

FORAGE PLANTS FOR IRRIGATED MEADOWS  
AND PASTURES IN NORTHERN AND EASTERN CALIFORNIA

LEGUMES

TRIFOLIUM

White clovers and Ladino (T. repens). There is tremendous variation within the species from low growing lawn types to high producing Ladino. Does not do well on very acid soils, most are not well adapted for haying, shallow rooted and will not stand as much drought or flooding as trefoil and strawberry clovers.

Ladino requires frequent water in hot weather. Lacks winter hardiness for very cold climates.

Pilgrim is very much like Ladino but may have more winter hardiness. Used extensively in northeastern states.

New Zealand is used in coastal areas because of slug resistance; winter hardiness is not claimed.

Common white or local grown non-certified varieties in northern areas are more winter hardy, more drought tolerant and less vigorous than Ladino.

Giant or Nordic of German origin is supposed to be more upright, winter hardy and drought tolerant than Ladino. Trials are out in Modoc and Plumas-Sierra.

Granladino, Lodi Giant or Latus are very tall growing somewhat winter hardy and drought tolerant. Good reports from New York and New Brunswick. Some on trial by Rimbey and Bedell.

Alsike clover (T. hybridum). This non-creeping perennial is very valuable on wet lands and somewhat acidic soils. It is winter hardy but short-lived and must be reseeded about every other year to maintain good stands. Most of its growth is early, not much aftermath. Seed is not certified in California, Washington or Oregon.

Red clover (T. pratense) is a very vigorous starting short-lived perennial and the best clover for hay. Hay cures more slowly than alfalfa. There is good aftermath. It is winter hardy and more drought tolerant than Ladino and will not stand as much flooding as Alsike. Best hay legume for soils too shallow or wet for alfalfa. It characteristically mildews but this may not have much effect on yield or quality. There are many varieties: Dollard, Chesapeake, Cumberland, Kenland, Lakeland, Midland and Pennscott. There is variation in disease resistance, winter hardiness and longevity. Prior to the advent of Lakeland, Kenland was recommended in Montana. Lakeland is a northern type from Wisconsin. It is the most mildew resistant of red clovers. It is reported to be winter-hardy and persistent. Seed supplies are currently abundant. All the above are two-cut or medium red clovers. There are also one-cut or mammoth red clovers that are later maturing and are not popular in the United States.

Strawberry clover (T. Fragiferum) is a relatively low growing, spreading, long-lived perennial. There is great variation in vigor. Palestine is an example of a very vigorous but not a winter hardy variety. Salina is a selection from Palestine and is certified in California. It is vigorous but may lack winter hardiness. Plants from local grown northern seed are winter hardy but not outstanding in growth. Strawberry clover can stand much more flooding and more drought than Ladino. It is reported to be tolerant of alkaline and saline conditions. It is not tall enough to be a good hay plant. It has a slow starting seedling.

Zigzag clover (T. medium) is a vigorous long-lived, spreading, perennial native to the Rocky Mountains and adapted to wet areas. It has been seeded some in Colorado. Forage production is good but seed production, germination and stand establishment are a problem.

White-tip clover (T. variegatum) is an annual clover of wet meadows. Clee Cooper has done some satisfactory seeding in eastern Oregon. There is a high percentage of hard seed. Delaying hay cutting until after seed is ripe will improve the stand for two or three years.

Mountain clover (T. cyathiferum) is another native annual that has been propagated to a limited extent.

## TREFOILS

Broadleaf or upright trefoil (Lotus corniculatus) is a long lived perennial inherently less productive than Ladino clover or red clover where these two clovers are adapted. It is somewhat tolerant of flooding and alkaline and saline conditions as is narrowleaf trefoil. It can cope with more droughty conditions than narrowleaf trefoil or Ladino clover. It is more winter hardy than most narrowleaf trefoil. Palatability is excellent and bloat hazard slight. Seedlings start slowly and this plant is not a strong competitor with other more vigorous plants.

Empire is later and lower growing and slower to recover than most other varieties. Hay yield can be good. Withstands heavy grazing.

California common from Sacramento and San Joaquin Valleys, not certified.

Cascade from state of Washington.

Douglas from Oregon.

Granger from Oregon.

Mansfield from Vermont.

Parker from Oregon.

Tana from Montana.

Viking from New York.

These are all claimed to be early starting, early maturing, upright types with rapid regrowth and good seedling vigor. Winter hardiness is probably a reflection of place of origin.

Narrowleaf or prostrate trefoil (Lotus tenuis) is in general less winter hardy but more tolerant of flooding or saline or alkaline conditions than broadleaf. Seedlings are not vigorous and plants are not strong competitors.

California common not certified, from Sacramento and San Joaquin Valley. Los Banos selected at Los Banos by SCS for tolerance to alkaline and saline conditions.

Payette has been started by SCS from plants growing near Payette, Idaho. Presumably winter hardy.

Big trefoil (Lotus uliginosus or L. major) is adapted to water-logged conditions but is not winter hardy.

### GRASSES

Orchardgrass (Dactylis glomerata). Very productive where there is good water control. Long-lived and may get somewhat bunchy if neglected but is more palatable and more easily managed than tall fescue. Often maintains good balance with legumes. There is tremendous variation between the many varieties as far as leafiness, height, earliness, drought tolerance, winter hardiness, disease resistance, etc.

Akaroe lacks winter hardiness.

Latar selected by SCS at Pullman, Wash. and is reported to be late maturing and long-lived with good winter hardiness and relatively low lignin levels.

Potomac selected by ARS at Beltsville, Md., is reported to be late maturing and long-lived and has shown superior rust resistance. It is very popular in Montana.

Chinook is a new very winter hardy variety being increased in British Columbia.

Tall fescue (Festuca arundinacea) is very productive and persistent. It will tolerate more wetness, drought and alkali conditions than orchardgrass. It is coarser and lacks palatability, especially in hot weather. It is recommended for conditions not suitable for more palatable grasses.

Alta is popular in the Northwest.

Goar is from Imperial Valley and has better seedling vigor. It is adapted to heavy-textured alkali soil.

Meadow fescue (Festuca elatior) is very much like tall fescue but is less productive and is very little used in the U.S.A.

Smooth bromegrass (Bromus inermis) is a long lived, sod forming perennial with good palatability. It is adapted to heavier soils and will stand more drought than commonly used varieties of orchardgrass. The many varieties can be divided into northern and southern types. Northern types are more winter hardy, more upright, and less aggressive than southern types. Manchar is somewhat intermediate and is popular in the Northwest. Some claim bromegrass production does not hold up late in summer and pastures have excessive legume growth. Others claim brome is very aggressive, crowds out legumes and becomes rootbound. This is probably a reflection of bromegrass variety. Seed viability may drop rapidly with age.

Liso is a selection by SCS at Los Banos and is claimed to be alkali tolerant.

Reed canarygrass (Phalaris arundinacea) is a very vigorous and persistent sod former adapted to wet areas. Palatability is good if growth is controlled. Hay is good if cut as the heads emerge. Livestock dis-

orders associated with reed canary pastures may be due to wet-ground parasite infestation in the animal. Stands are established with difficulty because of poor germination. This may be somewhat offset by fall planting and planting to greater depth to maintain seed in moisture. The SCS at Pleasanton claims to have a selection with better germination.

Tall oatgrass (Arrhenatherum elatius) is a very vigorous and palatable but short lived bunch-type perennial. It is successfully used when a vigorous legume like red clover is used in new plantings. The quick growth of tall oat thus reduces bloat hazard. Seed loses viability rapidly with age.

Annual ryegrass (Lolium multiflorum) is often used to improve first-year production at lower elevations.

Perennial ryegrass (Lolium perenne) is a good early growing perennial bunchgrass for lower elevations but lacks winter hardiness.

Timothy (Phleum pratense) is a short-lived bunchgrass, tolerant of wet acidic conditions and is used more for hay than for pasture. Stands are perpetuated by artificial or natural reseeding. Late cut hay is rather poor quality. There are many commercial varieties, some early some late.

Meadow foxtail and Creeping meadow foxtail (Alopecurus pratensis and A. arundinaceus) are both sod formers but the latter more so. Both stand flooding and some drought. Some claim they have tolerance to saline conditions. They bloom early but continue to grow and palatability is good throughout the season. Seed is fluffy and difficult to handle. Meadow foxtail is preferred to creeping meadow foxtail in Montana.

Kentucky bluegrass (Poa pratensis) is a persistent sod former that is palatable but is a low producer, especially during hot weather.

Redtop (Agrostis alba) is a long lived, sod forming grass adapted to wet areas but yields are low.

Intermediate wheatgrass (Agropyron intermedium) makes little regrowth after initial cutting. Other grasses are better if water is available after early springtime.

Tall wheatgrass (Agropyron elongatum) can be used on alkali lands that may be wet for part of the year where more palatable grasses will not grow. Close grazing or clipping helps maintain palatability.

Jim Street, Feb. 1962

#### Variety references:

Grasses and Legumes for forage and conservation. ARS Special Report 22-43, October 1957.

Grass Varieties in the United States. ARS Agriculture Handbook No. 170. Revised 1965.