

# Texas Dairy Matters

*Higher Education Supporting the Industry*

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## WATCH P LEVELS

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Environmental concerns are focusing on phosphorus now rather than nitrogen, particularly in certain Texas watersheds. In the past, phosphorus contamination of surface water was thought to be associated primarily with erosion. However, if too much phosphorus is applied, runoff may occur independently of erosion.

Reduce the potential for such runoff by applying manure at agronomic rates for phosphorus rather than nitrogen. Using phosphorus-based agronomic rates requires an increase in the land base necessary for spreading manure compared to nitrogen-based rates.

How cows are fed greatly impacts the amount of phosphorus excreted in manure and urine. Frequently additional phosphorus has been added to rations in an attempt to provide a “margin of safety” for production and reproduction. However, recent studies have shown that this “margin of safety” is unnecessary. Productivity and reproductive efficiency are not enhanced when phosphorus is fed above National Research Council guidelines.

Feeding excess phosphorus does increase how much phosphorus is excreted. In a study at Virginia Tech, early lactation cows were fed total mixed rations containing 0.34, 0.51 or 0.67 percent phosphorus. These cows produced over 100 pounds of milk per day and consumed more than 55 pounds of dry matter per day.

In Table 1, phosphorus intake and excretion are compared for the various ration phosphorus concentrations. Body weight, milk yield and dry matter intake were not affected by ration phosphorus concentration. The apparent phosphorus digestibility, or how much of the phosphorus consumed the cows could use, declined as phosphorus intake increased.

**Table 1:** Comparison of P intake and excretion in early lactation cows fed total mixed rations

With three different phosphorus concentrations (Knowlton and Herbein. 2002).

Item	Phosphorus Concentration		
	0.34%	0.51%	0.67%
Total P Intake, g/d	84.7	135.2	161.5
Fecal P Excretion, g/d	42.3	87.5	108.6
Urinary P Excretion, g/d	0.32	1.28	3.90
Total P Excretion, g/d	42.6	88.8	112.5
Apparent P Digestibility, %	49.0	34.4	32.8

Producers can save money by controlling phosphorus levels. Phosphorus is an expensive nutrient to add to rations, so reducing ration phosphorus concentrations to recommended levels can decrease feed costs. Additional savings occur when the phosphorus concentration in manure is reduced so fewer acres are required for spreading manure.

Work with your consultant to make sure that you are feeding enough phosphorus to maintain animal productivity, but not excess amounts.