

Table 8. Mineral supplements and their mineral composition.

Supplement	Ca	Phos	K	Mg	S	Na
% -----						
Calcium carbonate	38.0	—	—	—	—	—
Limestone, ground	33.0	—	—	—	—	—
Oyster shell flour	33.0	—	—	—	—	—
Tricalcium phosphate	38.0	18.0	—	—	—	—
Monocalcium phosphate	20.0	21.0	—	—	—	—
Deflourinated phosphate	32.0	18.0	—	—	—	—
Dicalcium phosphate	26.0	18.0	—	—	—	—
Disodium phosphate	—	21.6	—	—	—	—
Salt (NaCl)	—	—	—	—	—	39.3
Steamed bone meal	28.0	14.0	—	—	—	—
Sodium bicarbonate (NaHCO ₃)	—	—	—	—	—	27.4
Diammonium phosphate ¹	—	20.0	—	—	—	—
Monoammonium phosphate ²	—	24.0	—	—	—	—
Monosodium phosphate	—	25.0	—	—	—	—
Sodium, Tripoly phosphate	—	25.6	—	—	—	—
Biofos	18.0	21.0	—	—	—	—
Dyna-K	—	—	50.5	—	—	—
Dynafos ³	22.0	18.5	—	—	—	—
Dynamate	—	—	18.5	11.6	22.3	—
Dufos ^{1,3} (Diammonium phosphate)	—	20.0	—	—	—	—
Dikal 21 ³	19.0	21.0	—	—	—	—
Magnesium oxide	—	—	—	60.0	—	—
Potassium chloride	—	—	—	52.4	—	—

¹Compound contains 18.0% nitrogen or 112.5 protein equivalent.²Monoammonium phosphate (monofo) contains 68.75% protein equivalent (11% nitrogen).³Trade names of products available in abundance in Florida. Mention of a trade name, proprietary product or specific equipment does not constitute a guarantee or warranty by the Dairy Science Department, Institute of Food and Agricultural Sciences, or the University of Florida and does not imply its approval to the exclusion of other products that may be suitable.

Using Trace Minerals and Vitamins

The addition of trace minerals and certain vitamins to dairy cattle rations is usually considered to be good nutritional insurance. Yet, the question arises: "How do I know which trace minerals, and how much of each, to add?"

The trace minerals deserving some consideration as possible additions to dairy rations are shown in Table 10.

Trace minerals are needed by the dairy animal in very small quantities (parts per million). For this reason, salt is commonly used as a carrier for all the trace minerals.

Trace minerals should not be added to dairy rations indiscriminately. Many rations will contain adequate levels with or without their addition. If a trace mineral problem is suspected, examine the situation and make appropriate adjustments in the mineral mixture. Too much of a particular mineral could further antagonize the situation.

Vitamins deserving consideration under Florida conditions are vitamins A, D, and E. A 1400-lb cow consuming 40 lbs of dry matter daily needs about 65,000 USP units of vitamin A, 18,000 units of vitamin D, and 280 units of vitamin E. Dry cows should receive 50–100,000 units or

Table 9. Major mineral and vitamin content recommended in rations for high producers (dry matter basis).

Mineral	Current Desirable In Rations (%)	NRC 1988 (%)
Calcium	0.65-0.80	.65
Phosphorus	0.42-0.50	.42
Magnesium	0.28-0.35	.25
Potassium ¹	1.00-1.50	1.00
Sulfur	0.20-0.25	.20
Sodium ¹	0.40-0.67	.18
Vitamin A	1400-2000 IU/lb	1450 IU/lb
Vitamin D	450-500 IU/lb	450 IU/lb
Vitamin E	7-10 IU/lb	7 IU/lb

¹Recent studies at Florida showed an increased need for potassium (K) and sodium (Na) in hot weather or stress periods. The highest level of milk production was obtained when the total ration dry matter contained about 1.5% K and 0.67% Na

more of vitamin A per day when green forage is not available and 20,000 units or more if green forage is available.

Certain stress factors, such as hot climate, nitrate in feeds, disease, and lactations, may increase the vitamin A requirements of the animal. In order to avoid a vitamin A deficiency in reproduction, the dairy ration should provide from 40,000 to 80,000 USP units of vitamin A.