

LD
5655
A762
no. 155
c.2

Dairy guidelines

EXTENSION DIVISION

VIRGINIA POLYTECHNIC INSTITUTE

BLACKSBURG, VIRGINIA

VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY LIBRARY



Series 155 - March 1970

Small Grain for Silage

W. R. Murley, Extension Specialist, Dairy Science
S. B. Carr, Extension Specialist, Forage Evaluation
C. E. Polan, Associate Professor, Dairy Science
H. E. White, Extension Specialist, Forages

Small grain crops make excellent silage. Because barley and wheat yield more grain, they are usually better than oats or rye. The new varieties being developed, such as Blueboy wheat, yield much more grain than older varieties. The high yield of grain contributes to high energy silage.

Barley, wheat, or oats for silage must be harvested in the soft dough stage to get maximum yield of energy and protein per acre. At this stage of maturity these nutrients are highly digestible, and the silage can be made by direct-cut methods without wilting. Furthermore, the plant is harvested at a time when maximum energy and protein is deposited in the grain, before the grain becomes so hard that it passes through the cow undigested, and before the leaves and stems become extremely fibrous. The additional nutrients contributed by the grain in the soft dough stage off-sets the loss of nutrients in the leaves and stems. The T.D.N., crude protein, and crude fiber of these silages are comparable to excellent corn silage.

Rye harvested in the boot stage of maturity, and wilted prior to ensiling makes a higher quality silage than when cut in the soft dough stage. It permits earlier harvesting and planting of subsequent crops. Yields usually are not as great per acre nor is quality of silage as good as small grains harvested in the soft dough stage.

Small grain silage can be stored in any type silo that is used for corn silage. Time is a more important factor in making excellent quality small grain silage compared to corn. The chief reason for this is that small grains mature very rapidly. They remain in the optimal stage of maturity for only 3-6 days. During hot, dry weather they mature faster than if the weather is cool and damp.

Table 1. Composition of Barley, Wheat, and Corn Silage⁽¹⁾

| Silage Type | Stage of Maturity | As Fed Basis(%) ⁽²⁾ | | | |
|-------------|---------------------------|--------------------------------|--------|------|------|
| | | T.D.N. | E.N.E. | C.P. | D.P. |
| Corn | Hard Dough | 23.2 | 18.6 | 2.8 | 1.5 |
| Barley | Soft Dough ⁽¹⁾ | 23.3 | 18.8 | 3.3 | 1.8 |
| Wheat | Soft Dough ⁽¹⁾ | 23.6 | 18.9 | 3.5 | 1.9 |

(1) Average composition of samples analyzed in V.P.I. Forage Testing Lab, 1968-69.

(2) Adjusted to 35% dry matter.

Small grain, especially barley, which matures earlier than wheat, harvested for silage may fit in a double cropping system. In some areas of Virginia it is possible to follow the harvesting of small grain silage with a crop of corn for silage. This is possible if the moisture in the soil is adequate for a good stand. Also stubble planting may be possible. A double cropping system using corn following small grain may be too risky, but another possibility is the use of a grain-type sorghum. It is usually safe to follow the harvesting of rye in the boot stage with a corn crop.

The use of barley silage as a forage for high producing dairy cows has been studied at V.P.I. If properly harvested and stored to prevent spoilage it is an excellent feed. During the summer of 1969, cows were fed soft dough barley silage in excess of appetite as the only forage. Cows eating a 36% properly fortified pelleted protein supplement, fed at a rate of 1:6 (one lb. conc. per 6 lbs. milk per day) produced equally as well as cows under the other treatments and resulted in a considerable saving in feed cost. Although only barley silage was used in these studies, it is reasonable to assume that other small grain silages would support milk production as well.

Small grain harvested for silage in the spring will help stretch your silage supply. Also, it allows double use of your silos and feeding system, as well as double land use. By having silage to feed during the summer months, the "summer slump" in milk production may be prevented.

Table 2. Composition of Corn, Barley, and Wheat Silage⁽¹⁾

| Silage Type | Stage of Maturity | Dry Matter % | Dry Matter Basis (%) | | |
|-------------|-------------------|--------------|----------------------|------|--------|
| | | | C.P. | C.F. | T.D.N. |
| Corn | Hard Dough | 37 | 8 | 25 | 66 |
| Barley | Soft Dough | 41 | 9 | 27 | 65 |
| Wheat | Soft Dough | 51 | 10 | 25 | 66 |

(1) Average composition of samples analyzed in V.P.I. Forage Testing Lab, 1968-69.