

# Relation of Broodiness to Reproduction in Turkey Hens

By  
Jesse E. Parker<sup>1</sup> and O. A. Barton<sup>2</sup>

**P**oultrymen are well aware of the fact that the broody instinct, or the desire to sit, tends to reduce the numbers of eggs laid by chicken hens. At the U.S.D.A. Experiment Station at Beltsville, Md. (Jull 1940) it was observed that non-broody Rhode Island Reds averaged 205 eggs per year while broody females laid 180 eggs. In White Leghorns the average annual production was 194 and 153 for non-broody and broody individuals, respectively. At the Massachusetts station Hays and Sanborn (1926) found the non-broody chicken hens averaged 181 eggs their first year and broody hens 165 eggs. In the breeding of chickens for high egg production the broody factor has been eliminated from many strains of chickens.

In most strains of turkeys the broody instinct appears to be more common than in chickens. Although relatively little information has been published on the relation of broodiness to reproduction in this species, it is a common belief that broodiness lowers egg production. Consequently some turkey breeders are working toward reducing the incidence of broodiness in their flocks. At the California station Asmundson (1939) observed that the number and length of all broody and non-broody pauses were negatively correlated with egg production.

In the spring of 1945 broodiness was observed in 44 of the 59 hens in the North Dakota station flock of Broad Breasted Bronze turkeys. The broody factor was expressed in various degrees, ranging from individuals that were broody only once to one hen that was broody four times to June 1. The 59 hens were in six different pens. Although some phases of the management were not the same<sup>3</sup>, all were fed the same ration and all were exposed to artificial light-

ing commencing January 3. The relation of broodiness to reproduction of these turkey hens is shown in Table 1 on page 5.

Egg production was considerably higher in the hens that did not go broody. The average of 70 eggs laid in the trapnests for the group is considerably higher than for one-time and two-times broody groups, and is approximately twice that of the hens that were broody three or four times. These data indicate that

<sup>1</sup>Poultry Husbandman, and Chairman, Dep't. of Poultry Husbandry

<sup>2</sup>Professor of Poultry Husbandry, School of Agriculture, and Part-time Poultry Husbandman

<sup>3</sup>See N. Dak. Bimonthly Bulletin for Sept. Oct. 1945, page 3 for further information on management of the 6 pens.

the broody instinct is definitely related to decreased egg production in turkey hens. The periods of non-production due to broodiness appear to be rather long and might indicate that steps to break up broodiness were not taken soon enough. However, Hays (1943) observed that the average loss of time for each broody period in chicken hens over a 22-year period was 15 days. The average time lost from production by the turkey hens was 16.3 days for each broody period.

Since the production of turkey poults is the purpose of keeping turkey breeders, the number of poults per hen is a better measure of the turkey breeder hens value than the number of eggs she produces. The number of poults per hen is not only dependent upon the number of eggs produced but also upon the ability of these eggs to hatch. The non-broody hens produced more poults per hen than the broody hens, but the relative differences between groups with respect to poult production were not proportionally as great as those observed in egg production. An examination of the data shows that both fertility and hatchability of fertile eggs was higher in the broody groups than in the non-broody groups, with the exception of the one hen that was broody four times. This difference in fertility and hatchability of eggs in favor of the broody hens is interesting. At present there is no definite explanation for the phenomenon, but it is conceivable that the broody hens mated more frequently than those that showed no signs of broodiness. It was observed that mating frequently

took place when the hens were removed from the broody coops and returned to the pens. More frequent mating could very easily account for higher fertility. Also since Nalbandov and Card (1943) have reported some evidence that age or staleness of chicken spermatozoa (as measured by the length of time that the sperms remain in the reproductive tract of the female) influences the hatchability of the eggs they fertilize, more frequent mating might be responsible for the higher hatchability of fertile eggs produced by the broody groups of turkey hens.

The data presented in this study indicate that in a turkey breeding program which is directed at eliminating broodiness, emphasis should also be placed on fertility and hatchability. The fact that all eggs set from four of the 15 non-broody hens hatched better than 80 percent is pretty good evidence that by careful breeding non-broody strains of turkeys can be developed that have satisfactory fertility and hatchability.

### Summary

In a flock of 59 Broad Breasted Bronze turkey hens in their first year of production 15 hens showed no signs of broodiness to June 1. Sixteen were broody once, 18 broody twice, 9 broody three times, and one hen had four broody periods. The average number of days of non production was 16 days for each broody period.

Egg production per hen to June 1 was 70.5 eggs in the non-broody hens, while in the broody groups it ranged from 56 to 34, the number of eggs per group

being negatively correlated with number of broody periods. Percentages of fertility and hatchability of eggs set were higher in the broody groups than in the non-broody group. The number of poults per hen for the season was highest in the non-broody hens.

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**Table 1. Relation of broodiness to reproduction in Broad Breasted Bronze turkey hens—1945**

**Data for eggs laid in trapnests to June 1**

Times broody	Hens	Eggs total	Eggs per hen	Average days of non production due to broodiness	Fertility	Hatchability		Poults per hen
						Fertile eggs	All eggs set	
No.	No.	No.	No.	No.	%	%	%	No.
0	15	1058	70.5	0	82.4	76.5	63.1	42.9
1	16	897	56.1	15.2	91.6	78.5	71.9	38.4
2	18	953	52.9	30.8	91.9	81.3	74.7	35.4
3	9	339	37.7	48.3	92.7	80.0	74.1	25.8
4	1	34	34.0	69.0	90.0	66.7	60.0	18.0

## POTATO PRODUCTION

The United Fresh Fruit and Vegetable Association of Washington, D. C., in Bulletin 79 issued November 17th, 1945, states that the potato business is a half a billion dollar industry. They furnished tables showing potato yields by states for the year 1944-45. The car lot shipments of North Dakota through November 10, 1945 were 7,968,

1,014 less than that through November 11th, 1944 when there were 8,982.

The production in North Dakota, official Dec. 1, 1945, BAE estimate was 23,660,000 bushels compared to 20,875,000 bushels in 1944. The BAE estimated the total national production of potatoes as of Dec. 1, 1945 at 425,-131,000 bushels.