Remove Metal from Livestock Feeds....

to prevent "hardware disease"

Dan J. McLellan
Associate Agricultural Engineer

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Various types of equipment have been developed to remove iron objects from feeds. Ground or granular feeds can be cleaned of loose iron with simple, inexpensive equipment. Fibrous, stringy material such as hay presents a more difficult problem.

MANUAL CLEANING DEVICES

Plate Magnets (Fig. 1, 2, 3, 4)

The plate magnet is the simplest and least expensive device for removing iron objects. It is available in different sizes to fit different flows of feed. It can be used in different ways as shown in the illustrations.

Fig. 1
Simple adaptation of a plate magnet mounted in a chute.

Fig. 2
Plate magnets may also be mounted above a belt conveyor.

Fig. 3
in a cup elevator...

Fig. 4
...on a feed grinder.

Duct or Hump Magnets (Fig. 5, 6)

This is an adaptation of the plate magnet where two such magnets are installed in either a pneumatic or a gravity system as illustrated. In pneumatic systems a velocity below 8,000 feet per minute must be maintained for effective iron removal. A minimum velocity of 5,000 feet per minute is necessary to reduce plugging, so if a duct magnet is used on a pneumatic system the velocity should be between 5,000 and 8,000 feet per minute.
Magnetic Grate (Fig. 7)

A rotating grate of rod magnets will remove loose iron from most feed materials. Grates are available in a range of sizes to fit most installations. Maximum rotating speed should be 30 rpm with 15 to 20 rpm an average speed.
SELF-CLEANING DEVICES

Magnetic Drum (Fig. 8)

In this system a drum rotates around a half-circle of permanent magnet. The ground or granular material being cleaned is dropped onto the drum by gravity feed. The clean feed drops off the side of the drum. The iron is carried past the magnet, then drops, hence a magnetic drum is self-cleaning.

Magnetic Pulley (Fig. 9)

With the magnetic pulley the grain or ground feed drops off the belt at the pulley. The iron rides the belt as long as it is contact with the pulley, and is separated from the material being cleaned.

Suspended Magnets (Fig. 10)

Magnets may be suspended over moving belts to remove loose iron from a thin layer of material. An electromagnet may be used, permitting easy cleaning by turning off the electricity, or a self-cleaning unit, as illustrated, may be used. In the latter, the magnet and belt operate crossways of the conveyor so the iron is carried over the side of the conveyor belt.
It is important that the vendor recommend the magnet and engineer the installation for iron removal. Characteristics of magnets vary. Some magnets are weakened by dis-assembly and re-assembly. Welding may reduce the strength of a magnet. These details are known by the manufacturer; obtain and observe his recommendations.

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