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Galvanized or Painted Steel Fence Posts

BULLETIN 400
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AGRICULTURAL ENGINEERING DEPARTMENT
AGRICULTURAL EXPERIMENT STATION
South Dakota State College—Brookings

Galvanized or Painted

Steel Fence Posts

By DENNIS L. MOE¹

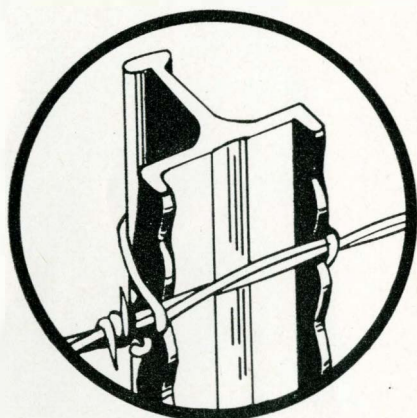
Good permanent fence lines perform a multitude of duties such as preventing livestock intrusion in crop land, indicating farm boundaries, improving farm appearance, confining livestock to grazing fields, and increasing the sale value of the farm.

One of the major items to consider in the erection of a new fence is the type of fence post to be used. What is the initial cost of the posts? How long will they last? What are the maintenance costs?

The purpose of this steel fence post research was to determine whether it is an economically sound practice to purchase galvanized steel fence posts rather than painted steel posts, purely from a standpoint of appearance and length of life of the post.

Specifications

One thousand 6½-foot, drab gray steel posts of the studded "T" type were set out at various places on the South Dakota State College farms. All the posts were set 2 feet in the soil, 15 feet apart, with the face of the post parallel to the fence line. Five hundred of the steel posts were factory galvanized and were purchased at a cost of 50 cents each. The additional 500 were common painted (dipped) steel posts purchased at 35 cents each. All of the 1000 posts were used to support a



STUDED "T"

Fig. 1. Studded "T" type steel post showing the face of the post parallel to the fence line.

heavy woven fence 48 inches high with No. 9 stay wires. Heavy concrete corner posts were used.

Common Painted Posts

In 1932, seven years after the posts were set, approximately 50 percent of the paint was missing on the common painted posts and considerable rust was evident. At this time 400 of the common painted posts were repainted with the following paints:

¹Agricultural Engineer, South Dakota Agricultural Experiment Station.

This steel fence post research was inaugurated in 1925 by Ralph L. Patty, Agricultural Engineer for the South Dakota State Experiment Station.

Number of Posts	Color	Type of Paint
100	Drab gray	Metallic zinc
100	Drab gray	Lead-oil, hand mixed
100	Drab gray	Lead-oil house paint, commercial
100	Drab gray	Titanium lead-oil, commercial

All the painting was brushed on in as nearly an identical manner as possible. The original paint applied by dipping lasted approximately 7 years, while after repainting with a brush, the covering lasted approximately 10 years. The metallic zinc paint covered the best and also painted the most posts to the gallon. Check posts were left without repainting in each group of repainted posts. At this particular time, the galvanized steel posts were left untouched as originally erected.

Stop watch time for repainting steel posts with metallic zinc paint was found to be 4 minutes per post. Labor cost was calculated at 60 cents per hour which made a labor cost of 4 cents per post.

One gallon of metallic zinc paint purchased at a cost of \$4.55 per gallon cov-

ered 120 steel posts, making a paint cost of 3.8 cents per post.

The two items listed above made the total cost of repainting 7.8 cents per post.

Galvanized Posts

After 12 years of exposure a small number of pinhead size blisters were visible on less than half of the galvanized steel posts. At the completion of the 25-year testing period, blisters, ranging from pinhead size to one-eighth inch diameter, were evident in rather large numbers. These blisters were scattered at random over each post both above and below the soil surface with a tendency for additional blisters to be present where the fence line was shaded by a row of elm trees. A relatively small number of the

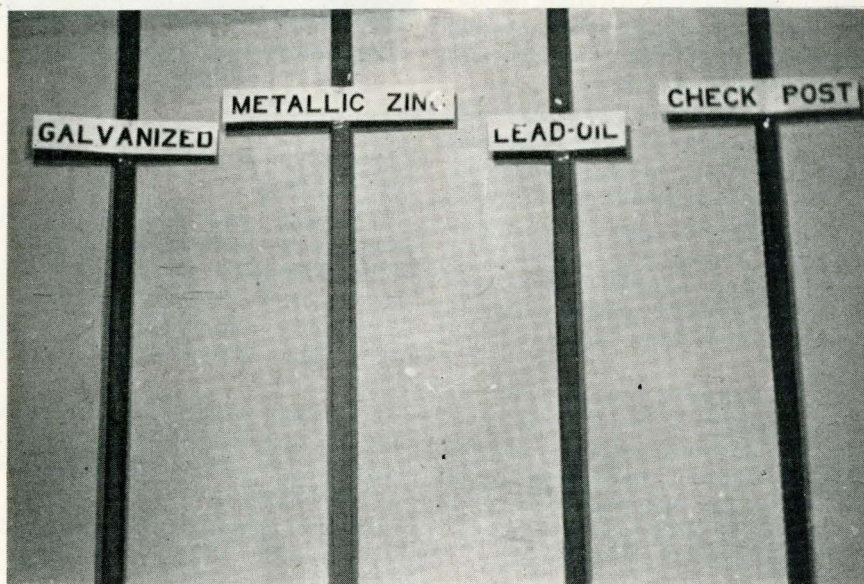


Fig. 2. Four types of fence post coverings after 15 to 25 years exposure.

blisters were cracked open showing a small rust spot within. However, this minute spot-rusting was found to be negligible.

Galvanized posts that supported an inferior grade of woven wire were badly stained after 25 years, but no additional rust beyond the blister rusting was present in this particular portion of the fence line. Some discoloration was also visible where fence line weeds had been burned.

The galvanized posts were found to be in very good condition both in appearance and serviceability after a 25 year period.

Conclusions

From observation and data secured, the following conclusions are drawn:

1. In South Dakota, metallic zinc-coated posts will give as good service as galvanized posts and in addition may be purchased at a lower initial cost.

2. When erecting a new fence, a sufficient difference in price may exist between common painted steel posts and galvanized steel posts to warrant the purchasing of the ungalvanized posts and repainting them with a metallic zinc paint after a 5-year period.

3. Galvanized steel posts, when supporting a good grade woven wire, may be expected to be very good in both appearance and serviceability after 25 years.

4. Metallic zinc paint surpasses lead-oil paints by a wide margin, both in appearance and durability; it covered equally as well as galvanizing and was in good condition after an 18-year test period.

5. Lead-oil paints used on steel fence posts generally fail by chalking rather than by blistering, peeling, or flaking. The paints used in this research may be ranked in the following order when comparing durability and appearance:

Commercial lead-oil house paint.

Hand-mixed lead-oil paint.

Commercial titanium lead-oil paint.

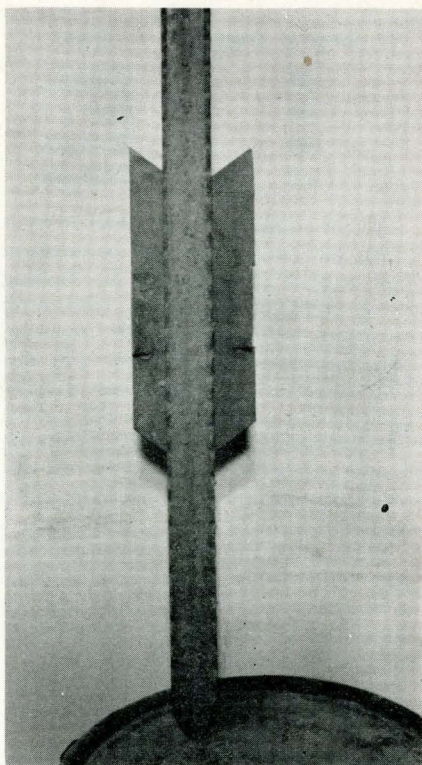


Fig. 3. Pin point blistering on galvanized steel post.

6. Application of common lead-oil paints by brush is far superior to application by dipping.

7. Repainted steel posts with lead-oil paints may be expected to be badly faded, dull, and blotchy in appearance after 10 years but still cover quite satisfactorily. However, repainting with lead-oil paints should be done at least every 10 years.

8. Common paint on new steel posts may be expected to fade in 3 years, definitely fail in 5 years, and be black with rust after 12 years.

9. Color brightness of steel posts in a fence line makes a greater difference in the appearance of a fence than one usually realizes.