. However, access to AS increased feed intake of diet C in both genotypes compared to groups fed diet C with MS and CAR ($P<0.05$). MA and CAR were more attractive forages than AS. LS hens obtained a higher laying rate (average 89%) compared to the NH (average 76%), ($P<0.05$), however, LS given diet C with MS and CAR was an exception (average 78%). Probably the high yielding LS hens was unable to sustain a high production with a lower protein diet when at the same time having access to MS and CAR with low levels of protein and aa. NH hens had overall a higher ($P<0.05$) feed intake in kg per kg egg (average 3.2) than LS hens (average 2.5). It can be concluded that NH hens in general obtained lower production results compared to the higher yielding LS hens. However, on diet C, the NH hens obtained the same production results as LS hens.

Keywords: organic egg-production, forage, hen genotype

References

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