1958

# Effects of Saline Water on Swine

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# EFFECTS OF SALINE WATER ON SWINE[1/]

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Occasionally waters used for livestock in South Dakota are so saline that they are toxic. In order to establish standards for determining, from chemical analysis, whether water is suitable for livestock, experimental work with waters of various salt content has been done. With cattle, toxic levels of various kinds of salts have been quite well established. Since swine are believed to be more susceptible to damage by high salt intake than are cattle, an experiment with swine was conducted.

With cattle, water containing 1.0% of either sodium sulfate, sodium chloride, or a mixture of these two salts and magnesium sulfate appears toxic, while less than 0.7% of these salts has no harmful effect on general health and well-being. This experiment was designed to test the effects of waters containing less than 0.7% of a salt mixture on swine.

## Experimental Plan

Sixty weanling pigs were divided into four lots and each lot was placed on a growing-finishing ration. The lots were supplied waters with different concentrations of a salt mixture added (see table). Water and feed consumption and weight data were obtained for the period of the experiment (June 10 to September 3) and the data are summarized in the following table.

Saline Waters and Swine Performance

| | Lot 1 | Lot 2 | Lot 3 | Lot 4 |
|---|---|---|---|---|
| Salt added [a] | 0% | 0.211% | 0.422% | 0.633% |
| No. of pigs | 15 | 15 | 15 | 15 |
| Av. initial wt., lb. | 37.4 | 37.4 | 37.2 | 37.2 |
| Av. wt. to date, lb. | 156.5 | 164.9 | 173.6 | 167.3 |
| Av. daily gain to date, lb. | 1.40 | 1.50 | 1.60 | 1.53 |
| Feed/pig/day, lb. [b] | 5.25 | 5.35 | 5.48 | 5.63 |
| Feed/lb. gain, lb. [b] | 3.75 | 3.57 | 3.42 | 3.67 |
| Water consumption (gal./pig/day) | 1.15 | 1.42 | 1.57 | 1.63 |

[a] Mixture of 3½ parts sodium sulfate, 3½ parts magnesium sulfate and 1 part sodium chloride.

[b] Feed remaining in feeders on September 3 was estimated.

## Summary

Since average daily gain, feed consumption and feed efficiency were better for all three lots given water with added salts than for the controls (water with no added salts), it appears that swine may be no more affected by saline waters than are cattle.

1/ Presented at South Dakota State College Swine Field Day, September 11, 1958.

Some scouring of the pigs, especially in lot 4, early in the experiment, apparently had no harmful effect on gains and general conditions.

Whether the increased average daily gain and feed efficiency of the pigs getting water with the added salt is real or is the result of greater water retention in the tissues, has yet to be determined.

It appears that standards of water quality established for cattle can be used for swine as well.