



Stanislaus Forage Farmer

University of California Cooperative Extension Stanislaus County



In This Issue:

Triple Cropping

Free Dairy Lagoon Nutrient Management Engineering Assistance!

U.C. Employment Opportunities

Alfalfa Field Day on September 15th at the Kearney Ag Center

August 2004

Triple Cropping

Triple cropping means planting and harvesting three crops in one year off of the same field. There are two main reasons why triple cropping is practiced. One is to obtain the most feed possible from same parcel of ground. The other is to maximize the amount of nitrogen or other crop nutrient that can reasonably be applied onto a piece of land. Although there are risks associated with this practice, many local dairy operators are concluding that triple cropping or early planting of winter forages is on some or all of their acreage; and is necessary, in order to properly utilize fall applied nitrogen.

Sudangrass or Sorghum-Sudan Crosses

There are several approaches to triple cropping in a typical winter cereal/silage corn rotation. The most common is to grow sudangrass or sorghum-sudan crosses in the fall, after the corn comes off and before the winter cereal is planted. In the Northern San Joaquin Valley, the break of the season (when the weather turns from typically warm and dry to typically cool and wet) occurs sometime around the last of October. Sudangrass grows very poorly in cool weather and also is prone to accumulate toxic amounts of nitrate and/or prussic acid under these conditions. When the sudan is cut, it must be left in the windrow to bring the moisture content to the proper ensiling moisture content of about 70%. Depending on the weather and the yield of the crop, this could take from half a day to several days, and if the weather turns damp, it may be impossible to get the crop to wilt sufficiently before it can be ensiled at the proper moisture content. It is therefore, imperative to get the crop ensiled prior to the start of the rainy season.

Sudangrass planted by early-to-mid-August can make impressive tonnage of over 14 tons per acre at 70% moisture in a single cutting. Depending on how soon the crop is planted and the heat units available, it is occasionally possible to obtain more than one cutting. Experience in California with triple crop Sudangrass planted in September is that yields are often disappointing. Downsides of sudangrass is that the feed value of the silage is not excellent and sudangrass and is often not appropriate for many classes of animals on the dairy. Options for weed control are limited, and weeds can be a problem especially during stand establishment

Double Cut Cereal Forage:

An alternative to planting sudangrass as a triple crop is to plant a winter cereal forage crop in early fall; take a cutting off in late fall; allow the crop to regrow, then take a second cutting at the normal time in the spring. The main advantages of this system is the elimination of the extra ground preparation and planting of the third crop. Cutting before winter minimizes the problems with disease, lodging, frost injury and early heading that often occur when forages are planted too soon. It is imperative that the crop not be allowed to go into the winter with tall growth that will cause problems later due to disease, frost and lodging.

In a greenchop system on light soils, harvesting multiple cuttings of winter forage during the winter is straightforward because the crop does not require wilting. However, this practice is less practical with larger dairies and more controlled rations. The concept behind very early planted double cut winter forage is to plant early enough to swath, wilt and chop the first cutting prior to the break of the season, with the onset of cold, wet weather. In other words, the early planted winter forage is treated the same as a triple crop sudangrass crop but, without the additional tractor work.

The crop may be cut at any time but must be cut before the crop begins to develop the seed heads. Cutting height should be at least 4 to 6 inches high to avoid destroying the buds where the regrowth for the second crop will come from. It is best to cut soon enough to have at least a little regrowth before a frost, as some varieties can be killed if frosted immediately after cutting. Avoid leaving the windrows lay too long on the field to keep from delaying or even killing the new growth.

There are significant risks associated with early planting. These include:

Difficulty in taking the first harvest, if the weather turns unexpectedly bad: However, unlike triple crop sudangrass under similar circumstances, there is less likelihood that the crop would be completely lost because it will not be killed by frost and there is probably less potential for nitrate and prussic acid accumulation due to frost.

Too much regrowth too soon in the spring: The cut forage has a well-established root system and regrowth can occur quickly, especially if the winter is warm. This may result in tall forage that is ready to harvest during the winter rainy season. If it is not possible to harvest the forage, it can lodge, mat and rot following heavy rains and/or be subject to disease. On the other hand, under optimum conditions, some growers have made as many as three cuttings off of one planting.

Diseases: Several significant plant diseases can reach devastating populations if allowed to develop multiple generations on early planted forages, especially wheat. Also, very early planting of winter forages does expose the crop to fall aphid flights which can be a vector for barley yellow dwarf virus. Oats or triticale have been less susceptible than barley or wheat to rust and septoria, but some oats can be susceptible to barley yellow dwarf. Planting wheat or barley very early is NOT recommended. Not only are you risking a crop failure of your own, but you also set up conditions that can lead to the development of new races of diseases that break down disease resistance in many commercial grain varieties.

Weed Control: Winter cereals may grow too slowly in the fall heat and not be competitive with heat-loving weeds. Just as warm-season crops grow slowly in cool weather, cool-season crops grow more slowly in warm temperatures and faster in cool temperatures.

Winter cereals should not be planted any earlier than mid-September, because they are adapted to cooler weather and tend to grow slowly when it is very warm. An unplanned comparison of Piper sudan and Kanota oat planted along side each other on August 25, 2002 (Sudan seed was leftover in the drill when planting oats) yielded 13.6 tons/acre @ 70% moisture (202 lb/A N removal) on October 21, compared to Kanota oat that yielded 2.9 T/A and removed 74 lbs/A of N.

In the same year, a strip trial with four kinds of winter forage was planted on September 12 in a field of Piper sudan. The winter forages and sudan were cut on November 5, and the field was planted to Dirkwin wheat following harvest. In this trial, most of the winter forages outperformed the sudan at the first cutting and final total yields and N removal showed no advantage to the triple crop sudan followed by forage

wheat compared to an early planting of winter forage cut twice. This data is presented in table 1. Additional yield comparisons are presented in tables 2 through 4. The strip trial results are consistent with what some growers have been yielding in commercial fields. The small plot yields tend to be inflated because they are harvested by hand, closer to the ground than commercial equipment can pick up, there is a bit more light getting to the crop because of alleys, and there are no borders or bad areas that bring down the average in a commercial field.

	T/A @ 70% Nov 5	% protein	T/A @70% May 6	% protein	T/A @ 70% Total	lbs/A N removed Nov 5	lbs/A N removed May 6	Total lbs/A N removed
2700 Triticale	4.8 ab	22.1	21.2	10.8	26.0	102 a	227	329
Cayuse Oat	4.2 ab	21.1	21.1	12.3	25.3	86 a	256	342
Dirkwin Wheat	4.2 ab	22.0	16.3	11.3	20.5	89 a	174	263
Kanota Oat*	2.8 bc	22.3	21.9	11.1	24.7	61 b	233	294
Sudan/Dirkwin	3.3 c	13.9	13.7	14.3	17.0	44 b	188	233

*Kanota Oat initially had a very poor stand

	T/A @ 70% Nov 1	% protein	T/A @70% April 26	% protein	T/A @ 70% Total	lbs/A N removed Nov 5	lbs/A N removed May 6	Total lbs/A N removed
2700 Triticale	4.0	14.9	15.6	11.8	19.6 a	59	174	233 a
Cayuse Oat	3.5	14.8	12.8	11.2	16.3 ab	49	138	187 b
Kanota Oat	3.8	14.6	9.9	9.7	13.7 b	53	93	146 b
Dirkwin Wheat	3.3	14.9	9.6	11.0	12.9 b	47	101	149 b

This trial initially had slow growth because of moisture stress early in the season and competition from volunteer corn. There was also damage to the regrowth due to the windrows not being removed promptly after yield measurements were taken.

	T/A @ 70% Nov 6	% protein	T/A @70% Feb 28	% protein	T/A @ 70% Total	lbs/A N removed Nov 6	lbs/A N removed Feb 28	Total lbs/A N removed
Kanota Oat	4.5	17.9	4.9	17.9	4.9	77	85	162
Cayuse Oat	4.5	18.0	4.6	18.0	4.6	78	80	158
2700 Triticale	4.3	18.8	5.4	18.8	5.4	78	98	176
Dirkwin Wheat	3.8	18.0	4.8	18.0	4.8	66	83	149

This wheat and, to a lesser extent, the triticale, was devastated by wheat stripe rust in this trial. The winter cereals made very poor growth during the hot fall. A third cutting was taken in late April (not measured) in which the two oat varieties appeared to have near-normal spring yields while the wheat and triticale made almost no recovery.

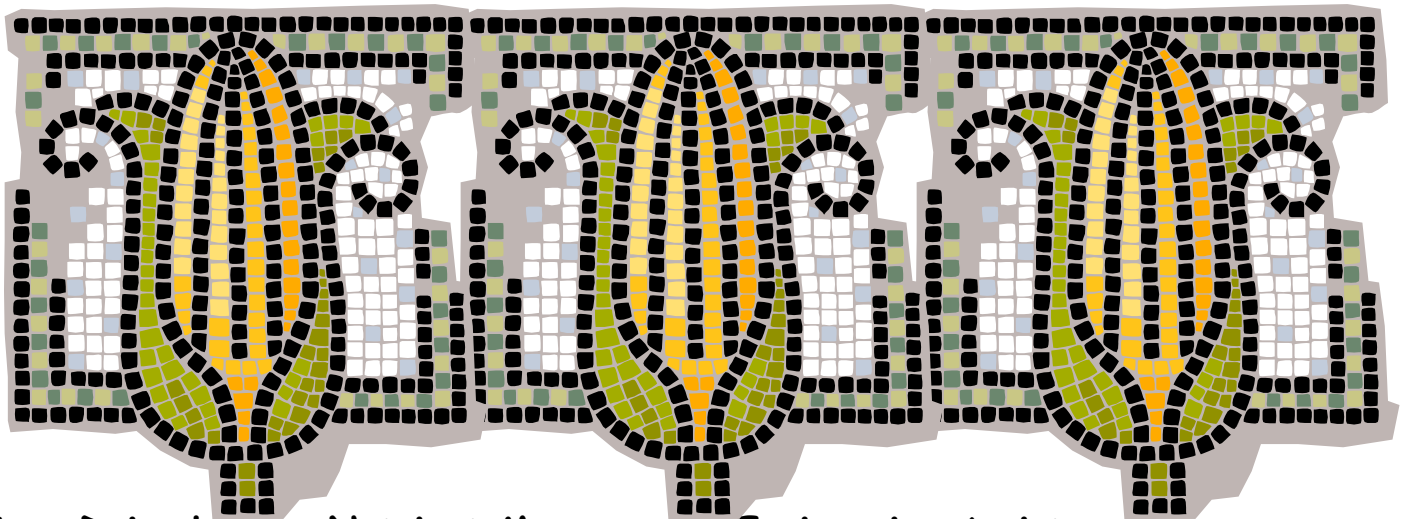


Triple Cropping with Back-to-back Silage Corn

With this system, two crops of corn are planted in one summer season. A major motivation to grow a second crop of corn is because the feed value is so much better compared to a fall crop of sudangrass, even those purported to have exceptional quality. In evaluating the feasibility of back to back corn crops, the heat units required by the crop should be compared to the heat units available during the planned growing seasons because crops grow in response to temperature and not according to days to maturity. Days to maturity are calculated as mid-season days. A 90 day corn planted early will take much more than 90 days to mature because there is not enough heat during the early part of the season for optimum growth. The same occurs as temperatures cool in the fall and the days get shorter. This puts harvest of the second corn crop too late in the season in many years. Also, consider carefully the time, costs and logistics required for harvest and land preparation to occur consistently in a compressed timeframe. Also consider that if there is risk of crop loss due to an early fall, the costs associated with triple crop sudan or early planted winter forage are much less than the investment required to grow corn. Most growers who have tried back-to-back corn crops rarely continue the practice for more than a couple years, even if the crops have been successful. Most have found that the practice is not as profitable as growing a good single crop of long-season corn.

Growing degree units (GDUs) for corn are calculated as the average of the high and low temperatures each day that are higher than 50 degrees and less than 90 degrees. This is the best temperatures for corn growth. (Midwest corn GDUs are calculated with a maximum of 86 degrees; in under-irrigated California conditions, we think we can continue to get good growth until at least 90 degrees). These charts show corn growing degree units (GDUs) for the past ten years for weather data recorded at the IPM weather stations in Denair. This weather station is in an agricultural area and tends to record somewhat cooler temperatures than the Modesto Irrigation District weather data in downtown Modesto. Corn GDUs calculated from the MID data have been reported to predict local corn development stages fairly well.

A full season corn (120 days) typically needs 2560-2600 GDUs to get to 70% moisture. A 90 day corn needs 2200 to 2300 GDUs. The GDU information for a particular hybrid may be obtained from your seed supplier.



Free Dairy Lagoon Nutrient Management Engineering Assistance!

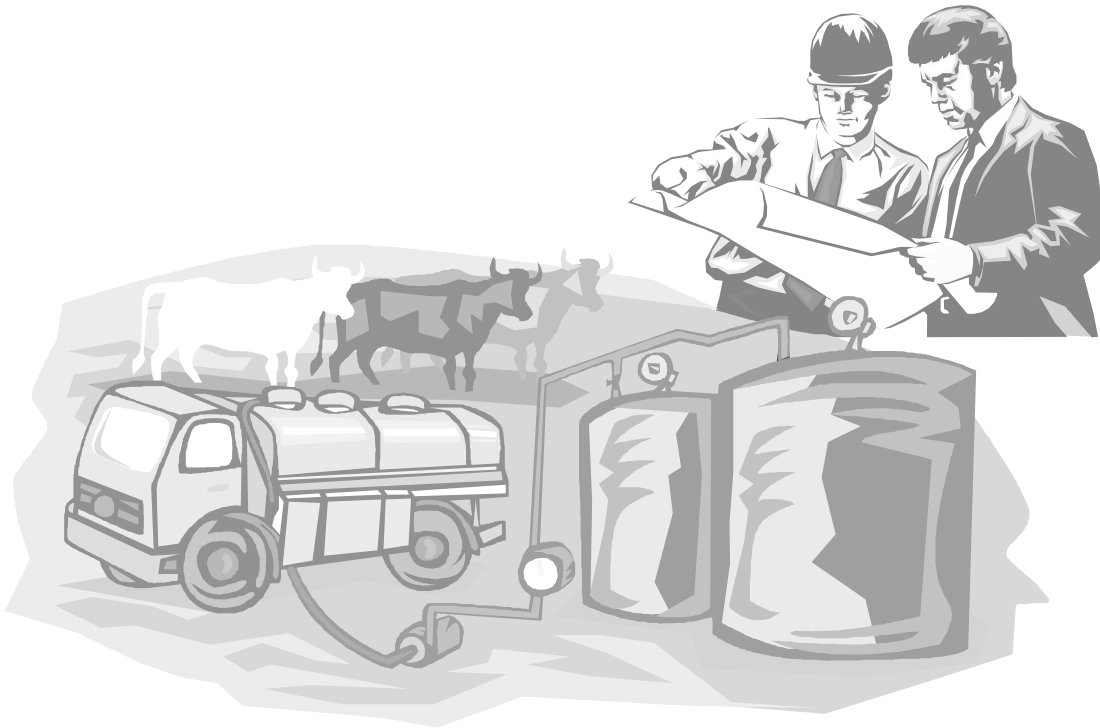
Want to save money on your fertilizer bills? Concerned about how you will meet upcoming requirements to report how many nutrients you are applying to cropland? Planning to install a nutrient metering system, solids separation system, or pipeline but not sure what kind, or what size? Need help keeping track of all those numbers?

The University of California Cooperative Extension, working with the East Stanislaus Resource Conservation District and other partner organizations has obtained grants to provide free engineering and mentoring assistance to dairy operators wishing to upgrade their nutrient management systems. This new program also provides rebates of up to \$1000 for the first 40 dairies to install metering systems. This includes nutrient metering systems that don't require purchasing an expensive flow meter but still provide real-time measurement of lagoon flow rates.

This program will only be available for a VERY limited time. The primary focus of this project is Stanislaus, Merced and southern San Joaquin counties but some assistance may be possible in other areas. For more information, contact Marsha Campbell Mathews of University of California Cooperative Extension at 209-525-6800.

Employment Opportunities Available

We are currently looking for qualified candidates to fill several positions to assist dairy operators in setting up and learning to use nutrient management systems. Good farm math skills are essential. Must be proficient in Excel. Students are encouraged to apply. For an application and more information on these positions, access our website at <http://cestanislaus.ucdavis.edu/> or call (209) 525-6800



Alfalfa Field Day

Kearney Agricultural Center
9240 S. Riverbend Avenue, Parlier, CA
Wednesday, September 15, 2004
8:00 - Noon

8:00 AM	Registration PCA/QAC/PAC/CCA Credit Forms
8:30	Tram ride to tour Alfalfa Variety Trial Dan Putnam, Alfalfa and Forage Crops Specialist, UC Davis
9:15	Tram returns to the conference room for refreshments and presentations
9:30	Roundup Ready Weed Control Studies Kurt Hembree, Farm Advisor, UCCE, Fresno County
9:50	Stewardship of Roundup Ready Traits in Alfalfa Ron Vargas, Farm Advisor, UCCE, Madera County
10:10	Insect Update Charlie Summers, Entomologist, UC Davis & Kearney Ag Center
10:30	Weevil Management in Alfalfa Larry Godfrey, Entomologist, UC Davis
10:50	Back to Back Alfalfa? Carol Frate, Farm Advisor, UCCE, Tulare County
11:10	Triple Cropping Marsha Mathews, Farm Advisor, UCCE, Stanislaus County
11:30	Nitrate Issues in Hay and Forage John Adaska, Vet Diagnostician, CAHFS, Tulare
11:50	California Recognized Program Dan Putnam, Alfalfa and Forage Crops Specialist, UC Davis
Noon	Adjourn

PCA/QAC/PAC/CCA Credit Requested

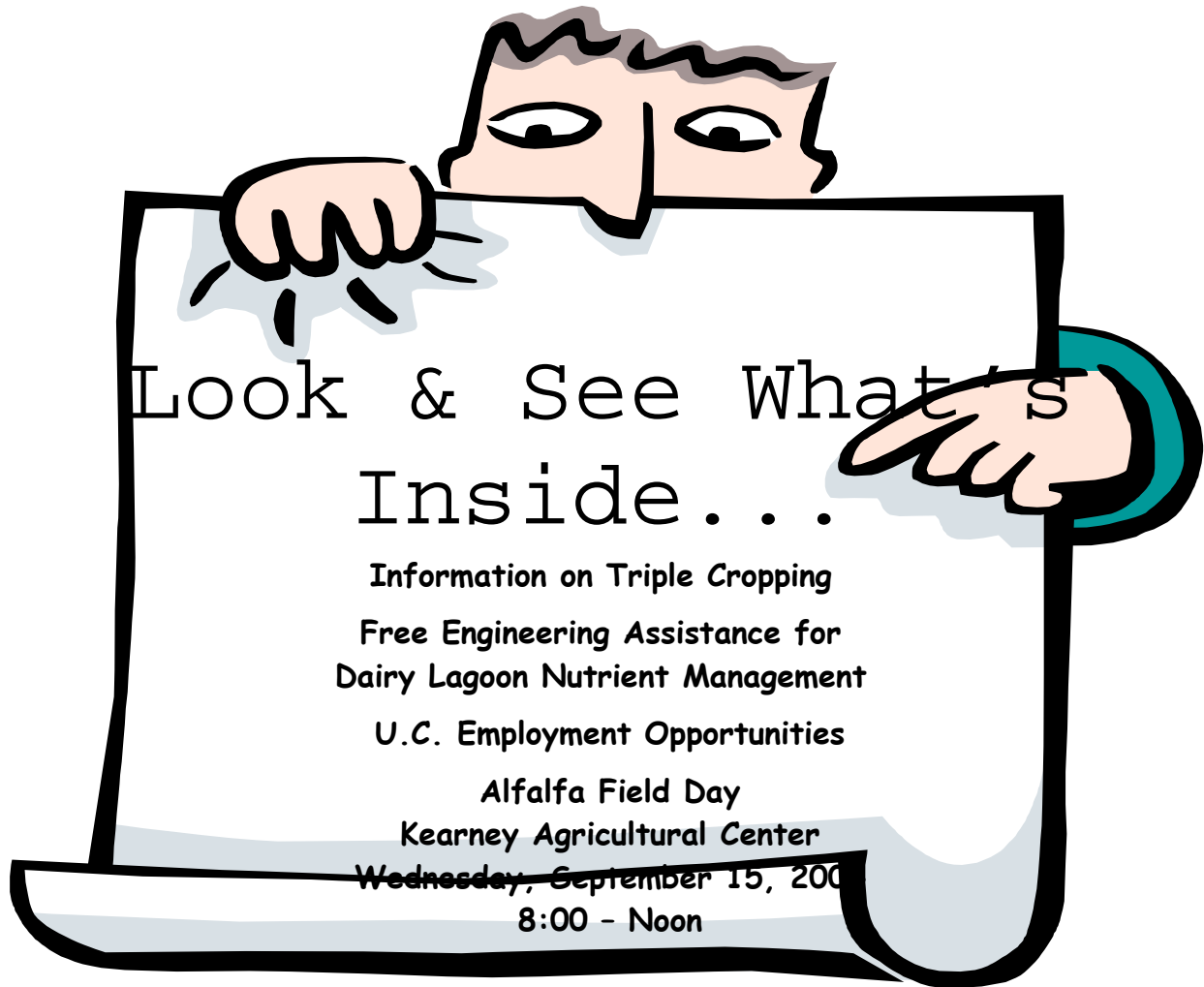
Directions

Coming from the North

North of Fowler, CA
 Head south on Hwy 99.
 Exit E. Manning Ave.
 Head East for approx. 6 mi.
 Turn right on S Riverbend Ave.

Coming from the South

South of Kingsburg, CA
 Head north on Hwy 99.
 Exit Road 12. Travel north approx. 8 mi.
 Road name changes to 18th Ave.
 Road name changes to S. Mendocino Ave.
 Turn right on E. Manning. Head east 2 mi.
 Right on S. Riverbend Ave.



Marsha Campbell Mathews, Farm Advisor
UCCE - Stanislaus County