Potassium Affects Alfalfa Yield, Quality, and Root Traits

Potassium fertilization of alfalfa is important for maintaining yields but can have negative consequences on forage quality: a tradeoff that could vary depending on cultivar and growing environment. Moreover, reports of potassium fertilization on stand persistence have been inconsistent largely as a result of poor understanding of how potassium influences root biomass and architecture, pathogen resistance, winter survival, and other drivers of stand persistence.

New research in *Agronomy Journal* reports on the effects of potassium fertilization on forage yield and quality responses and belowground traits that relate to stand persistence. The potassium responses of eight modern alfalfa cultivars grown at three locations varying in soil type were studied.

Among all cultivars, potassium fertilization increased alfalfa forage yield but decreased forage quality. The concentration of potassium increased in both forage and root tissues when fertilized at rates beyond those needed to maximize forage yield, which suggests that alfalfa exhibits “luxury consumption” of potassium. Therefore, over-fertilization is not just an economic detriment to growers, but it can also reduce forage quality enough to put lactating dairy cows at risk of milk fever. Although potassium fertilization did increase root biomass, it did not result in any differences in the root disease crown rot and had inconsistent effects on stand persistence.


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