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Adding Water to Grain, Silage, or Hay

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Water additions to feeds stored as high-moisture grain, silage, haylage, dry hay, or dry rations may be desirable for several reasons.

When chopped forage is too dry to pack, adding water to the top layer (2 to 4 ft.) will aid in getting a good pack on top and will provide weight to help pack the drier material in the lower layer. Most silages will pack well if chopped finely at a moisture content ranging from 60-65 percent (35-40 percent dry matter).

Water is added for reconstitution of corn or milo. Water added to high-moisture grain to equalize moisture content as stored eliminates the need for ration adjustment during the feeding period because of changes in the moisture content of the grain fed. Water added to dry hay or dry rations reduces dust and feed wastage.

Using water meters to measure the water added, along with periodic moisture tests of the material stored, contributes to accuracy in adjusting moisture to the desired level. Water should be mixed with the grain or forage as it is ensiled rather than sprinkled on top of the material after the silo is filled. When grains are stored in ground form, water should be added after the grain is ground. For dry hays, water should be added after grinding.

Water is usually added to dry, chopped hay in a mixer wagon before feeding. If dry hay is the sole dietary forage, reconstituting this hay with water to about 60 percent dry matter will allow a total mixed ration to be fed with minimal dustiness and grain particle segregation. Some producers have successfully ensiled reconstituted hay in Harvestores (oxygen-limiting silos) at approximately 50 to 60 percent dry matter. In these cases, water is added to the dry chopped forage at the blower.

Potential advantages of feeding reconstituted forage rather than dry hay include: increased forage consumption, greater forage palatability, and less feed wastage because cattle consume more of the forage fed, including coarse, stemmy forage. Adding water can be especially advantageous when feeding poor-quality forage. When feeding dairy cows, remember to keep total ration dry matter between 50 and 85 percent to avoid reductions in feed intake. Adding too much water to dry forage can depress intake and milk production.

Table 1. Amount of Water to Be Added in Ensiling High Moisture Grain

% Moisture in Grain	*% Moisture Desired*															
	30	*29*	*28*	*27*	*26*	*25*	*24*	*23*	*22*	*21*	*20*	*19*	*18*	*17*	*16*	*15*
29	3.4															
28	6.9	3.4														
27	10.3	6.8	3.3													
26	13.7	10.1	6.7	3.3												
25	17.1	13.5	10.0	6.6	3.2											
24	20.6	16.9	13.3	9.9	6.5	3.2										
23	24.0	20.3	16.7	13.1	9.7	6.4	3.2									

22	27.4	23.6	20.0	16.4	13.0	9.6	6.3	3.1								
21	30.8	27.0	23.3	19.7	16.2	12.8	9.5	6.2	3.1							
20	34.3	30.4	26.6	23.0	19.4	16.0	12.6	9.3	6.1	3.0						
19	37.7	33.8	30.0	26.3	22.7	19.2	15.8	12.5	9.2	6.1	3.0					
18	41.1	37.2	33.3	29.6	25.9	22.4	18.9	15.6	12.3	9.1	6.0	3.0				
17	44.5	40.5	36.6	32.9	29.2	25.6	22.1	18.7	15.4	12.1	9.0	5.9	2.9			
16	48.0	43.9	40.0	36.1	32.4	28.8	25.2	21.8	18.4	15.2	12.0	8.9	5.8	2.9		
15	51.4	47.3	43.3	39.4	35.6	32.0	28.4	24.9	21.5	18.2	15.0	11.8	8.8	5.8	2.9	
14	54.8	50.7	46.6	42.7	38.9	35.2	31.6	28.0	24.6	21.2	18.0	14.8	11.7	8.7	5.7	2.8
13	58.2	54.0	50.0	46.0	42.1	38.4	34.7	31.1	27.7	24.3	21.0	17.8	14.6	11.6	8.6	5.6
12	61.7	57.4	53.3	49.3	45.4	41.6	37.9	34.3	30.7	27.3	24.0	20.7	17.5	14.4	11.4	8.5
11	65.1	60.8	56.6	52.6	48.6	44.8	41.0	37.4	33.8	30.4	27.0	23.7	20.5	17.3	14.3	11.3
10	68.5	64.2	60.0	55.8	51.9	48.0	44.2	40.5	36.9	33.4	30.0	26.6	23.4	20.2	17.1	14.1

1 gallon of water = 8.34 pounds

Table 2. Amount of Water to Be Added in Ensiling Haylage or Silage

% Moisture in Grain	*% Moisture Desired*															
	65	*64*	*63*	*62*	*61*	*60*	*59*	*58*	*57*	*56*	*55*	*54*	*53*	*52*	*51*	*50*
64	6.9															
63	13.7	6.7														
62	20.6	13.3	6.5													
61	27.4	20.0	13.0	6.3												
60	34.3	26.6	19.4	12.6	6.1											
59	41.1	33.3	25.9	18.9	12.3	6.0										
58	48.0	40.0	32.4	25.2	18.4	12.0	5.8									
57	54.8	46.6	38.9	31.6	24.6	18.0	11.7	5.7								
56	61.7	53.3	45.4	37.9	30.7	24.0	17.5	11.4	5.6							
55	68.5	60.0	51.9	44.2	36.9	30.0	23.4	17.1	11.2	5.5						
54	75.4	66.6	58.3	50.5	43.0	36.0	29.2	22.8	16.7	10.9	5.3					
53	82.2	73.3	64.8	56.8	49.2	42.0	35.1	28.5	22.3	16.4	10.7	5.2				
52	89.1	79.9	71.3	63.1	55.3	48.0	40.9	34.3	27.9	21.8	16.0	10.4	5.1			
51	95.9	86.6	77.8	69.4	61.5	54.0	46.8	40.0	33.5	27.3	21.3	15.6	10.2	5.0		
50	102.8	93.3	84.3	75.7	67.6	60.0	52.6	45.7	39.0	32.7	26.6	20.9	15.3	10.0	4.9	
49	109.6	99.9	90.7	82.0	73.8	65.9	58.5	51.4	44.6	38.2	32.0	26.1	20.4	15.0	9.8	4.8
48	116.5	106.6	97.2	88.4	79.9	71.9	64.3	57.1	50.2	43.6	37.3	31.3	25.5	20.0	14.7	9.6
47	123.3	113.2	103.7	94.7	86.1	77.9	70.2	62.8	55.8	49.1	42.6	36.5	30.6	25.0	19.6	14.4
46	130.2	119.9	110.2	101.0	92.2	83.9	76.0	68.5	61.3	54.5	48.0	41.7	35.7	30.0	24.5	19.2
45	137.0	126.6	116.7	107.3	98.4	89.9	81.9	74.2	66.9	60.0	53.3	46.9	40.8	35.0	29.4	24.0
44	143.9	133.2	123.1	113.6	104.5	95.9	87.7	79.9	72.5	65.4	58.6	52.1	45.9	40.0	34.3	28.8

43	150.7	139.9	129.6	119.9	110.7	101.9	93.6	85.6	78.1	70.9	63.9	57.3	51.0	45.0	39.2	33.6
42	157.6	146.5	136.1	126.2	116.8	107.9	99.4	91.4	83.7	76.3	69.3	62.6	56.1	50.0	44.0	38.4
41	164.4	153.2	142.6	132.5	123.0	113.9	105.3	97.1	89.2	81.8	74.6	67.8	61.2	55.0	48.9	43.2
40	171.3	159.9	149.1	138.8	129.1	119.9	111.1	102.8	94.8	87.2	79.9	73.0	66.3	60.0	53.8	48.0

1 gallon of water = 8.34 pounds.

Table 3. Amount of Water to Be Added to Dry Hay for Ensiling or to a Dry Ration to Reduce Dust

% Moisture in Grain	*% Moisture Desired*																			
	50	*48*	*46*	*44*	*42*	*40*	*38*	*36*	*34*	*32*	*30*	*28*	*26*	*24*	*22*	*20*	*18*	*16*	*14*	*12*
48	9.6																			
46	19.2	9.2																		
44	28.8	18.4	8.9																	
42	38.4	27.7	17.8	8.6																
40	48.0	36.9	26.6	17.1	8.3															
38	57.6	46.1	35.5	25.7	16.5	8.0														
36	67.1	55.3	44.4	34.3	24.8	16.0	7.7													
34	76.7	64.6	53.3	42.8	33.1	24.0	15.5	7.5												
32	86.3	73.8	62.2	51.4	41.3	32.0	23.2	15.0	7.3											
30	95.9	83.0	71.1	60.0	49.6	40.0	30.9	22.5	14.5	7.1										
28	105.5	92.2	79.9	68.5	57.9	48.0	38.7	30.0	21.8	14.1	6.9									
26	115.1	101.5	88.8	77.1	66.2	56.0	46.4	37.5	29.1	21.2	13.7	6.7								
24	124.7	110.7	97.7	85.6	74.4	63.9	54.2	45.0	36.3	28.2	20.6	13.3	6.5							
22	134.3	119.9	106.6	94.2	82.7	71.9	61.9	52.5	43.6	35.3	27.4	20.0	13.0	6.3						
20	143.9	129.1	115.5	102.8	91.0	79.9	69.6	60.0	50.9	42.3	34.3	26.6	19.4	12.6	6.1					
18	153.5	138.4	124.3	111.3	99.2	87.9	77.4	67.4	58.1	49.4	41.1	33.3	25.9	18.9	12.3	6.0				
16	163.1	147.6	133.2	119.9	107.5	95.9	85.1	74.9	65.4	56.4	48.0	40.0	32.4	25.2	18.4	12.0	5.8			
14	172.7	156.8	142.1	128.5	115.8	103.9	92.8	82.4	72.7	63.5	54.8	46.6	38.9	31.6	24.6	18.0	11.7	5.7		
12	182.3	166.0	151.0	137.0	124.0	111.9	100.6	89.9	79.9	70.5	61.7	53.3	45.4	37.9	30.7	24.0	17.5	11.4	5.6	
10	191.8	175.2	159.9	145.6	132.3	119.9	108.3	97.4	87.2	77.6	68.5	60.0	51.9	44.2	36.9	30.0	23.4	17.1	11.2	5.5

1 gallon of water = 8.34 pounds.

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