



Cattle Producer's Handbook

Computers for Cattle Nutrition

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Computers have been used in livestock nutrition for more than 30 years, but they are still not used extensively by cow and calf producers. Cow and calf producers can lower feed costs and improve nutrition by using computers.

The value of computers for calf producers differs from the feedlot or dairy operator. The most useful information may be computer evaluation of alternative feeds or assistance in selecting supplements. This article describes nutrition information available on computers, ration evaluation and formulation, and evaluation of alternative feeds.

The value of computers arises from their ability to store vast amounts of information about feeds and animal nutrient requirements along with their powerful mathematic capabilities. The chemical composition or "feed analysis" of hundreds of feeds can be stored on diskettes or a computer's hard disk. Often this information is provided when computer nutrition programs are purchased. Feed analysis can be changed or added, adapting the information to specific conditions. Basic feed analysis includes moisture, energy, protein, calcium, and phosphorus concentration. However, many programs include 20 or more specific nutrients for each feed.

Prices for feeds may also be stored and changed as needed by the user. Prices should estimate the cost to actually get the feedstuff in front of cattle. This might include the cost of transportation, wastage, feed bunks, prorated costs of feed mills, and labor. Commodities such as hay must be transported, sometimes further processed by milling or grinding, and fed in hay bunks or feeders. These costs should be included in the cost of the feed.

Frequently, purchased supplements are relatively expensive compared to commodities such as hay, but the supplements may include all costs associated with getting the feed to the cattle. It is possible to use commodity prices and not the "processed" price; however, caution must be used if those results are then used to

compare to other types of feed, such as purchased, prepared supplements. The important point is to use feed prices established on the same basis, either "processed" to get the feed in front of the cattle or some other price, but to remain consistent on all feeds.

Animal requirements may be stored on the computer or calculated for each use from formulas stored in the computer. Animal requirements are based on the class of livestock, for example adult cow, replacement heifer, bull, weight, and sex. Additional definitions may include lactation stage, use of implants, weather, and other environmental factors, such as mud or wind.

Often the nutrition program makes an estimate of the quantity of feed consumed. The user may use a different value. Consumption is usually the most difficult value to estimate, and it is important because the amount of feed consumed greatly influences the required concentration of nutrients. Concentration is the amount of a specific nutrient in the total feed (amount of nutrient per unit of ration; e.g., percent).

Livestock need specific *amounts* of nutrients (e.g., grams of calcium), not specific *concentrations* of nutrients (percent calcium). Intake is critical because the total amount of a specific nutrient depends on its concentration and consumption.

Some nutrition programs also store feeding logic such as constraints or limitations about specific feeds, nutrients or nutrient ratios. For example, wheat products that could include wheat grain, wheat mill run, bakery waste plus other wheat products, may want to be limited as a group due to the specific digestive properties of wheat. Beet products may also have constraints due to their laxative properties. Ratios of nutrients may also be important feeding logic, for example the calcium and phosphorus ratio.

Having all of this information readily available and adaptable to local conditions is a vast improvement and