

ANEMIA IN SUCKLING PIGS

by
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A study of the effects of feeding supplemental iron to sows during the gestation period was started during the spring of 1945. This work was initiated on the basis of observations made previously at the University of West Virginia, University of Georgia and University of Idaho. It has been observed at these three stations that the feeding of copperas resulted in more vigorous thriffter pigs and usually delayed the onset of anemia and decreased the death loss of pigs between birth and weaning.

The original work was begun following a severe outbreak of anemia in pigs less than one week of age that resulted in heavy losses prior to the time that treatment by dosing newborn pigs could become effective. While extensive observations including birth weights, rates of growth, hemoglobin level and livability

Table 1—Comparison of weights in pounds, hemoglobin level in grams per 100 c. c. of blood and survival of pigs from treated and untreated sows. (Hgb signifies hemoglobin.)

| Spring-1945 | No. of Sows | Avg. Pigs farrow'd | Birth | | 1 week | | 2 weeks | | % pigs weaned |
|---------------|-------------|--------------------|---------|-------|---------------|--|---------|-------|---------------|
| | | | Wt. | Hgb. | Wt. | Hgb. | Wt. | Hgb. | |
| Treated | 2 | 10½ | 2.60 | 10.60 | 4.14 | 6.52 | 7.06 | 5.51 | 81 |
| Untreated | 3 | 10 | 2.39 | 9.07 | 4.32 | 5.35 | 6.86 | 4.96 | 60 |
| Fall-1945 | No. of Sows | Avg. Pigs farrow'd | Birth | | 9 days | | 20 days | | % pigs weaned |
| | | | Wt. | Hgb. | Wt. | Hgb. | Wt. | Hgb. | |
| Treated | 3 | 9½ | 2.68(1) | 8.73 | 5.71 | 5.93 | 8.77 | 7.35 | 53 |
| Untreated | 3 | 7½ | 2.21 | ..... | ..... | ..... | ..... | ..... | 0 |
| Spring-1946 | No. of Sows | Avg. Pigs farrow'd | Birth | | 1 week | | 2 weeks | | % pigs weaned |
| | | | Wt. | Hgb. | Wt. | Hgb. | Wt. | Hgb. | |
| Treated | 3 | 7 2/3 | 2.38(2) | 8.82 | 4.18 | 5.71 | 4.69 | 5.93 | 30 |
| Untreated | 4 | 8 1/4 | 2.56 | 7.47 | 4.41 | 5.40 | 6.50 | 4.24 | 39 |
| Spring-1947 | No. of Sows | Avg. Pigs farrow'd | Birth | | 1 week | | 2 weeks | | % pigs weaned |
| | | | Wt. | Hgb. | Wt. | Hgb. | Wt. | Hgb. | |
| Treated | 2 | 8½ | 1.84 | 10.04 | ..... | 7.32 | ..... | ..... | 76 |
| Untreated (3) | 1 | 11 | 2.17 | 6.00 | ..... | 6.85 | ..... | 6.63 | 38 |
| Spring-1948 | No. of Sows | Avg. Pigs farrow'd | Birth | | % pigs weaned | % Pigs do alive that lived until weaning | | | |
| | | | Wt. | Hgb. | | | | | |
| Treated | 26 | 8.19 | 3.19 | 9.98 | 80.7 | 19.8 | | | |

(1)—Birth weights differ significantly. (2)—Birth weights not significantly different. difference in hemoglobin level is significant. (3)—Hemoglobin level of pigs from untreated sows maintained by means of drenching pigs on alternate days with copperas solution.

were made at the other institutions only the data collected at the North Dakota Experiment Station are being reported here.

Table 1 presents the data on weights, hemoglobin levels and survival of pigs from a total of 44 litters farrowed under controlled conditions.

During the spring of 1948, 26 sows bred for spring farrow were used to determine to what extent increasing the amount of supplement feed would result in increased hemoglobin level in the sows'

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blood. The average hemoglobin level by bleeding intervals is shown in Table II.

TABLE II

| Hemoglobin level of sows by periods (grams per 100 c.c. of blood) | | | | | | |
|--|----------|----------|--------|---------|--------|---------|
| | 12-12-47 | 12-22-47 | 1-7-48 | 1-20-48 | 2-2-48 | 2-16-48 |
| Average Hemoglobin | 13.56 | 12.75 | 14.42 | 12.10 | 12.91 | 13.29 |

An analysis of variance failed to show any significant difference between individual sows.

Iron sulfate was fed at the rate of $\frac{1}{2}$ ounce per gilt per day from start of trial until January 20, 1948, at which time the dose was doubled. The feces became very dark during the next two periods. The dose was reduced to $\frac{1}{2}$ ounce per gilt per day on February 2, 1948.

Even though a significant difference was found between periods, no definite trends could be determined. An increase in amount of iron sulfate fed appeared to result in a decrease in hemoglobin level. A slight decrease in amount of feed consumed was observed during the period when the high level of iron sulfate was being fed. It was not determined whether this resulted from decreased appetite or lessened palatability; however the gilts did continue to eat sufficient feed to maintain relatively high condition.

The hemoglobin level of all pigs at birth was determined. Determination of hemoglobin level at one week of age on the first four litters farrowed showed an average drop of 45% (from 8.3 to 4.6). Therefore, all pigs were given supplemental iron starting at two days of age.

Conclusions:

1. It is possible through feeding of iron sulfate during pregnancy to increase the hemoglobin level of the sow's blood and of the blood of the newborn pig.
2. The higher level of hemoglobin in the blood of newborn pigs is associated with heavier birth weights and more vigorous pigs.
3. Hemoglobin level at birth is positively correlated to gain in weight during the first week. (correlation is of the order of 0.356).
4. The rate of growth during the first week is correlated to the decrease in hemoglobin level (correlation of the order of 0.5426). Furthermore, the drop in hemoglobin level during the first week is usually between 40 and 45% of the level at birth.
5. One-half ounce per day per sow of copperas appears to be sufficient to attain the maximum level although no serious results have been observed from feeding twice this amount.
6. Supplementing the sow's ration during pregnancy with iron sulfate at the rate of $\frac{1}{2}$ ounce per sow per day has resulted in an increase in the proportion of pigs raised.