

Relation of Amount of Semen Used in Artificial Insemination of Turkeys to Fertility

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During recent years the breeders of turkeys have shown considerable interest in artificial insemination. In general practice the amount of undiluted semen used per insemination has been .05 cc. Using this amount Burrows and Marsden (1938) have observed that good fertility could be obtained when inseminations were accomplished at intervals up to 4-weeks duration.

As a relatively small amount of semen is usually obtained from turkey toms, usually about .3 to .4 cc. (Parker 1946), the use of the .05 cc. dose of undiluted semen results in the necessity of inseminating only a few hens with the semen of a single tom at one time. The following experiment was conducted to determine the feasibility of using smaller doses of undiluted semen in the artificial insemination of turkey hens.

Broad Breasted bronze turkey hens all hatched the preceding May were available. The hens were confined throughout the experiment and fed the station turkey mash ad libitum while the grain mixture of corn and oats was restricted to about 4 ounces per bird per day. Oyster shell and grit were available. All night lights were used and the hens were trapnetted.

The hens were first inseminated on February 1, 1946 and at 3-week intervals following that date with mixed undiluted semen from 6 Broad Breasted Bronze toms of similar ages to the hens. All eggs laid from February 3 to April 26, inclusive were incubated and candled on the 13th day. All eggs candled out as infertile were broken out and examined macroscopically for any trace of germ development.

The results (Table 1) show that fertility was relatively low on all amounts of semen. No de-

finite explanation for the low fertility is offered. During the 1945 breeding season two pens of turkey hens which were inseminated at two-week intervals with .05 cc. mixed undiluted semen laid eggs which were 88 and 90 percent fertile for the season. The fact that the hens were inseminated at three-week intervals instead of two-week intervals may have been a contributing factor to the lowered fertility.

The data show that there was more variation in fertility between hens inseminated with the

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Table 1—Relation of amount of semen artificially inseminated to fertility in turkey hens

Amount of semen	Hens inseminated	Eggs incubated	Eggs fertile	Fertility of individual hens
cc.	No.	No.	%	%
.10	2	96	58.3	62.5-55.4
.075	3	127	64.6	90.4-70.5-12.9
.05	4	165	66.7	84.3-84.0-79.1-26.1
.04	4	121	43.8 (69.7*)	78.6-65.2-45.5-0
.03	4	171	60.8	85.7-65.0-55.6-25.6
.02	4	228	57.0	75.5-67.3-45.7-43.4
.01	4	158	54.4	78.8-67.9-48.1-24.4
.005	3	126	65.9	80.0-75.8-51.7

*Average percentage fertility omitting the infertile hen

same dose than between groups of hens inseminated with the different doses. Since only a limited number of hens were used in this investigation the results are not conclusive; however, they do show the possibility of using semen doses of less than .05 cc. in artificial insemination of turkey hens. Further studies on the subject are indicated.

It is surprising that hens inseminated with .005 cc. semen should have such high fertility. Sperm concentration of the mixed semen was determined on February 1 and March 15 and was found to be 9.7 and 7.4 millions of sperms per cu. mm. respectively. Therefore the numbers of sperms inseminated in the .005 cc. doses were 48 and 37 million or an average of about 43 million. In chickens Munro (1938) has shown that the percentage of fertile eggs subsequently laid is affected when the number of sperms artificially inseminated was about one hun-

dred million or less. Apparently smaller numbers of sperms are necessary for fertilization in turkeys than in chickens.

Summary

Subsequent fertility of eggs was not affected a great deal when the size of semen dose used in the artificial insemination of turkey hens varied from .005 to .1 cc. of undiluted mixed semen and the inseminations were accomplished at 3-week intervals.

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