



# FEEDS, FEEDING, AND NUTRIENT REQUIREMENTS OF DAIRY CATTLE

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## Introduction

Proper feeding and good balanced rations remains the cornerstone of a successful dairy operation. Milk yield per cow and the cost of feed to produce milk have by far the greatest influence on profitability in a dairy operation. If a dairy is to be successful, the dairyman must continually strive to adopt practices that allow him to achieve the greatest output of milk at the most economical cost. Successful dairying in the future will depend on high levels of milk production, culling for low production, controlling feed costs, and the use of good replacements.

Cow identification and good records make good feeding practices possible. Without milk production records, it is difficult to feed according to milk production or to use any well-designed group feeding system.

Milk yields per cow continue to increase annually as reported by the USDA National Agricultural Statistics Service. Average production per cow in the U.S. reported in 1975 was 10,360 lbs as compared to 14,244 lbs in 1989. Much of this increase in milk production is due to better nutrition and feeding, overall management practices, and the genetic improvement of the cow population.

## Feeding Standards

Feeding standards have been used since the late 1800s to help guide nutritionists and livestock producers in formulating rations and feeding livestock. Periodically, the

standards are updated to encompass the most current research information available. Such are the standards that are now available titled, "Nutrient Requirements of Dairy Cattle," that were updated in 1988 by a subcommittee on Dairy Cattle Nutrition of the National Research Council.

Tables 1, 2, and 3 show the nutrient requirements of dairy cattle as developed by the National Research Council (1988).

**Energy** - the energy requirements used from this publication are expressed as net energy for maintenance (NEM), net energy for lactation (NEL), and total digestible nutrients (TDN). Even though both TDN and NEL are acceptable measures of energy, NEL is expressed as megacalories (Mcal) whereas TDN is given in pounds.

**Table 1. Daily nutrient requirements for maintenance of mature lactating cows.\***

Body Wt. (lb)	Crude Protein (lb)	NEL (Mcal)	TDN (lb)	Ca (lb)	Phos (lb)	- Vitamins - A D -(1000 IU)-
1000	.98	7.86	7.58	.041	.029	34 14
1200	1.18	9.02	8.70	.049	.034	41 16
1400	1.37	10.12	9.76	.057	.040	48 19

\*Add 20% for growth of lactating cows during first lactation.

The NEL is defined as the energy contained in the milk produced. Since milk fat is high in energy, cows producing a higher fat testing milk require more energy per pound of milk (Table 2).

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