Alfalfa Variety Selection for Limited Irrigation

Dan Gardner
S&W Seed Company
December 12th, 2013
Western Alfalfa and Forage Symposium
S&W Salt tolerant alfalfas; a tribute to Bob Sheesley and Cooperative Extension

- SW9720
- SW9215
- SW8421-S

- Tim Jacobsen and Bob Sheesley
Field screening for Salt Tolerance

• Intimate knowledge of salt challenged areas.
• Developed sites with high salt pressures.
• 20+ years of selection.
• Different genetic mechanism infer salt tolerance at the germination and forage production stages.
Varietal selection for deficit irrigation; Using water when it is available

Varietal selection
- Yield
- Abiotic Stress Tolerance
- Fall Dormancy
- Disease resistance
- Pest Resistance
- Quality
- Persistence

- Summer “fallow”.
- Use water when water use efficiency is greatest.
- Timing yield via dormancy
- FD = height of fall growth.
- # Harvests per year.
Yield Quality Tradeoff
Putnam, Orloff and Teuber – 2005 California Alfalfa & Forage Symposium

**2002-2004 All Harvests**

Yield vs. Fall Dormancy Score

Yield = $-0.0656x^2 + 1.1679x + 5.6397$

$R^2 = 0.7418$

Quality vs. Fall Dormancy Score

ADF = $0.0062x + 0.2432$

$R^2 = 0.9279$
Fall Dormancy and yield distribution

Tons/Acre by cutting 2004 UCDavis

- In the first 4 cuts of the year FD6 alfalfas yield similar to FD 8’s at UC Davis.
- The second half of the year, FD8’s yield more. 1.4 vs. 1.2 T/A per cut.
- Using a more dormant alfalfa synchronizes the yield distribution with water availability and WUE
Advantages of using a more dormant alfalfa for deficit irrigation

• Equivalent yield early in the year when water is available and WUE is greatest.
• Better forage quality.
• Less re-growth during deficit irrigation periods.
• Larger crowns and root system.
Alfalfa’s future in California?