

ALFALFA VARIETY SELECTION FOR LIMITED IRRIGATION

Dan Gardner¹

ABSTRACT

Sufficient irrigation water applied to alfalfa forage production fields is critical for a high yielding, profitable stand. Unfortunately, a combination of environmental, political, and economic pressures has growers confronting the situation of having to produce alfalfa on limited irrigation in areas that have not previously had water restrictions. Key genetic traits to consider when selecting an alfalfa variety for limited irrigation include salt and drought tolerance, dormancy, and persistence under drought conditions.

Key Words: alfalfa, salt tolerance, drought tolerance, dormancy

Cooperative extension has long educated alfalfa growers and others in the alfalfa industry about variety selection. At this Symposium and at countless field days in the every alfalfa growing region of the state, factors to consider when choosing a variety have been discussed. With many growers in the state now facing reduced water supplies, there are new factors growers should consider, salt and drought tolerance, drought induced dormancy and persistence under drought conditions. Other factors to consider in selecting a variety are still the same; yield, quality, persistence, pest and disease resistance.

Forage yield under osmotic stress or salt tolerance has become an important consideration for growers. Limited irrigation water and poor quality water have increased salt levels in the soil. This trend was recognized by Bob Sheesley when he worked for Cooperative Extension from the 1960's to 1990. He then went to work as an alfalfa breeder and bred several landmark salt tolerant varieties including SW8421-S, SW9720 and SW9215. Other breeders have followed suit and now many varieties are appearing in the marketplace to the benefit of growers. Salt tolerance is important as it helps to protect the plant from both salt induced and drought induced osmotic stress.

Dormancy is a trait that needs to be re-considered when selecting a variety for a limited irrigation situation. During the first cuttings of the year, alfalfas of all dormancies have similar yields and their greatest water use efficiency. In summer, more dormant alfalfas start to reduce in yield relative to less dormant types, but this is when water use efficiency is lowest. The best management strategy is to eliminate irrigation at this time and have the alfalfa go into a drought induced dormancy. A more dormant variety will have less regrowth and put more energy into crown growth and root development. Increased persistence and more efficient soil moisture usage will be realized.

CONCLUSION

A grower in a water limited situation in the San Joaquin Valley should select a variety with salt or drought tolerance and a lower dormancy than they would otherwise choose to increase persistence.

¹ D. Gardner (dgardner@swseedco.com), V.P. Breeding and Genetics, S&W Seed Company, 25552 South Butte Ave. Five Points, CA 93624. **In:** Proceedings, 2013 Western States Alfalfa and Forage Symposium, Reno, NV, 11-13 December, 2013. UC Cooperative Extension, Plant Sciences Department, University of California, Davis, CA 95616.(See <http://alfalfa.ucdavis.edu> for this and other alfalfa symposium Proceedings.)