

Does the Source of Chicks have an Impact on Performance of Birds within Organic Table Bird Production Systems (Part 1)?

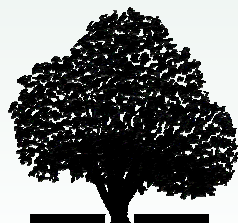
Vanessa Pegg, Bruce Pearce.

**Final Report
September 2003.**

Sheepdrove



Organic Farm



**ELM FARM
RESEARCH CENTRE**

Abstract.

1. Sheepdrove Organic Farm wanted to know whether the source of day old chicks and brooding and production period would have an impact on their enterprise.
 - 1.1. An experiment was undertaken using two different sources of day old chicks and on two sites. 1000 day old chicks from Maurice Millard were exchanged with 1000 organic chicks from Devon Foods. These chicks were then put through the Sheepdrove (SOF) and Devon Foods Bradbury Barton (BB) organic production systems and weighed every week until depletion.
 - 1.2. The two systems were not identical and there were slight variations between the SOF and BB systems. BB had 500 bird flocks compared to SOFs 1000, BB had a brooding period of four weeks to SOFs three and BB total production period was 11 weeks to SOFs 10 weeks.
 - 1.3. The conclusions from the study are;
 - 1.3.1. There is no significant difference between the performances of the birds from the two different sources, although the experiment has highlighted the importance of high stockmanship at all times.
 - 1.3.2. There is no overall benefit in brooding the chicks for four weeks but there does appear to be short-term benefits in not brooding for four weeks as the three week brooded birds performed better over the weeks they were introduced to the field (there is a caveat to this that the experiment was undertaken under warm summer conditions).
 - 1.3.3. Increasing the production period from 10 to 11 weeks could be beneficial as the final weights of the birds at 11 weeks on the BB site were at or above SOFs optimum weight.

Objective.

2. There were two objectives of the study;
 - 2.1. Are there differences between the performances of the difference sources of chicks?
 - 2.2. Does an increase in the brooding period for three to four weeks improve the final performance of the birds?

Background.

3. Sheepdrove Organic Farm sources its day old chicks from Maurice Millard. It was suggested that a different source of day old chicks could result better performance over the production period.
 - 3.1. To this end an agreement was reached with Devon Foods to exchange a number Maurice Millard day old chicks with them to be put through their production enterprise in Devon and for SOF to put 1000 of their organic chicks through its silvo-poultry system.

- 3.2. Devon Foods have a different production system with a longer production period due to longer brooding. It was envisaged that this experiment would give an indication of whether the longer brooding period is of benefit.

Methods.

4. The experiment was undertaken using two different sources of day old chicks and on two sites.
 - 4.1. The chicks were sources from;
 - 4.1.1. Maurice Millard (SOF supplier)
 - 4.1.2. Devon Food Organic Chicks.
 - 4.2. The experiment was split between two sites.
 - 4.2.1. Sheepdrove Organic Farm.
 - 4.2.2. Devon Foods site in Bradbury Barton (BB) Devon.
 - 4.3. There were 1000 MM birds exchanged with 1000 Devon food birds at day old. The birds were then put through the production on SOF and the Bradbury Barton site. A description of the key features of the production system can be found in Table 1.

Table 1. Key features of SOF and Devon Food production systems.

	SOF	BB
Brooding period	22-24 days	33 days
Full production period	68-70 days	77 days
Flock size	1000	500

- 4.4. Birds were weighed on arrival (a Monday) and then each Monday in the following weeks. Thirty birds were weighed from each batch each week. The data was analysed and mean values produced for each week and at depletion.

Results.

5. Birds weights can be found in Table 2 and Figure 1.
 - 5.1. The birds all started at a similar weight as 1-day old chicks.
 - 5.2. MM birds were generally heavier on both sites but this is not significant.
 - 5.3. The average of both MM and DF birds on both sites was below target weigh when depletion date was in week 10. When the birds were allowed to grow on for a further week and depleted in week 11 the MM birds had an average weight of 2870g (that would produce a processed bird of approximately 2000g that would be too large for SOF). The DF bird produced an average weight of 2653g (that would give a processed weight of approximately 1844g that is approximately the target weight for SOF processing).

Table 2: Weekly average weights of 30 birds from Maurice Millard (MM) and Devon Food (DF) on Sheepdrove Organic Farm (SOF) and Devon Foods Bradbury Barton (BB) site.

Age	SOF site		BB site	
	MM	DF	MM	DF
Day Old	41.8g	41.8g	41.8g	41.8g
Wk 1	129.7g	107.9g	n/a	n/a
Wk 2	223.2g	190.5g	248.0g	160.3g
Wk 3	349.5g	318.1g	380.0g	246.6g
Wk 4	570.8g	507.5g	570.0g	430.0g
Wk 5	870.5g	816.4g	750.0g	646.6g
Wk 6	1209.5g	1140.4g	1280.0g	926.6g
Wk 7	1589.7g	1536.3g	1510.0g	1226.6g
Wk 8	1860.4g	2037.7g	1830.0g	1843.3g
Wk 9	2210.8g	2296.2g	2380.0g	2126.6g
Wk 10	-	-	2870.0g	2653.3g

5.4. By comparing the weigh gain between sites in weeks 3 and 4 and 4 and 5 it should be possible to get an idea of the impact of brooding for an extra week at the BB site. Figure 2a and Figure 2b show the weight gains during these periods.

Figure 1: Weekly average weights of 30 birds from Maurice Millard (MM) and Devon Food (DF) on Sheepdrove Organic Farm (SOF) and Devon Foods Bradbury Barton (BB) site.

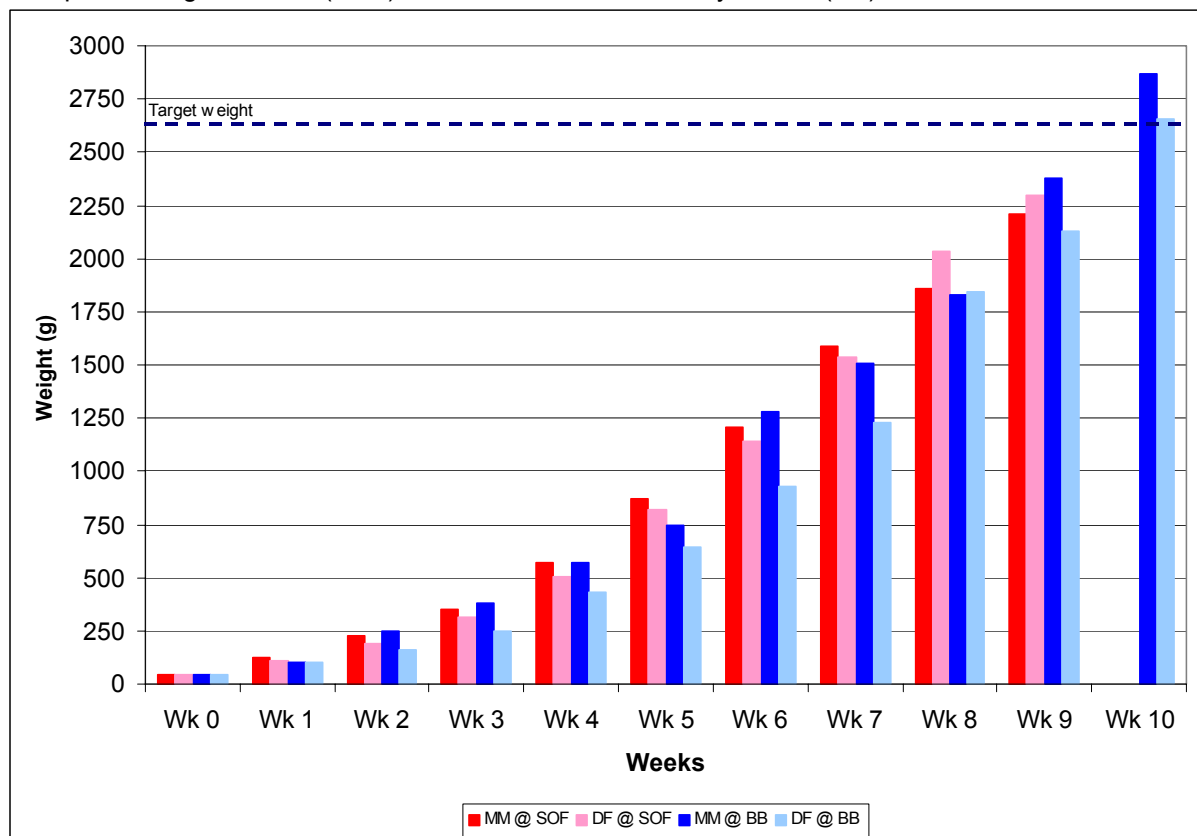
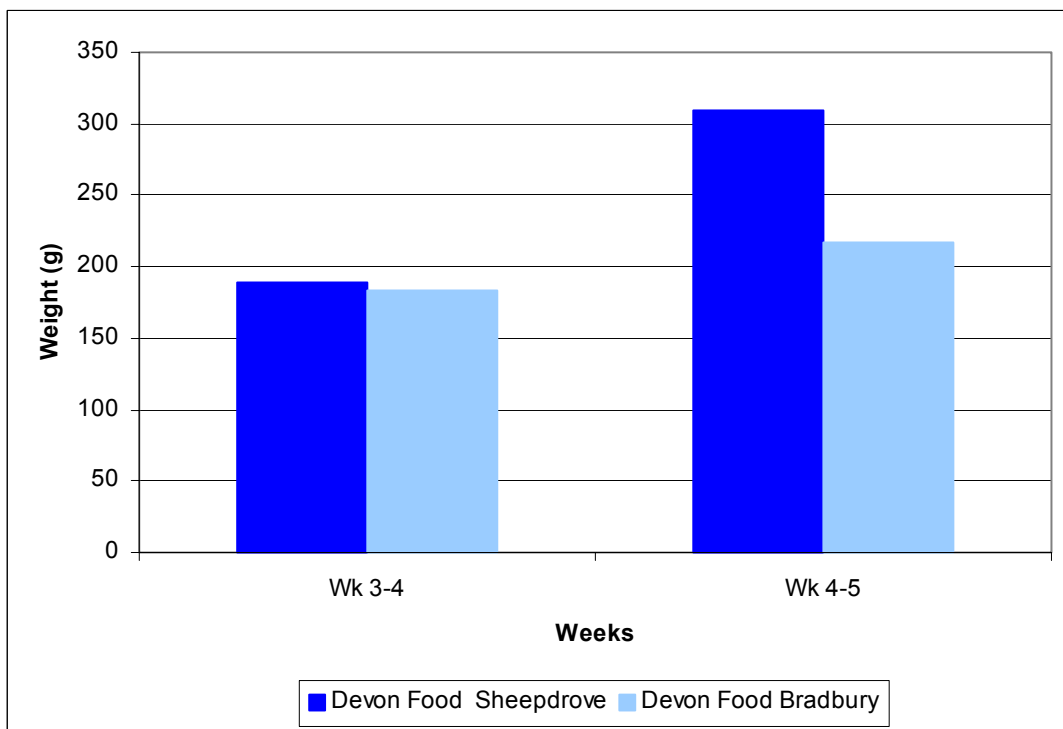


Figure 2a: Weight gains comparison of transfer week of Maurice Millard birds at SOF and BB.



Figure 2b: Weight gain comparison of transfer week of Devon Food birds at SOF and BB.



5.5. The data shows that weight gain in week 3-4 was greatest for those birds that had been moved from the brooder to the field. The data also shows that the growth of the birds the following week was also greater for those birds that were already in the field.

Discussion.

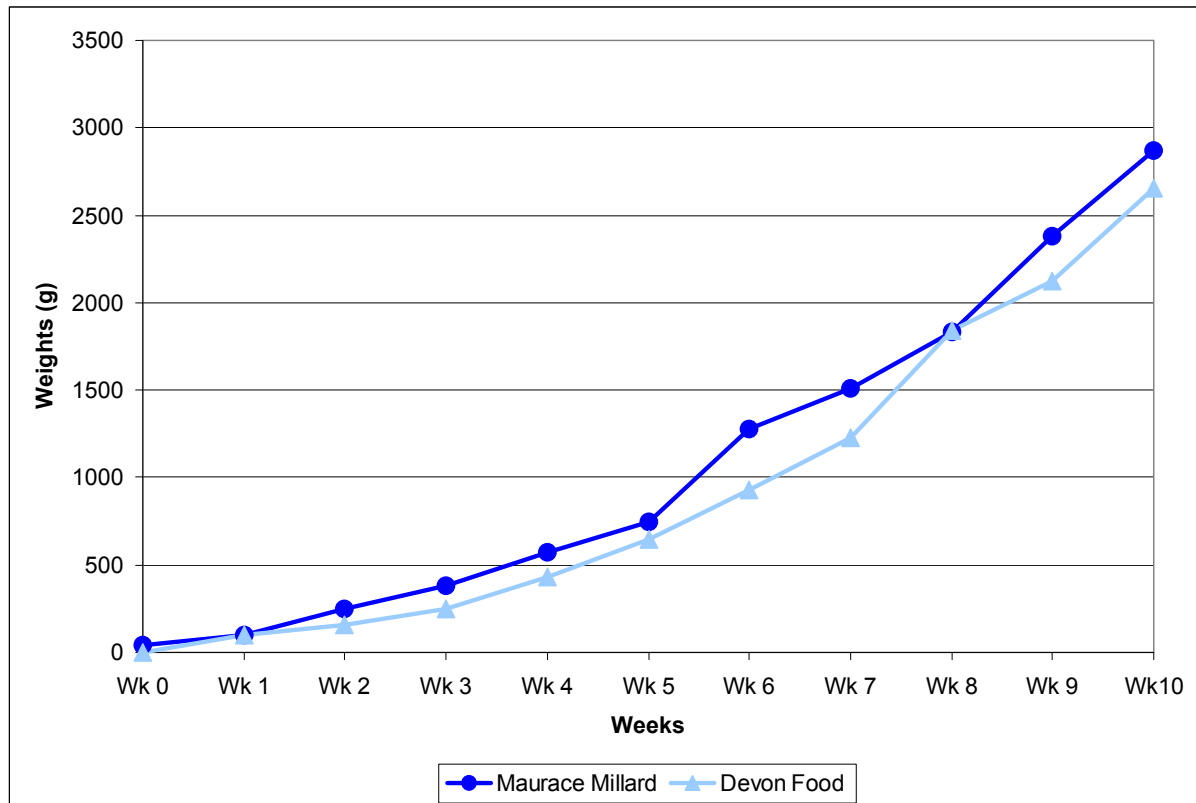
6. The experiment can answer two questions;

- 6.1. Are there differences between the performances of the difference sources of chicks?
- 6.2. Does an increase in the brooding period from three to four weeks improve the final performance of the birds?

Are there differences between the performances of the difference sources of day old chicks?

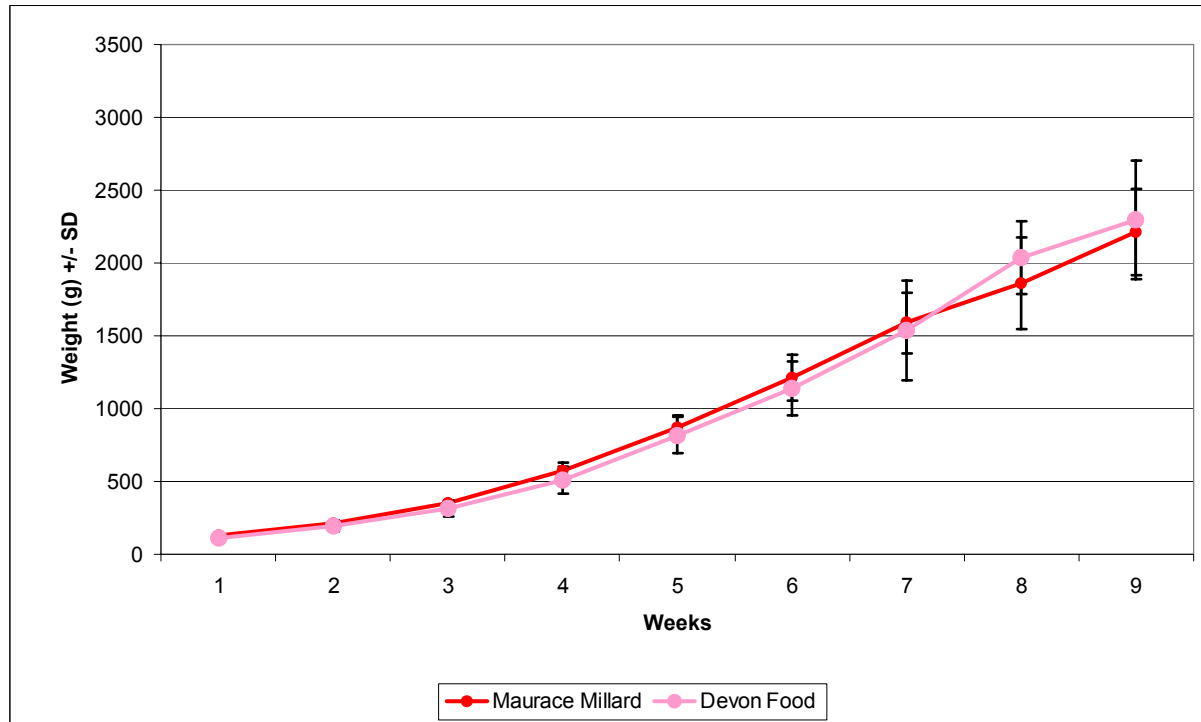
- 6.3. Figures 3 and 4 show the growth of the birds on SOF and BB. On both sites MM were generally heavier throughout the growth period. However, the differences were small. Also due to the way the data was supplied from BB it has not been possible analyse the variation within the data and so we are unable to say whether the differences in the BB data is significant.

Figure 3: The growth of MM and DF birds on the Devon Food BB site.



- 6.4. The SOF data however, Figure 4, could be analysed for variation and although the MM birds are generally heavier than the BB birds this is not significant. The striking feature of this data set is the sudden decrease in growth rate of the MM birds between week 7 and 8. This could be attributed to management problems. A water meter fault was reported in this shed at this time and it is possible that the birds were without or deficient of water during this period.

Figure 4: The growth of MM and DF birds on the SOF site.



Does an increase in the brooding period from three to four weeks improve the final performance of the birds?

- 6.5. Figures 2a and 2b show the increase in growth of both sources of birds on both sites in the weeks following movement to the field sheds.
 - 6.5.1. On the SOF site MM birds gained 221.3g, while the DF birds gained 189.4g the week they were moved to the field (week 4). The corresponding gains on the BB site where the birds were still in the brooder were 190.0g for MM and 183.4g for BB. Therefore the SOF birds in the field sheds out performed the BB birds in the brooder.
 - 6.5.2. The following week when the BB birds were moved to the field sheds the growth of the birds in the field at SOF was 299.7g for MM and 308.9g for DF. The growth of the BB for this period was 180g for MM and 216.6g for DF. Therefore the SOF birds in their second week in the field out performed the BB birds that had just been introduced.
 - 6.5.3. These results would question the benefit of brooding for the extra week.

Conclusions and future

- 7. This study has been informative and has brought out some important conclusions.
 - 7.1. It is highly likely that there is no difference between the performance of the chicks from MM and DF within the SOF production system. However, if the dip in growth rate that was observed in the MM birds between weeks 7 and 8 was due to water deprivation during this period it highlights how critical good management is to optimise the production on SOF.

- 7.2. With the differences within the production systems between SOF and BB it is possible to make some judgement on the impact of brooding for four weeks rather than three, as a four week brooding period has been suggested for SOF.
- 7.3. The data presented here show that there is no benefit in brooding for four weeks.
 - 7.3.1. The birds raised within the SOF production system out performed those within the BB system during the weeks of transition from brooder to field.
 - 7.3.2. There was no overall significant difference in the final weights of the birds.
 - 7.3.3. A caveat needs to be added to these statements as the experiment was undertaken in summer with a warm climate. We cannot guarantee that this will be the case in a colder winter climate.
- 7.4. The production system at BB was a week longer than the system that has been used at SOF (BB = 11 weeks, SOF = 10).
 - 7.4.1. The extra week appears to give a benefit as the final weight of the birds were close to the optimum for SOFs marketing (1.83 kg).
 - 7.4.2. There is a possibility that the birds will become too heavy. The mean weight of the MM birds on BB was 2.87 kg which converts to an over 2.0 kg processed bird. This is too heavy for SOF.
 - 7.4.3. This system of brooding for four weeks and then a further seven in the field does not conform to organic standards as the birds are spending too short a period within the free range field system.
- 7.5. This experiment does indicate that the SOF breed of bird (257) is capable of achieving the optimum processed weight of 1.83 kg within an 11 week production period. However, there is always a welfare issue with heavier birds and we did not get any information from BB about the welfare of these animals ie had they become too heavy and gone off their legs? With the new 11 week production system now introduced to SOF this will be able to be monitored on site.