

FARM BASED BREEDING OF DUAL PURPOSE POULTRY - Experiences from a biodynamic poultry farm in The Netherlands

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Authors background

Slingenbergh is biodynamic poultry farmer practicing on-farm breeding, Vredevoogd is biodynamic egg trader and advisor, Nauta as a breeding expert and researcher is involved in the on-farm breeding and selection procedures on Slingenberghs farm. Wagenaar and Bestman are researchers who helped to write down the results and experiences.

Summary

Since 2009 a small scale breeding and selection project started on a biodynamic farm in The Netherlands. The overall goal is to breed stronger hens that do well under organic conditions and show lower rates of mortality and at the same time have roosters that can be reared for meat production. In this paper results concerning egg and meat production are given, as well as thoughts about economic aspects.

Background

The breeding and selection of poultry has developed into two strictly separated directions: genotypes for either egg or meat production. In organic egg production the same genotypes are being used as in conventional production. However, somehow 'the chicken and the organic environment' not always fit together. For example, a higher mortality is experienced than in conventional farming. Moreover, the killing of the hens' brothers as a one day chick, is regarded as undesirable.

Experiences with farm based breeding of dual purpose poultry

In 2009 Slingenbergh, Vredevoogd and Nauta started with their breeding and selection on Slingenbergh's farm. The overall goal is to breed stronger hens that do well under organic conditions and show lower rates of mortality and at the same time have roosters that can be reared for meat production. When less birds die, more eggs will be produced and this will, to some extent, compensate for the lower production per bird. Since then 7 generations are bred. The breeds and hybrids used at the start had different colours: brown, silver and white egg laying hybrids and breeds as Sussex and Hageweider.

In a farm barn five separated henhouses were build including five outdoor runs. In each henhouse a new (F0) breeding family was started with different breeds and hybrids. Each group had 10 laying hens and 1 rooster. After two weeks, when roosters mated all hens, 50 eggs of each family were collected and hatched in an incubator. All birds, hens and roosters were raised up to 20 weeks. During this period some early developing roosters and about 10 hens were selected for breeding and kept in the flock. As soon as the breeding birds reached maturity and started laying eggs, roosters were moved to

selected families, following the kinship breeding scheme¹. This procedure is repeated every time the birds reach maturity and fertilized eggs can be collected.

In the first generations many different feather colours and patterns were seen from almost black to white. Birds from different crosses did not differ in size. The growth rate was slightly higher compared to the standard growth of the commercial hybrid. This can be explained by the faster growth of the offspring of a Sussex and Hageweider rooster, heavier dual purpose breeds. Moreover, birds were fed ad libitum, while in commercial situations birds are fed based on a standard feeding scheme. A sample of layers was weighted at an age of 50 weeks. The average weight was 2196 ± 299 grams. Three roosters weighed 3106 grams on average.

The egg production of the hens was not measured on all farms and at the breeding unit hens were culled after they had produced eggs for brooding. The F5 hens started laying at 20 weeks of age and the production of the F5 hens was measured from week 28 to 32. The average laying percentage was $82,3 \pm 9,03\%$. On average and including the hens that went to other farms, the hens layed about 70-80%. However, these small flocks of 30-50 hens are not always kept in a professional way.

Egg weight of the F6 was on average $62 \pm 4,53$ grams ($n = 60$) which is more than commercial standard of 58 gram. Egg colour was lighter brown and more varied.

Due to different practical settings and ongoing adjustment of the fattening strategy the batches of roosters were not kept and fed in the same way. Of the first batch only 10 were slaughtered manually at an age of 30 weeks resulting in 2,1 kg carcass weight. The other roosters were slaughtered mechanically in a slaughter facility for spend hens. Due to practical arrangements, the F2 was also somewhat delayed, resulting in a higher average weight. The F3 was slaughtered at 22 weeks and resulted in the most favourable average weight, concerning our marketing goal. A part of the roosters of F4 suffered from the low winter temperatures in 2011, resulting in a lower average weight and higher variation.

When hens produce 360 eggs in a lifetime² and for each egg five Euro cents more are being paid, then the resulting $360 * 0,05 = \text{€ } 18,00$ will pay for a whole rooster of 1,3 kg. The roosters in our project were sold for €13,- per kg, which is nearly € 17 per rooster.

Core messages and conclusions

Does small scale on-farm breeding result in acceptable production levels for farming? The overall goal is to breed stronger hens that do well under organic conditions and show lower rates of mortality. When less birds die, more eggs will be produced and this will, to some extent, compensate for the lower production per bird. When the costs of meat production are integrated in the egg production and when consumers are informed about this being more ethical and bird friendly, we think there is a (niche) market for such eggs and meat.

¹Nauta, W.J., Baars T., Cazemier, C.H., 2005. Kinship-breeding as a foundation for organic dairy production. 15th Organic World Congress of the International Federation of Organic Agriculture Movements (IFOAM) "Unites the Organic World", 20-24 September, Adelaide, Australia

²Average production of one hen in 16 months, 75% laying percentage.

On-farm breeding of a double-purpose chicken

Introduction The Dutch biodynamic poultry farmer Gerjan Slingenbergh and his egg trader Wim Vredevoogd were not satisfied with the nowadays poultry genotypes. The mortality was too high, the male chicks were not suitable for human consumption and by using hybrids, farmers remain dependent on breeding companies. They asked breeding expert Wytze Nauta to design an on-farm breeding scheme in order to develop a breed that satisfies their needs; at least 260 eggs per hen per year and cockerels suitable for meat production.

Methods A breeding scheme was made, based on the 'Kinship breeding scheme'. Five groups, each consisting of 10 hens + 1 male are housed in a biodynamic environment and from their offspring individuals were selected for the new generation. Five different genotypes (hybrids and pure breeds) are combined for breeding a new pure breed. This summer the 8th generation is becoming mature. At the 10th generation the new pure breed is expected to become stable enough.



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Results till 6th generation Body weight of hens and males in 1th generation parents was 2196 and 3106 gram respectively. Hens started laying at 20 weeks of age with an average laying % at peak of 82% (F5). Average egg weight was 62 grams (F6). Egg color was lighter brown and more varied than in commercial hybrids. Young males for slaughter weighed 1.3 kg (slaughtered weight) at 22 weeks (F3).

Economics If hens produce 360 eggs in a lifetime (75%) and for each egg an additional € 0.05 is paid, then the resulting 360 x 0.05 = € 18.00 makes raising of one brother affordable. We were able to sell the males for € 13.00/kg, nearly € 17.00 per animal. With such prices raising cockerels in an extensive way can also pay for the costs of raising the hens. Breeding the dual purpose chickens depends on a newly to be created market for these table eggs and chickens.

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