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Feeding Iodine to Dairy Cattle

Ag Facts

Michigan State University Extension Service

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Dairy farmers are urged to examine the amount of iodine currently being fed to their dairy herd and limit iodine intake to recommended nutritional allowances. The dairy industry and health authorities are concerned that the iodine content of some farm milk supplies is higher than desirable and should be reduced immediately.

Iodine is contained in most commercial protein, mineral and trace mineralized salt supplements. Feeding "Medicated" salt (.141% iodine as EDDI) or excessive iodine from several sources results in excessive iodine in milk and is not justified for preventing footrot or subclinical infections of cattle.

GUIDELINES

Feed only one source of iodine!

Milking and dry cows fed *only one source* of supplemental iodine will receive adequate iodine to prevent iodine deficiency and goiter under ordinary conditions in Michigan.

SOURCE A: Trace Mineralized or Iodized Salt (.007 to .01% iodine)

1% in grain ration (20 lb per ton) or .35 to .45% of total ration dry matter or free choice—3 to 4 ounces per head daily—dry cows 1 to 2 ounces per head daily.

SOURCE B: Commercial Mineral Supplement (.007 to .01% iodine)

1% in grain ration (20 lb per ton) maximum 40 lb/ton or .35 to .5% of total ration dry matter or free choice.

SOURCE C: Commercial Protein Supplement—Fortified With Minerals and Vitamins (.0004 to .0005% iodine)

As required to balance ration for protein depending on protein content of forages fed.

Feeding according to these guidelines will provide approximately .5 ppm supplemented iodine in total ration dry matter or 6 to 15 milligrams iodine per head daily as recommended to prevent deficiency and goiter. Milk will then contain .1 to .2 ppm iodine (100 to 200 micrograms per liter) which is well above the level considered approaching iodine deficiency in cattle (less than .020 ppm or 20 micrograms per liter in milk). Milk from cows fed 40 or more milligrams iodine per head daily may exceed the recommended maximum .5 ppm (500 micrograms iodine per liter milk).

Check iodine intake—The amount of iodine (milligrams) provided by feeding various amounts of supplements with given iodine content (percent) is shown in Tables 1 and 2. Determine iodine intake from each supplement fed and add to find total daily intake. Adjust intake to fall within recommendations.

Mixed grain rations for milking cows should contain:

- minimum 600 milligrams iodine per ton (2000 lb) = .3 mg./lb.
- normal 900 milligrams iodine per ton (2000 lb) = .45 mg./lb.
- maximum 1200 milligrams iodine per ton (2000 lb) = .6 mg./lb.

The amounts (milligrams) of iodine provided by

TABLE 1. Iodine intake from feeding various amounts of protein supplement with given iodine content.

Iodine Content* of Protein Supplement		Protein Supplement Fed Per Head Daily					
		Pounds					
		1	2	3	4	5	6
%	ppm milligrams					
.0001	(1)	.45	.9	1.36	1.82	2.3	2.7
.0002	(2)	.91	1.8	2.72	3.64	4.5	5.4
.0003	(3)	1.0	2.7	4.08	5.45	6.8	8.2
.0004	(4)	1.8	3.6	5.44	7.27	9.1	10.9
.0005	(5)	2.3	4.5	6.8	9.09	11.3	13.6
.001	(10)	4.5	9.1	13.6	18.2	22.7	27.3
.002	(20)	9.1	18.2	27.2	36.4	45.4	54.5
.003	(30)	13.6	27.3	40.8	54.5	68.1	81.8
.004	(40)	18.2	36.4	54.4	72.7	90.8	109.1
.005	(50)	22.7	45.4	68.0	90.9	113.5	136.3
.006	(60)	27.2	54.5	81.6	109.1	136.2	163.4

*Iodine content (%). See feed registration tag or manufacturer's guaranteed specification.

various amounts of commercial protein, mineral and iodized salt supplements with given iodine content are shown in Table 3. Use non-iodized supplements when necessary to keep iodine content of ration within limits indicated here.

For further information see Extension Bulletin E-1335, "Iodine Nutrition and Toxicity in Cattle," available from your County Cooperative Extension Service Office or the MSU Bulletin Office, P.O. Box 231, Michigan State University, East Lansing, Michigan 48824.

TABLE 2. Iodine intake from feeding mineral or salt supplements with given iodine content.

Iodine Content* of		Amount Fed Per Head Daily							
Salt or Mineral Supplement	Ounces: Pounds:	1 .0625	2 .125	3 .187	4 .25	5 .31	6 .375	7 .44	8 .5
%	ppm	milligrams							
.001	(10)	.28	.57	.85	1.1	1.4	1.7	2.0	2.3
.002	(20)	.57	1.1	1.7	2.3	2.8	3.4	4.0	4.5
.003	(30)	.85	1.7	2.5	3.4	4.2	5.1	6.0	6.8
.004	(40)	1.1	2.3	3.4	4.5	5.6	6.8	8.0	9.1
.005	(50)	1.4	2.8	4.2	5.7	7.0	8.5	10.0	11.3
.006	(60)	1.7	3.4	5.1	6.8	8.4	10.2	12.0	13.6
.007	(70)	2.0	4.0	5.9	7.9	9.9	11.9	14.0	15.9
.01	(100)	2.8	5.7	8.5	9.1	14.1	17.0	20.0	22.7
.02	(200)	5.7	11.4	17.0	22.7	28.2	34.0	40.0	45.5
.03	(300)	8.5	17.0	25.5	34.1	42.3	51.0	60.0	68.1
.04	(400)	11.4	22.7	34.0	45.4	56.4	68.0	80.0	90.8
.05	(500)	14.2	28.4	42.5	56.8	70.4	85.0	100.0	113.5
.08	(800)	22.7	45.4	68.0	90.1	112.7	136.0	160.0	181.6
.141	(1410)	40.0	80.1	120.0	160.2	198.7	240.0	282.0	320.1

*Iodine content (%). See feed registration tag or manufacturer's guaranteed specification.

TABLE 3. Iodine control chart for mixing grain rations.

Ingredient	Iodine %	Pounds of Ingredient						
		1	5	10	15	20	25	30
		iodine milligrams						
SALT								
Trace mineral or iodized	.007	32	159	318	477	635	794	953
Medicated EDDI	.141	640	(NOT RECOMMENDED)					
MINERAL SUPPLEMENT								
	.005	23	113	227	340	454	567	681
	.01	45	227	451	681	908	1135	1362
	.02	91	454	908	1362	1816	2270	2729
	.03	136	681	1360	2043	2720	3400	4080
	.04	227	1135	2270	3405	4540	5675	6810
		Pounds of Ingredient						
		100	200	300	400	500	600	
		iodine milligrams						
PROTEIN SUPPLEMENT								
	.0001	45	90	135	180	215	260	
	.0002	90	180	210	360	450	540	
	.0003	136	272	408	544	680	952	
	.0004	180	360	540	720	900	1080	
	.0005	227	454	681	908	1135	1362	
	.0006	272	544	816	1088	1360	1632	
	.0007	318	636	954	1271	1590	1908	



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