

Artificial Breeding of Turkeys

artificial insemination of turkeys requires exacting procedures but does offer specific advantages

F. W. Lorenz and J. D. Carson

Artificial insemination of breeding turkeys seems to offer three specific advantages over natural mating: 1, elimination of the need for saddles and thus of damage to the hens by the toms, 2, fewer males needed, and 3, increased fertility.

The number of toms needed depends on the volume of semen produced and the volume required for fertility. Maximum fertility in a flock can be maintained with inseminations of 1/40 ml—milliliter—of undiluted semen repeated every three weeks. The largest volume obtained from a single tom at one time is approximately .5 ml but the average of a flock is closer to .2 ml. Although semen may be obtained every day, or—in smaller volumes—even more often, turkeys do not respond well to such frequent handling. As a regular procedure stripping on alternate days appears to give best results. This would probably reduce to three times a week for convenient flock management, making the average tom capable of maintaining fertility in 72 hens.

However, spare birds are necessary as a safety factor. Also the figure of 72 hens per tom is based on mid-season performance; the .2 ml average volume per ejaculate is obtained—or exceeded—only between the middle of February and the middle of June. More toms are required for insemination before or after that period.

Even so, the number of males can be reduced to some 20% to 25% of those necessary for natural mating if the breeder is willing to observe a rather exacting procedure:

1. The males should be handled prior to the breeding season and only good semen producers chosen.

2. The flock of hens should be subdivided into nine separate pens and kept there for the entire breeding season. Since the hens in the last pen will not be inseminated until three weeks after the hens in the first pen the hens should be graded according to stage of maturity when the separation is made; the most advanced hens should go into the first pens and the slow hens into the last.

3. The males may be handled three times each week during the entire breeding season and each day's collection used to inseminate the hens in one pen.

A two-week interval between insemina-

tions is more usual—as a safety factor—than a three-week interval. This program requires only six instead of nine pens of hens but a correspondingly larger number of toms.

Good results are not to be expected unless separate pens are maintained so that the groups of hens may be inseminated in a regular rotation, and unless the toms are used three times every week during the breeding season.

Fertility in the University flock averaged over 90% but such high values have not been observed in the field.

In University research an egg is reported as fertile if any development can be observed with the naked eye or low-powered microscope after breakout. In the field, early dead embryos—before the blood-ring stage—are usually reported as infertile. Field data are thus difficult to compare with experimental results. Higher fertility in inseminated than in naturally mated control pens has usually been observed.

The techniques of artificial insemination influence the success of the operation.

Cleanliness is important as many foreign materials are poisonous to sperm. Contaminated semen must be rejected.

Chilling the semen should be avoided as temperatures of 40° F or below destroy the fertilizing capacity of the sperm. The glassware should be warmed slightly before use, and the semen protected from cold during the several minutes that may elapse before it is used.

Fertilizing capacity is lost rapidly after the sperm are shed, even under optimum holding conditions so far as now known. Attempts have been made to transport semen from one ranch to another nearby, but maintaining adequate freshness is difficult and this procedure should be considered risky.

Even with all precautions some infertile eggs may be expected. There is variability in fertility due to the individual hen. In late season sperm production declines also and an increasing number of males will fail to produce altogether. After the first of June any tom not producing might as well be culled as few such toms will produce any more semen until the next spring.

The technique of artificial insemination is not limited to an exclusive pro-

gram. A single round of insemination to an otherwise naturally mated flock is useful as an emergency measure, where—through some accident or fault of management—fertility is lower than it should be. In such instances a supplementary program of a single artificial insemination has resulted in a striking increase. From 7% to 35% more live embryos—at the time of first test—have been obtained by this means, where live-embryo percentages varied from 45 to 82 in eggs laid immediately prior to the insemination.

The toms should be separated from the hens a day or two before supplementary insemination—so that they will produce the maximum quantities of semen—and returned to the hens immediately after handling. Where this is done the increased level of fertility may be quite persistent.

A more intensive supplementary program involves a combination of artificial insemination and natural mating. Preselection of the males is an important part of this program, especially if the breeder produces his own replacement stock. The rate of sexual maturity of male turkeys is inherited; the practice should thus benefit fertility in future generations as well as in the current season.

The full usual number of toms must be run with the hens, and the hens must be saddled. The program is carried out in the following steps:

1. Males are tested when seven to eight months old for semen production and good producers only are saved.

2. Natural mating is allowed until four days prior to saving the first eggs for hatching.

3. Males are isolated for two days, then all hens are inseminated.

4. Males are returned to the breeding flock immediately after ejaculation.

5. The rapid fertility test is applied to each setting and the insemination is repeated as soon as fertility declines appreciably.

A rapid fertility test may be performed with a powerful candling lamp employing a light blue filter. On the second day of incubation the eggs are placed on their sides for two or three hours, and then candled without turning them over. Fertility is shown by the presence of

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