

## **Finding a balance on Valley dairies\***

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One of the fundamental challenges facing the dairy industry in the Central Valley of California will be to quantify the nutrient flow in each dairy farm, particularly nitrogen (N). Environmental legislations has made it necessary for dairy producers to be able to quantify and adjust N use in their farms. Different research papers indicate that it is difficult to measure the various N losses from farms on a routine basis, and strategies to control one type of loss (e.g. ammonia volatilization) often lead to increase in a different loss (e.g. nitrate leaching). Thus, whole nitrogen balance is often considered as a means to estimate unaccounted for N that can become a hazard to the environment, and also to implement the necessary strategies to decrease the losses to the environment. In other words, complete records of total farm N inputs (feeds, fertilizers, bedding, etc) minus N outputs (milk, animals, manure, feeds, etc) will help dairy producers to identify possible areas to improve the efficiency of N utilization, decrease losses to the environment, and to comply with new environmental regulations.

The minimal time to run a whole nitrogen balance is one year. This might be considered as the first step for many dairies. In most of the cases, producers keep records and it would be possible to run whole nitrogen balances with the information from recent years, if not, it is highly recommended to begin keeping records. A dairy farm will be in balance when the ratio between the N Inputs and N Outputs is approximately 2:1. That means, if in one farm the outputs of N in milk, feeds, animals, and manure represent less than 50% of total N Inputs some changes needs to be done to close the balance. For example, reducing the number of heifers to other farms, exporting dry manure as compost, increasing the forages production to consume more manure, decreasing feed purchases and fertilizers, maximizing the production of N in milk, etc. These changes if they are necessities must be carefully planned between dairy producers and his advisers to reduce possible negative impacts on the system economy.

The University of California Cooperative Extension is also working on other two basic tools to improve the efficiency of N utilization. They are: (1) how to apply manure to minimize losses and improve forage production, and (2) how to feed animals to maximize N conversion to animal products. To minimize losses to the environment, manure needs to be applying at agronomic rates, or according to the N content in manure, soil, and the crops consumption. Respect to feeding management, information from more that 50 dairies in Merced County indicate that dairy producers are doing an excellent job in terms of animal nutrition. But, new technologies can be applied on high yielding dairy cows to improve efficiency of N utilization decreasing N excretion. Clearly, whole nutrient balances are a big challenge for the dairy industry and will require a huge effort from dairy producers.

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