Principles and Practice of Artificial Insemination in Turkeys

R. D. Carter
Iowa State College

Follow this and additional works at: https://lib.dr.iastate.edu/iowastate_veterinarian

Part of the Large or Food Animal and Equine Medicine Commons, and the Veterinary Physiology Commons

Recommended Citation
Available at: https://lib.dr.iastate.edu/iowastate_veterinarian/vol21/iss1/3

This Article is brought to you for free and open access by the Journals at Iowa State University Digital Repository. It has been accepted for inclusion in Iowa State University Veterinarian by an authorized editor of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.
Principles and Practice of Artificial Insemination in Turkeys

R. D. CARTER, M.S.

LOW FERTILITY is one of the most common and most costly problems in turkey breeder flocks. As a partial solution to this problem, there has been a growing interest in artificial insemination of turkeys. Artificial insemination is a practical solution to infertility due to inactive toms, inefficient toms and non-receptive hens, but is not a solution to infertility due to poor management.

The practice of artificial insemination is costly and time consuming. In commercial flocks it is practical because at the present time there is no other way to correct for the fact that the tom is not doing the job properly.

COLLECTING SEMEN

The basic principles involved in the practice of artificial insemination are that of obtaining semen from the tom and placing it in the oviduct of the hen. Stimulating the male to protrude his sex organ and "milking" semen from this organ is the most difficult part of the procedure.

Three operators are required for maximum efficiency in collecting semen. One operator holds the male, the second stimulates him to ejaculate and the third collects the semen. It is very important to hold the tom in a resting position. This can be accomplished by placing a sack of shavings or other litter material on a table or barrel about four feet high and placing the tom on the sack (Figure 1). The person holding the bird grasps the thighs so that the bird is held in an upright and comfortable position. The protrusion of the sex organs is brought about by massaging the abdomen along the underside of the pubic bones with the fingers and thumb of the right hand. At the same time, the back and tail head are stroked with the left hand. As soon as the bird is stimulated, the tail is pushed toward the back with the left hand. The bird is further stimulated by the right hand and the thumb and forefinger of the left hand are brought into position to "milk" the semen from the bulbous ducts (vas deferens) of the sex organ the instant it is protruded and ejaculation takes place (Figure 2). "Milking" involves the application of pressure with the thumb and forefinger on both sides of the base.

Mr. Carter is an assistant professor in poultry husbandry at Iowa State College. He has a B.S. in poultry husbandry and a M.S. in poultry nutrition from Ohio State University.
of the sex organ (Figure 3). It is important not to simply squeeze the sex organ because the bulbous ducts (vas deferens) lie rather deep in the wall of the cloaca at the base of the sex organ and considerable inward pressure is necessary to empty them. A third operator collects the semen in a glass container as it flows from the sex organ.

Care should be taken to collect semen free from foreign matter, particularly feces. By removing the feed about six hours before the birds are handled the amount of feces voided during collection can be reduced. Collection of large amounts of urates should also be avoided, but small amounts apparently do not damage semen quality.

Turkey semen should be used as soon as possible after collection to insure maximum fertility. The semen should not be chilled during collection and some protection against chilling is advisable during cold weather because sperm cells are destroyed at temperatures near freezing. This can be accomplished by holding the vial used for collection in the palm of the hand, thus keeping it from being chilled.

The average volume of semen produced per male at each collection is $\frac{1}{2}$ to $\frac{1}{4}$ cc. Semen can be collected every two days with no reduction in volume of semen produced.

**INSEMINATING FEMALES**

The insemination of the female requires the services of two people. The first operator places the hen between his legs with the bird's wings behind his knees and supporting her there with his

---

Fig. 2. As the tom becomes stimulated, the tail is pushed back with the left hand. The thumb and forefinger are then brought into position.

Fig. 3. Inward pressure is necessary to engage the bulbous ducts (vas deferens) and the semen is then forced out.

Fig. 4. Suggested position for holding hen while inseminating.
legs and knees. The cloaca is everted and
the oviduct protruded by applying gentle
pressure to the abdomen with both hands,
one on either side of the vent (Figure 4).
The oviduct opening lies on the left side
of the cloaca (Figure 5). The inseminator
inserts a 1 cc. tuberculin syringe about
one inch into the oviduct and delivers the
correct amount of semen. The pressure
on the abdomen should be relaxed at the
same time that the semen is delivered.
After insemination, the female should be
released gently so that she does not strain
and eject the semen from the oviduct.

The recommended dosage per insemin­
ation is 1/40 cc. Insemination should be
repeated every 2 to 3 weeks. Experiments
have shown no advantage in inseminating
more frequently than once every three
weeks. However, many insemina­
tors prefer to inseminate once every two
weeks during the latter part of the breed­
ing season as an aid in maintaining high
fertility. Afternoon inseminations are
preferred, as most hens will have laid by
this time, thus reducing the possibility of
a hard-shelled egg in the oviduct inter­
ferring with the passage of the sperm.

The syringe and vial used in artificial
insemination should be rinsed with a one
per cent saline solution if they are to be
used again soon, as tap water kills sperm.

CARE OF BIRDS

If early hatching eggs are desired, it
is important to use artificial lights on the
toms for at least 4 weeks before at­
tempting to collect semen. The male
should be subjected to lights two to three
weeks before the females. A 14-hour day
is satisfactory. About one watt of light
should be provided for each three to four
square feet of floor space. Best results
are obtained when males are housed sepa­
radely from the females, however, toms
naturally mated can be used providing
they are removed from the hens two to
three days before collecting semen.

VALUE OF ARTIFICIAL
INSEMINATION

Usually turkey hatching eggs are pur­
chased on the basis of 75 per cent ferti­
licity. With a price of 30 cents per egg at the
75-percent fertility level, 100 eggs would
be worth the following amounts:

<table>
<thead>
<tr>
<th>Level of Fertility (°)</th>
<th>Value/100 Eggs</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>$19.50</td>
</tr>
<tr>
<td>45</td>
<td>21.00</td>
</tr>
<tr>
<td>50</td>
<td>22.50</td>
</tr>
<tr>
<td>55</td>
<td>24.00</td>
</tr>
<tr>
<td>60</td>
<td>25.50</td>
</tr>
<tr>
<td>65</td>
<td>27.00</td>
</tr>
<tr>
<td>70</td>
<td>28.50</td>
</tr>
<tr>
<td>75</td>
<td>30.00</td>
</tr>
<tr>
<td>80</td>
<td>31.50</td>
</tr>
<tr>
<td>85</td>
<td>33.00</td>
</tr>
<tr>
<td>90</td>
<td>34.50</td>
</tr>
</tbody>
</table>

With each 5 per cent improvement in
fertility, there is an increased return of
$1.50 per 100 eggs. For illustration pur­
poses, if fertility has been 50 per cent
due to poor mating, artificial insemana­
tion could quite possibly increase fertility
to 75 per cent. If a hen lays 10 eggs over
a 3-week period, the improvement in
fertility from 5 to more than 7 eggs
would make the single insemination
worth from 60 to 75 cents per hen. The
table shows that 10 eggs at 50-percent
fertility are worth $2.25 and 10 eggs at
75 per cent are worth $3. From these
figures it can be seen that it is possible to
pay the cost of insemination for the whole
season by the increase in fertility result­
ing from a single insemination.

If artificial insemination is used alone
and not as a supplement to natural mat­
ing, additional savings can be made. Sad­
dles would not be needed for the hens.
The saddles cost about 30 cents each,
therefore a considerable amount of money would be saved. Fewer toms would have to be carried from market age through the breeding season. This would result in a savings in feed as well as eliminate the depreciation taken when the breeders are sold.

**COST OF ARTIFICIAL INSEMINATION**

Such factors as the semen production of the toms, the number of toms available, the number of hens in the flock, the efficiency of the inseminating crew, as well as the number of men in the crew, are all involved in determining what it will cost to inseminate a flock of turkeys.

Professional inseminating crews are available in some sections of the United States. Depending on the above factors, the cost of this service varies from 7 to 20 cents per insemination per hen. Anyone can learn the technique of artificial insemination and with the flock owner providing help and the hatchery using regular service personnel, insemination could be done for as little as 5 cents per insemination. An experienced 4-man crew can "milk" the necessary toms and inseminate about 150 hens per hour. Using 10 cents as a cost per insemination and inseminating 6 times over an 18-week period, or once every three weeks, it would cost 60 cents per hen per season. This cost would be equivalent to about two eggs per hen or one saleable poult.

**SUMMARY**

Artificial insemination offers a partial solution to the problem of low fertility. The collecting of semen is a difficult process, requiring three operators for maximum efficiency. The services of two people are required for the insemination of the female.

Special care should be taken to collect semen free from contamination by foreign matter. After the semen is obtained, it should be protected from chilling and used as soon as possible. Insemination with 1/40 cc. every two or three weeks seems to be the most satisfactory.

The cost of artificial insemination varies from 7 to 20 cents per insemination per hen depending upon the efficiency and number of men on the inseminating crew, as well as the number of toms and hens in the flock.

With the improved fertility that results, artificial insemination can be of great value to the turkey breeder. An artificial insemination program should be given serious consideration, particularly in flocks of the large, broad-breasted varieties under good management, where infertility is a problem.

---

Tips on Practice Promotion, Continued from page 7

(2) Poor-risk patients.
(3) Poor-risk clients.
d. Mail statements regularly.
e. Maintain continuing pressure to collect "bad debts."
(2) For the unavoidable "charge" get:
(1) Home address and telephone number.
(2) Business address and telephone number.

**THE CLINICAL (PHYSICAL) EXAMINATION AS A FORM OF ETHICAL PRACTICE PROMOTION.**

With the widespread adoption of laboratory aids has come a regrettable tendency to slight the physical examination of the patient. Not only is the art of evaluating physical signs an important aid to diagnosis, it is also a potent step in building client confidence.

This paper is an abstract of a talk given by Dean W. W. Armistead at the First Annual Florida Conference for Veterinarians at Gainesville, Florida, on May 17, 1958. We believe Dean Armistead has some very worth-while tips to offer in building a successful practice.—Editors.

---

**Correction**

On page 191 of Vol. XX, No. 3 under Report of the Hospital Clinic the number of bovine examined should be:

1957
2209 instead of 5704
1952
1125 instead of 7615

Iowa State College Veterinarian