

# Findings Show 55-65% Moisture Content Best Range For Haylage

Now that haylage has won its spurs as a forage feed, it's time to take a closer look at it from the standpoint of the most effective methods of production and utilization.

How critical is the moisture level? What is the best harvesting and curing system? Where does haylage fit into the overall feeding program?

A moisture level ranging widely as 35 to 65% has been regarded as satisfactory. Now there is evidence

should be more tightly controlled, depending on how you plan to ensile.

For an oxygen-free sealed silo, the accepted ideal moisture level is 35 to 40%. But indications are this doesn't hold for haylage made in a conventional silo.

For conventional silos, an average moisture of about 50% has been regarded as acceptable. Recent research, however, indicates the range should be closer to 55 to 65%.

Cornell scientists have found that 55-65% moisture haylage is highly palatable and that milk production per pound of dry matter is greater than with higher moisture silage.

Alfalfa haylage at about 65% moisture also is highly efficient for feeding beef cattle, according to trials at Michigan State University.

"Under no conditions should the haylage be more than 70% moisture," says Hugh Henderson, Michigan State researcher. "Higher moisture than this makes for a poorly fermented, unpalatable feed."

Research by USDA scientists at Beltsville indicates that for best results the moisture content should not drop below 50%.

For harvesting and curing haylage, the conventional method has been to mow and condition and then let the forage wilt in the swath before raking.

Now USDA researchers, headed by Dr. C. H. Gordon, have determined that use of a windrower, which mows, conditions and windrows in one operation,

does a better job for making haylage — even in humid areas. The scientists decided losses caused by leaching and slow drying appeared minor compared to physical losses from raking.

Because of weather problems when making first-crop hay in humid areas, Dr. Gordon suggests haylage as a best bet. Second and third cuttings, he says, are the logical choice for hay.

Where does haylage fit into the overall feeding program?

Haylage should be used as a high-protein, low-energy roughage, says Dr. T. W. Perry, Purdue University.

In an energy comparison trial at Purdue, a full feed of haylage plus 10 pounds of corn had a beef feeding value equal to a full feed of corn silage plus 2.3 pounds of corn and two pounds of Supplement A.

"It is hardly fair to compare haylage and corn silage as roughages," Dr. Perry says. "Corn silage is a higher energy, low protein roughage, while haylage is a high protein, low energy roughage."

Dr. Perry points out that haylage can replace one half, or more, of the supplemental protein required in fattening rations

which contain no haylage.

South Dakota State College researchers have concluded that alfalfa haylage is better used in a dairy cow feeding program when corn silage furnishes part of the roughage. Alfalfa haylage, they say, should be used as a major source of protein rather than as a source of energy in providing a balanced ration.

In tests at Pennsylvania State University, a combination of mixed haylage, corn silage and mixed hay proved to be a highly efficient dairy feed.

Total daily feed costs per cow were only 54 cents when fed 29 pounds of haylage, 36 pounds of corn silage and six pounds of hay.

Based on a return of \$1.87 per day, income over feed costs came to \$1.33. For corn silage and mixed hay, \$1.21; for haylage alone, \$1.30.

Very little soybean meal was needed with the corn silage haylage-hay mix, and no vitamin A was required. Total added ingredient costs therefore were less for the combination.

Penn State has been comparing results for several years, using a gas tight silo. In tests with red clover, both haylage and direct-cut silage proved to be excellent feeds, but dry matter loss was only 15% with haylage. The direct-cut silage showed a 24% loss in dry matter when fed out.

The effects of using overly dry forage in making silage were shown as part of the Penn State work. When average moisture levels were about 40%, with some loads much closer to dry hay, dry matter losses amounted to 6% for haylage. When the same material was stored as direct-cut silage, losses went over 15%.

When Penn State stored 48% average moisture timothy-alfalfa haylage in conventional concrete stave silos, losses were considerable. Some of the loads actually went into the silo at 20% moisture. This seems to bear out recommendations that haylage should always be over 50% moisture.

The advantages of haylage are spelled out by scientists at the University of Wisconsin

1. Cows consume more dry matter than when fed higher moisture silages.
2. No objectionable odors
3. Reduced freezing problems.
4. Efficient mechanization of the feeding operation.
5. Reduced exposure to weather damage.

Disadvantages include:

1. Considerable care must be taken to make good haylage in conventional silos
2. More exposure to weather damage than direct-cut silage.
3. Gumming may clog some equipment not equipped with a water inlet.

Based on their own research observations as well as reports from farmers, the Wisconsin scientists offer these recommendations for making good quality haylage:

1. Cut the crop early (one-tenth to mid-bud stage for alfalfa).
2. Chop as short as possible.
3. Use equipment that will reduce drying time in the field as much as possible.
4. Begin chopping at about 50-55% moisture (This may be too low in view of the findings that suggest average moisture in the 55-65% range works out better)
5. Use covers on forage wagons to reduce field losses
6. Store material in a good, tight silo.
7. Fill as rapidly as possible.
8. Fill uniformly. In large silos, distribute forage while filling.
9. Level top of silage if it is necessary to stop filling for more than a half day.
10. Cover the silage with a plastic cap.

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