

Interpretation of ammonia nitrogen values in hays

During an ordinary haymaking operation, the fermentation processes are limited to the phase following the swathing, when the damp grass remains in the lower layer; as humidity decreases, these processes (which in this phase are mainly of the lactic type) progressively decrease to stop at about 10-12% humidity.

Prolonged accumulations in heaps or stowage in barns with unsuitable humidity can determine more relevant phenomena of fermentation (heating) by numerous environmental microorganisms which use both carbohydrates and proteins as substrates. Among these, molds can easily take over, especially with progressively lower humidity values.

The intense microbial or fungal activity that causes proteolytic fermentations in mowed wet forage is completely inhibited by the final drying (naturally in the open fields or forced with dryers or turbo dryers), however the more or less serious consequences on quality and health remain of the product: from the simple loss of nutritional value to contamination with mycotic toxins or degradation products of the various substrates, in particular the protein one (NH₃, biogenic amines, nitrogenous fractions).

Ammoniacal nitrogen, as occurs for silage, can represent a good indicator of fermentation, or at least, a value above the norm (approximately higher than 0.8-1% Namm./Ntot.), not one can only explain that with an uncontrolled fermentation; however, this event represents a critical point in the food production process such as to be judged "at risk" and, possibly, to be related to problems attributable to the presence of the contaminants listed above.

Example of values as a possible reference:

	Dry Protein	NH₃ (Dry)	Namm./Ntot.	pH
Normal Hay	12,0	160	0,7	6,30
Normal Hay	19,5	230	0,7	6,00
Fermented Hay	11,7	388	2,0	5,15
Fermented Hay	17,05	728	2,6	5,15
Hay Silage	7,75	652	4,3	5,13
Hay Silage	17,63	661	2,3	5,93