Alfalfa production in the inter-mountain west of Idaho, Utah, Montana, and Nevada continues to be an important crop for these growing areas. Acre numbers while not at historical highs are still high enough to be either the number 1 or 2 largest cropping areas in each of these states. Forages including alfalfa are enjoying some of the greatest economic returns that have been observed for many years. A lot of this is related to changes in population in these areas, diets of international customers, and markets. There continues to be a growth in dairy markets with larger and larger dairy operations looking for both high quality feed for milk production as well as feed for livestock at feed yards. All of these contributing factors have pushed the price of alfalfa well beyond expectations from just a few years ago. These changes are bound to get producers’ attention and lead to questions about how to increase production.

Yield of all crops including alfalfa will always depend on the amount and quality of irrigation water in the desert areas of this geography; however, proper nutrition related to available fertility is of primary importance. This is especially true for P fertilizer use as growers push for high yields. “Phosphorus is the most common fertilizer input for alfalfa across the western U.S.,” says Dr. Rich Koenig, CPSS and professor and chair of the Crop and Soil Sciences Department at Washington State University. “It is essential for optimum alfalfa production.” Potassium is also a nutrient that is heavily used by rapid-growing alfalfa and in many growing conditions needs to be managed similar to P fertilizer. In the authors’ experience, if P and K are both limiting, the grower will need to first apply phosphorus and resolve that as a limiting nutrient and secondly apply potassium. In many growing environments, although P and K nutrition may test adequate, there may very well be factors that limit the ability to access these primary nutrients in a timely matter to maximize yield as well as influence alfalfa quality.

This study explores the potential of addressing in-season applications of NPK delivered to alfalfa within a growing season. Many times, growers and researchers only focus on dosage or rate of nutrients applied when other parts of nutrient management criteria should also be explored—namely, timing and form of nutrient delivery.

Foliar applications of low-salt NPK fertilizers were applied to established irrigated alfalfa during the 2012 and 2013 growing season. These applications were made when the regrowth was about 6 to 8 inches tall. In 2012, applications were made with a commercial sprayer and between the second and third cuttings. The NPK liquid applications at this time were 3–18–18. Rates of applications included a total of 0, 2.5, or 5.0 gallons/ac for each cutting. Irrigation was allowed to be stopped for 24 hours to assure adequate drying on the foliage of the alfalfa. Each treatment was laid out with anticipation of harvest and determining yields.

Applications of foliar nutrients applied in season increased yields during the 2012 season for each of the cuttings. These yield improvements were able to deliver an economic improvement for the forage being used. Kent Frisch who is the farm manager for this area for Simplot says, “It looks like these applications are something we should be pursuing. However, the system needs changing for ease of applications.” Therefore, changes were made after these trials were conducted.