IV. OBSERVATIONS ON THE ACTIVITY AND FERTILITY OF WHITE LEGHORN MALES

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Since it is generally agreed that excessive service by the male, in the larger animals lowers his fertility, poultrymen are seeking more information regarding the effect of excessive sexual activity of the male on the fertility of the poultry flock. Experimental studies with males in the poultry field have been limited to one or two males for a breed. Chappellier,[1] Kaupp,[2] Phillips,[3] Martin and Anderson[4] and Payne[5] have studied this question.

It has previously been shown[6] that a very much larger percentage of dead or immobile sperm is found in the semen from White Leghorn males that mated frequently than from those that mated less frequently.

Experimental Results

The purpose of the observations herein reported was to gain more information on the effect of sexual activity of the male on the fertility of the flock with which he is mating. Six two-year old White Leghorn males and a flock of one and two-year old White Leghorn females were used in this study. The females had been previously separated from the males for thirty days, and it was known that the eggs they were laying were infertile. Three of the males were observed on June 10 from 6 a. m. to 6 p. m., and the others for the same hours on July 8, 1927. The temperature and other weather conditions were alike on these two days. The males were placed in the yard with the females and when mating occurred the female was moved to an adjacent yard to prevent further mating. Females were trapnested and eggs were gathered twice daily for sixteen days after the mating. All eggs were incubated to determine fertility and none were more than three days old when incubated.

Beginning at 6:28 a. m. and continuing until 5:47 p. m., male No. 7786 mated with 21 females. The shortest interval between matings was two minutes and the longest was four hours and twenty-seven minutes. Five of the females with which this male mated did not lay

[1]Chappellier, A. The duration of Spermatozoa after fecundation in the pullet and the duck. Compt. Rend. Assoc. France, Adv. Sci. 1914.

[2]Kaupp, B. F., Fertility Experiments. Jour. Amer. Inst. and Invest. Poul. Husb. 5:53.

[3]Phillips, A. G., Preferential mating of fowls. Jour. Amer. Inst. and Invest. Poul. Husb. 5:28-32.

[4]Martin, J. H., and W. S. Anderson. The result of single one-day matings. Journ. Amer. Inst. and Invest. Poul. Husb. 5:22-23.

[5]Payne, L. F. Vitality and activity of sperm cells and artificial insemination of the chicken. Okla. Sta. Cir. No. 30.

[6]Craft, W. A., C. H. McElroy and Robert Penquite. The influence of certain feeds upon the production of spermatozoa by the domestic chicken. Poul. Sci. 5:187.

during the following sixteen days, while the others laid from one to eleven eggs. The first, fourth, eighth, ninth, and twenty-first female laid fertile eggs The first mating gave the lowest fertility of 14.4 per cent, and although the female laid 7 eggs during the sixteen days she did not produce a fertile egg after the fourth day. The fourth mating gave 50 per cent fertility for four eggs laid. The eighth and ninth mating gave 37.5 and 36.4 per cent and seven and eight days fertility respectively. While the twenty-first mating gave the highest fertility, 66.7 per cent, the female laid only three eggs during the first three days trapnested and the last two laid were fertile.

Male No. 785 mated with 16 females from 6:15 a. m. to 5:30 p. m. Only one of these birds did not lay; the others laid two to twelve eggs. Fertility was obtained only on the eleventh and sixteenth mating. The eleventh female mated laid eleven eggs and only one laid on the fifth day was fertile. The sixteenth mating produced 50 per cent fertility. This female laid twelve eggs and gave fertility for 14 days. The shortest interval between mating for this male was six minutes and the longest was two hours and 57 minutes.

Male No. 787 began mating at 6:15 a. m. and continued until 5:53 p. m. During the twelve hours he mated with 18 females. The shortest interval between matings was one minute and the longest was one hour and 23 minutes. Only two females from these matings did not lay; the others laid from four to eleven eggs. The fourth, tenth, eleventh and eighteenth matings produced fertile eggs. The eighteenth mating gave the lowest percentage of fertility, which was 9.1 per cent, while the fourth gave 14.3, and the tenth gave 54.5 and the eleventh 20 per cent fertility. For the fourth mating fertility was maintained for three days; the tenth mating for thirteen days, the eleventh for eight days and the eighteenth for two days.

Male No. 768 mated with 28 females from 6:25 a. m. to 4:55 p. m. The shortest interval between matings was one minute, while the longest interval was two hours and 40 minutes. Only one of the females did not lay after mating; the others laid from one to fifteen eggs. Fertility was produced for the first, second, third, sixth, eighth, ninth tenth and twenty-fourth matings. The sixth, ninth and tenth matings gave 18.2 per cent fertility each. This was the lowest fertility produced in this group by the females which laid fertile eggs. The first, second and third matings produced 26.7, 58,3 and 60 per cent and the twenty-fourth mating gave 33.3 per cent fertility. The twenty-fourth mating gave fertility for 14 days, while the other matings gave fertility for four to nine days.

Male No. 790 mated with fourteen females and all of these laid from four to sixteen eggs each. He began mating at 6:25 a. m. and continued unti 5:35 p. m. The shortest interval between matings was 5 minutes and the longest interval was three hours and 35 minutes. The first, third, fourth, fifth, ninth and fourteenth matings produced fertile eggs. The highest per cent of fertility was 57.1 per cent for the fifth mating and the lowest was 21.4 per cent for the third mating. The first, fourth, ninth and fourteenth matings gave 50, 38.5, 42.9, and 28.6 per cent fertility respectively. The fourth mating produced fer-

tie eggs over a period of fourteen days and the first, third, fifth and fourteenth gave fertility for ten, six and four days, respectively.

Male No. 791 mated with only six females from 6:30 a. m. to 3:40 p. m. The shortest interval between matings was five minutes and the longest seven hours and eight minutes. All females in this group laid from nine to seventeen eggs each after mating. Fertility was obtained for the second, fourth, fifth and sixth matings. The second female mated laid 17 eggs, only one of which was fertile, and it was laid on the fifth day. The fourth mating gave 60 per cent fertility and the fertility was maintained for 13 days. The fifth mating gave 45.5 per cent fertility which was continued over a period of fourteen days. The sixth mating gave 33.3 per cent fertility, and fertility was maintained for 11 days.

None of the females mated laid fertile eggs before the second day. The males showed greatest activity in the early part of the day and slowed up after the first two hours. One of the males ceased sexual activity at 3:40 p. m. and another at 4:55 p. m., while the others continued to be active almost to the close of the day.