9. Other factors, such as plane of nutrition, will be studied if a need is indicated for this supplemental information.

Studies of the breeding behavior of ewes and rams in the College flock for the past three years have revealed facts that may be of value in better understanding the basic problems involved. These facts, which follow, may also suggest new possibilities for experimental work that could be of value in helping solve the problems.

1. Rambouillet or fine-wool ewes are sexually active during most months of the year. The period of least activity appears to be during February, March, and April. Blackface and whiteface crossbred ewes tend to follow the same pattern in breeding activity, but become sexually active later in the spring and may remain active for a shorter time.

2. Temperatures may play a smaller role in affecting the breeding behavior of ewes than many have thought. Observations made at Kansas State College during the extremely warm summers of 1953 and 1954 show that 60 to 80 percent of the fine-wool ewes came into heat during each of three months: June, July, and August. The accumulative total for the three months would have included between 90 and 95 percent of the ewes. The figures were somewhat lower for the cross breed.

3. Temperatures apparently affect breeding behavior and ability in rams more than in ewes. The semen quality of all the rams used in the experimental flock during the summers of 1953 and 1954 deteriorated to the point that they were virtually sterile during late July and early August.

4. While there may be some variation in temperature tolerance among rams of different breeds and ages, so far the differences have been largely individual, in Kansas studies.

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**The Effect of Stilbestrol Implants on Fertility in Adult Male Guinea Pigs.**

**PROJECT 93**

**J. D. Wheat, C. S. Menzies, and L. A. Holland**

July 6, 1955, two adult guinea pig males each was implanted with 24 milligrams of stilbestrol. A young female that previously had given birth to a litter was placed in the cage with these males, but for some time they showed no interest in the female. One male died during the latter part of the summer but the other male remained in the colony until February 29, 1956. The female was kept in the cage with the implanted male and she gave birth to a litter about February 1, 1956. The average gestation length in the guinea pig is 68 days so the implanted male must have recovered from the effect of the stilbestrol and sired this litter by about November 24, 1955, approximately 4½ months after the implant was administered.

This indicates that adult guinea pig males can recover sufficiently from large dosages of stilbestrol to sire progeny.

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**Stilbestrol in a Guinea Pig Ration.**

**PROJECT 93**

**J. D. Wheat, C. S. Menzies, and L. A. Holland**

This study was to determine the response of young guinea pigs to stilbestrol added to the basic ration of ground oats, tankage, bonemeal, ground alfalfa hay, and freshly-cut, green alfalfa. Eight litters of guinea pigs, each consisting of two pigs of the same sex, were used. These pigs ranged from 3 to 5 weeks of age and the initial weights ranged from 220.7 to 368.6 grams. Four of the litters were males and four were females. One male from each of the male litters was placed



in the control cage and the other pig from each litter was placed in the treatment cage. The female litters were divided in a similar manner and an effort was made to equalize the initial weights in the control and treatment cages for each sex.

The four animals in each treatment cage received 80 milligrams of stilbestrol-fortified premix daily in addition to the same amount of the basic ration received by the animals in the control cages. Each pig in the treatment cages received approximately 9 micrograms of stilbestrol, mixed with its feed, per day. The experiment began June 7, 1955, and ended August 9, 1955 (9 weeks). The gains, in grams, made by litter mates and the differences in gains made by these litter mates are shown in Table 56.

**Table 56**

**Gains Made by Guinea Pig Litter Mates with and without Stilbestrol in the Ration (in Grams).**

| Litter number | Initial av. wt. for litter mates | Control ration | Control plus stilbestrol | Difference between gains |
|---|---|---|---|---|
| | | Males | | |
| 1 | 286.5 | 308.3 | 155.2 | 153.1 |
| 2 | 260.3 | 321.8 | 256.0 | 65.8 |
| 3 | 267.2 | 274.2 | 197.5 | 76.7 |
| 4 | 304.0 | 268.8 | 260.0 | 8.8 |
| Total | | 1173.1 | 868.7 | 304.4 |
| Av. | | 298.3 | 217.2 | 76.1 |
| | | Females | | |
| 5 | 242.0 | 268.4 | 220.9 | 47.5 |
| 6 | 288.2 | 202.8 | 155.1 | 47.7 |
| 7 | 300.5 | 149.3 | 87.6 | 61.7 |
| 8 | 345.2 | 227.8 | 135.7 | 92.1 |
| Total | | 848.3 | 599.3 | 249.0 |
| Av. | | 212.1 | 149.8 | 62.2 |

The gains were analyzed statistically and those made by the pigs receiving no stilbestrol in the ration were significantly higher than those made by pigs receiving stilbestrol. The males made significantly higher gains than the females but the addition of stilbestrol to the ration affected the two sexes similarly, as there was no statistical evidence of a different response caused by sex. Among the animals receiving stilbestrol an increase in teat length and size was observed in both sexes as early as the end of the fifth week of the experiment.