

How Thirty Plus can benefit your hay

- ✓ No more waiting on the weather, bale when you're ready at moistures up to 30%
- ✓ Start working earlier in the day and later in the evening
- ✓ Bale at higher moistures without worry of heating or mold damage
- ✓ Hay treated with Thirty Plus is greener and higher in feed value
- ✓ When compared to dry preservatives and inoculants, Thirty Plus is easier to apply, gives more consistent coverage, and won't clog application equipment
- ✓ Works well on ALL types of hay
- ✓ Non-corrosive buffered formula won't harm expensive baling equipment, the user, or livestock
- ✓ Thirty Plus treated hay can be stored for years and will look at feed as well as when it was first baled
- ✓ Thirty Plus is ok to store outside as it won't freeze and won't lose effectiveness over time



Thirty Plus is available in Four Convenient Sizes for Any Size Baling Operation

Large square baler operators will find a 200 or 270-gallon tote goes a long way and keeps them in the field as long as they need. A 50-gallon drum is enough for any size baler and will treat up to 100 tons of hay. Smaller operations may prefer to start with an easy to store 13-gallon drum. In any size, Thirty Plus is one of the most effective preservatives on the market.



Mini Drum
120 lbs./13 Gal.
54 kg/50.5 L



Drum
450 lbs./50 Gal.
204 kg/189.3 L



Totes
1,800 lbs./200 Gal.*
818 kg/757 L
*Not Available in Canada

2,380 lbs./270 Gal.
1,082 kg/1,020 L

Thirty Plus has been on the market over 10 years and is a clear favorite when it comes to preserving bales.

Quality over Quantity

Case IH is the market leader in hay preservative and hay preservative applicators, and there are some significant risks using inferior preservatives and application equipment: mold in the bale, combustion, financial loss or loss of customers who are unsatisfied with the hay quality.

Case IH quality and brand reliability go hand in hand, bringing you the best hay equipment to make the best hay.



www.caseih.com



www.harvesttec.com/caseih



THIRTY PLUS™

Buffered Acid Hay Preservative



Why Does Hay Spoil?

Mold

At moistures 16% to 30%, mold, fungi and yeasts start to multiply, consisting of mycelium and spores, giving the hay a white and dusty appearance, and can also produce harmful mycotoxins. Mold growth also causes heating.

Heat

- Hay baled at moistures 16% to 22% will heat to over 115°F, causing discoloration and will loss of its fresh smell
- Between 23% and 26% hay can reach temps of over 120°F in storage, causing brown to black caramelized hay
- Moisture levels of over 27% can result in heating to 140°F and above and may even combust



Treated Hay



Untreated Hay

The value of higher moisture hay

Baling Alfalfa at 22% vs. 14% moisture

- More tons of dry matter harvested +10%
 - Extra weight from moisture retained +4%
- Total +14%**

- 24 points higher relative feed value

Mechanical Properties Affecting Leaf Loss in Alfalfa", W.K. Bilanski, CANADIAN AGRICULTURAL ENGINEERING, Vol. 15, No. 1, June 1973.

How Thirty Plus hay preservative works

Propionic Acid

Buffered so it has a neutral pH, and it will not corrode equipment, yet is still effective enough to stop the growth of mold and prevent heating

Citric Acid

Helps maintain both the fresh smell and green color of hay, even after it's stored

Surfactant

Makes particle size uniform for even dispersing and less risk of under application due to wind drift

Types of Hay Preservatives

There are many types of preservative used on baled hay to prevent spoilage at moistures over 16%. None of them work effectively over 30%, so the operating window in which preservatives should perform is between 16% and 30% moisture. The two most common preservatives used are buffered propionic acid and hay inoculants.

Buffered Propionic Acid - Buffered Propionic acid is the most popular type of preservative used on hay between 16% and 30% moisture. While other acids can be used to preserve hay, propionic is the most effective in controlling the molds commonly found in hay. Un-buffered acid has a pH of less than 1 and is therefore very corrosive. The buffering process can raise the pH to 6, the same as rain water, and is much easier to use than straight acid. However, in raising the pH, careful manufacturing procedures must be followed to prevent neutralizing the propionic acid making it much less effective. A truly reacted buffered propionic acid will keep the effectiveness of straight acid and that is what makes Case-IH Thirty plus effective on hay up to 30% moisture.

Hay Inoculants - Inoculants are live bacteria introduced at time of baling to stimulate fermentation of the bale. Due to many of the unknown conditions for fermentation to start, it is not a reliable way to preserve hay baled above 16% moisture. In fact, in University studies, adding inoculants to the hay actually increased the level of spoilage.

Bacterial Inoculants for the preservation of Alfalfa Hay, C.A. Rotz, JOURNAL OF PRODUCTION AGRICULTURE, Vol. 1, no. 4, 1988.

Other compounds

Other compounds found in hay preservatives have not proven to be as effective as buffered propionic acid. Some of the alternative types of preservatives seen from time to time are:

Potassium sorbate - It is an excellent preservative for hay but is eight times more expensive than propionic acid. Therefore, to be price competitive, competitors relying on potassium sorbate have cut the level of active ingredient way back, leading to very weak products that will not keep hay from spoiling.

Silicone - This is a known wood preservative. It coats and seals the surface of wood to help keep out mold. The complication in hay is that much of the moisture is on the inside of the plant and coating the surface with silicone has proven ineffective.

Sulphur - This is a low-cost preservative with significantly lower strength in controlling mold. Compared to buffered propionic acid, application rates should be five times higher. Sulphur attacks the UV protection in plastics, and it may lead to premature deterioration of plastic twine and net wrap, resulting in broken bales.

To make a comparison to an alternative product you are considering, use the chart at right to evaluate your choices.



Not all hay preservatives are created equal.

Buffered Propionic Acid

Brand	Propionic Acid-Labeled	Propionic Acid-Tested	Buffered vs. Blended	Citric Acid	Surfactant	pH	Specific Gravity	Color
Thirty Plus	64.5%	64.5%	Buffered	5%	T-DET DD5	6	1.06	Light Green
Competitor A	68%	56%	Blended	None	None	6.4	1.04	Light Green
Competitor B	68%	62%	Blended	2.5%	None	5.8	1.06	Dark Green
Competitor C	68%	62%	Blended	None	None	6.4	1.06	Dark Green
Competitor D	63%	53.2%	Blended	None	None	6.2	1.06	Light Green

Other Compounds

Product	Type	Active Ingredient Level	Application Rates	Moisture Range	Anti-oxidant	Sufactant	EPA Registered*
Thirty Plus	Buffered Acid	64.5%	4 to 16 pounds per Ton	16%-30%	YES	YES	YES
Competitor A	Inoculant	<1%	Fixed @ 2 Pounds/Ton	16%-22%	No	No	No
Competitor B	Silicone	2%	Fixed @ 4 Pounds/Ton	16%-25%	No	No	No
Competitor C	Potassium Sorbate	3%	4 to 12 Pounds/Ton	16%-30%	No	No	No

* Before selling or using a hay preservative be sure to confirm the product meets federal and state registration requirements.

Thirty Plus Hay Preservative Ingredients

Active Ingredient	
Propionic Acid	64.5%
Citric Acid	5.0%
Other Ingredients	
Ammonium Hydroxide, Deionized Water, Dodecylphol Ethoxylate, Green Dyes	30.5%
EPA Registration #73877-1-74898	Total 100%

Application Rates Large Square Bales

Hay Moisture	Stem Moisture	Dew Moisture Only
Under 22%	6 lbs/ton	3 lbs/ton
23% - 26%	10 lbs/ton	8 lbs/ton
27% - 30%	DO NOT BALE	16 lbs/ton

Small Square and Round Bales

Hay Moisture	Stem Moisture	Dew Moisture Only
Under 22%	4 lbs/ton	2 lbs/ton
23% - 26%	8 lbs/ton	6 lbs/ton
27% - 30%	16 lbs/ton	12 lbs/ton

Not recommended on any hay above 30% moisture.