

# DAIRY NOTES

UNIVERSITY OF CALIFORNIA

COOPERATIVE EXTENSION

KINGS COUNTY



November 1999

## WINTER FORAGE SELECTION AND PLANTING

**What to plant** - There are so many choices! Wheat, barley, triticale, oats, vetch, peas or beans?? Your decision should be based on what your feeding objectives are. If you are looking for a forage to feed to high producing milk cows, then you should consider a tall variety that you can harvest at boot stage **or** a short statured, high grain yielding variety to harvest at soft dough stage. If you want forage for heifers, dry cows or late lactation milk cows, then high yielding, soft dough stage forages should be your choice. Every attempt should be made to “match the feed to the need.”

**When to plant** - In general, the best time to plant in the Kings-Tulare area is mid- November to mid-January. Earlier plantings are at greater risk for damage from disease, frost and lodging. Late plantings have a lower yield potential due to a shortened growing season.

**Seeding rate and depth** - Successful plantings should average 25 to 30 seedling plants per square foot. Consider replanting if germination results in less than 13 plants per square foot at the 2 to 3 leaf stage. The following table provides suggested seeding rates for irrigated and dryland conditions:

**Suggested seeding rates for small grains in the San Joaquin Valley.**

<b>Crop</b>	<b>Irrigated (lbs/ac)</b>	<b>Dryland (lbs/ac)</b>
Wheat	100 - 150	60 - 100
Barley	80 - 120	60 - 100
Triticale	100 - 150	60 - 100
Oats	80 - 150	60 - 100

Ranges are provided because the actual seeding rate will depend on soil conditions, planting date and method, seed size and intended end use. For example, the lower end of the ranges would be used if the seed is drilled into a well prepared seed bed. The higher ranges would be used if the seed is broadcast, or if planting is late (after mid-January). High seed rates can also be used to produce finer stems in hay, although lodging is more likely under these conditions. Seeding rates also need to be adjusted to account for varying seed size; varieties with larger seed need to be planted at higher rates than varieties with smaller seed to ensure adequate plant populations. Wheat and triticale should be planted at a depth of  $\frac{3}{4}$  to  $1\frac{1}{2}$  inches; barley and oats can germinate when planted as deep as 2 inches. Planting deeper than this will reduce stand, seedling vigor and yield.

**Fertilizer** - Nitrogen (N) and sometimes phosphorus (P) are the nutrients most often limiting to high yields of cereal forages. Potassium and zinc deficiencies are not common in the San Joaquin Valley.

*How much?* - The amount of fertilizer required depends on the type of forage or grain selected, soil type, residual from the previous crop, rainfall and irrigation, manure applications, forage yield and quality goals. The following table provides reasonable N fertilizer rates for an entire season:

**Suggested seasonal rates of nitrogen fertilizer for small grains.**

<b>Crop</b>	<b>Irrigated (lbs N/ac)</b>	<b>Dryland (lbs N/ac)</b>
Wheat	160 - 210	10 - 50
Triticale	125 - 175	10 - 50
Barley	100 - 150	10 - 50
Oats	100 - 125	10 - 50

Phosphorus fertilizer should be applied pre-plant only if a soil test shows a deficiency. Soil levels of PO<sub>4</sub>-P less than 10 ppm usually respond to P<sub>2</sub>O<sub>5</sub>; apply 40 to 80 lbs/acre depending on severity of deficiency.

Dairy *manure solids* and *liquid manure* water from lagoons are commonly applied to winter forage crops. These sources of nutrients can contribute part or all of the fertilizer requirement. Since levels of N and other nutrients in manure vary widely, these sources should be sampled prior to application and commercial fertilizer application rates adjusted accordingly. A field day will be held locally on Wednesday, Nov. 17<sup>th</sup> in Lemoore for those interested in learning more about how to estimate manure nutrient application rates. (see attached notice).

*When to apply?* - Winter cereals need most of their nitrogen during the period of rapid growth. This is usually mid-February through April, depending on planting date. Applying all of the N fertilizer preplant is not recommended. On sandy soils, most applied fertilizer nitrogen will wash away or be leached below the root zone during winter storms. On heavy soils that waterlog, the nitrogen will be converted to gaseous nitrogen which escapes into the atmosphere. The more rain, the more pronounced the losses.

Only enough nitrogen should be applied at planting to cover the growth expected before mid-January. As a thumb rule, about 16 lbs of nitrogen are needed per ton of growth. For example if you anticipate about 4 tons of wheat forage before mid-winter, then apply  $4 \times 16 = 64$  lbs of N per acre preplant. The remaining nitrogen should be applied in at least two split applications; one in late January as the plants begin their rapid vegetative growth, and one just as the grain head starts to emerge (usually mid to late March in our area depending on variety and planting date). So following through with the example above, if you applied about 60 lbs. of N per acre preplant, then you could reasonable apply about 50 lbs. of N/acre in late January and another 50 lbs. of N/acre in March for a season total of 160 lbs of N. Phosphorus is important for germination and seedling vigor and is not typically a management concern once the crop has advanced past early jointing stages of growth.

*Cereal forage variety trial*- Following are results of the 1999 winter forage trial conducted in cooperation with John Silveira of Baretto & Silveira dairy. The field was planted on November 23. Each of the five entries was planted in 4 plots and each plot was 30 feet wide by 1/4 mile long. The table below shows yield as harvested and corrected to 30% dry matter. Trical 105 had the highest yield in this trial, although from a statistical standpoint there were no differences among the entries. The triticale was taller and later maturing than the other entries, and had some lodging. There was very little lodging among the wheat entries. Yecora Rojo wheat had significantly lower fiber (ADF and NDF) than any of the other entries. This is consistent with previous trials and explains in part why Yecora Rojo has been such a popular choice for dairy producers in past years. The lower fiber content of Yecora Rojo translates into higher TDN. Although the field was harvested at dough stage, sub-samples of each entry were harvested at four earlier stages to compare feeding value at earlier harvest to soft dough stage. These will be the topic of a future newsletter.

### UC Cooperative Extension 1999 Winter Forage Trial - Kings County

cultivar	cereal type	tons/acre as harvested	% DM at harvest	tons/acre at 30% DM	plant ht. (in)	% CP	% ADF	% NDF
Trical 105	triticale	21.5	34.7	24.9	49	10.1	35.0	52.6
Cuyama	wheat	19.2	36.9	23.5	40	9.5	37.2	54.1
Brooks	wheat	18.9	36.7	23.0	38	10.8	34.2	49.8
Yecora Rojo	wheat	18.7	36.5	22.7	37	10.4	32.4	47.6
RSI 5	wheat	20.2	33.2	22.5	43	10.0	35.0	51.2
<b>Average</b>		<b>19.7</b>	<b>35.6</b>	<b>23.3</b>	<b>41</b>	<b>10.2</b>	<b>34.8</b>	<b>51.0</b>
<b>CV %</b>							<b>2.87</b>	<b>2.53</b>
<b>LSD(.05)</b>							<b>1.538</b>	<b>1.987</b>

Planted: November 23, 1998 @ 150 lbs/acre

Harvested: May 18, 1999

Fertilization: 50 units UN32 pre-plant; 32 units anhydrous ammonia on April 10 in addition to manure lagoon water

Means are averages of four replications. CP=Crude protein – ADF=Acid Detergent Fiber – NDF=Neutral Detergent Fiber

I am grateful for the cooperation of grower John Silveira and the others who made this trial possible; Gary Dooley (planting), Gene Aksland, Resource Seeds, Bob Headrick's harvest crew and especially Joe Padilla our UC field technician. Please thank these people when you see them, for it is through their efforts that we all can benefit from the information developed in the trial.

*UC Regional Grain Trials*- Each year the UC Davis Department of Agronomy and Range Science conducts regional cereal grain trials throughout the state. Kings County (Corcoran) is one of the sites for these trials. On the following page are selected results from last season's wheat trial in Corcoran. In addition to the standard wheat varieties (cultivars) that you see listed, there were also many other varieties of common wheat, durum wheat, barley, oats and triticale in the trial that could not be listed due to space limitations. For the varieties listed you will see grain yield, plant height, lodging and disease ratings. Forage yields are not listed, but you can get some idea of how well the wheat might fare if harvested as dough stage forage by looking at the grain yield and plant height. Most of the varieties of wheat that we use for forage were developed for grain and you will see some familiar names in the list.

1999 KINGS COMMON WHEAT TEST

ENTRY	YIELD (lbs/acre)	1000		PLANT HT (in)	LODGING (soft dough)	LODGING (harvest)	BYDV	SEPTORIA	LEAF RUST	STRIPE RUST	BACTERIAL STREAK	
		TEST WT (lbs/bu)	KERNEL WT (grams)									
<i>CULTIVARS</i>												
20 ANZA	7440 (32)	63.0	32.3	41	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
112 YECORA ROJO	7630 (24)	64.5	49.0	37	1.0	1.0	1.0	1.0	1.0	1.8	1.0	
353 YOLO	7590 (27)	62.0	30.7	42	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
415 KLASIC	8270 (03)	64.6	48.5	38	1.0	1.0	1.3	1.0	2.0	1.0	1.0	
638 SERRA	8090 (07)	63.4	39.9	45	1.0	1.0	1.0	1.0	1.0	1.0	1.5	
788 EXPRESS	7610 (25)	62.7	38.0	42	1.0	1.0	1.0	1.0	1.0	1.3	1.0	
827 CAVALIER	7640 (23)	63.6	48.2	37	1.0	1.0	1.0	1.0	1.8	1.5	1.0	
901 BROOKS	8470 (02)	64.0	45.6	42	1.0	1.0	1.0	1.5	1.0	3.0	1.0	
976 RSI 5	7800 (18)	62.9	44.7	42	1.0	1.0	1.3	1.0	1.0	1.3	1.3	
1020 BONUS	8570 (01)	63.3	47.7	38	1.0	1.0	1.3	1.0	1.0	1.3	1.0	
1036 KERN	7140 (36)	64.6	45.3	36	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
1130 STANDER	7940 (14)	62.6	43.1	37	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
1193 SUNSTAR KING	7690 (21)	64.2	39.8	45	1.0	1.0	1.0	1.0	1.0	1.5	1.0	
1203 CHIEF	6980 (38)	62.6	45.0	49	2.0	1.5	1.0	1.0	1.0	1.0	1.3	
1204 TOPIC	7570 (28)	63.7	46.2	50	1.0	1.0	1.0	1.0	1.0	1.8	1.0	

Rating scale for diseases (area of flag-1 leaf affected at soft dough stage) and lodging: 1=0-3%, 2=4-14%, 3=15-29%, 4=30-49%, 5=50-69%, 6=70-84%, 7=85-95%, 8=96-100%.

BYDV ratings (see scale above) were based on percentage of plants showing foliar symptoms.

(BYDV=Barley Yellow Dwarf Virus)

Numbers in parentheses indicate relative rank in column.

As you can see, there are *many* varieties, each with different attributes. Yecora Rojo is still the leading wheat (grain) cultivar in California in terms of acres planted --113,280 acres of Yecora Rojo out of 569,000 total acres of wheat planted in California last season. It has excellent feeding value as a forage when harvested at soft dough stage, but it suffers from rust, a leaf disease, which can be especially bad in wet years. Brooks has yielded well in grain trials and has high grain protein, but it too can be susceptible to several of the leaf diseases. RSI 5 has been used widely for forage with good yields and acceptable quality. I am anxious to try some of the others in my forage trials this year --Bonus looks very promising as does Stander. Maybe it is time for you to consider the options and try a field or a strip or two in a field of something other than your "old stand by" variety. Give me a call if you would like ideas on how to go about setting up a test at your farm.

# Lagoon Water Field Day - Wednesday, November 17th

Do you know how much nitrogen you are applying when using lagoon water in your irrigation? Would you like to learn some easy methods for using the nutrients in your lagoon to meet the fertilizer needs of your crops? For practical answers, please join us!!

## *At this field day you will:*

- Learn practical methods of applying lagoon water nutrients so you can easily estimate how much nitrogen you are applying
- Learn about an in-line flow meter that is being used to monitor lagoon water application
- See demonstrated an in-field method of analyzing lagoon water for rapidly available nitrogen that takes just a few minutes. **(Bring a sample of your lagoon water to the meeting for free on-the-spot ammonium analysis – remember to keep it cold)**
- Learn an easy method to estimate the output of your existing lagoon water pump that you can do yourself
- See the results of the second year of a replicated field scale trial conducted in Hilmar comparing silage corn grown using only lagoon water nutrients to corn fertilized with anhydrous ammonia
- See the results of this season's cotton grown at Oliveira Dairy using only manure nutrients

**When:** Wednesday, November 17th.

10:30 - 11:00 AM registration, refreshments, and drop off your water sample  
11:00 - 1:00 PM program presentations

**Where:** Oliveira Dairy, 8519 24th Ave., Lemoore

## **Speakers:**

*Marsha Mathews*, UC Cooperative Extension Farm Advisor, Stanislaus County

*Rollie Meyer*, UC Cooperative Extension Soils Specialist, UC Davis

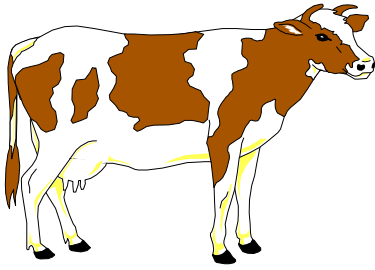
*Thomas Harter*, UC Cooperative Extension Ground Water Specialist, Kearney Ag Center

*Tony Oliveira*, County Supervisor, Dairyman and *Keith Backman*, Della Valle Laboratory

## **How to get there:**

Oliveira Dairy is located on 24th Ave., just north of Grangeville Blvd., about 5 miles west of Highway 41 and just east of the Lemoore Naval Air Station.

If you have any questions about the program, call Carol Collar at 582-3211 ext. 2730



*Inside . . . .*

***Winter Forage Selection and Planting -  
Lagoon Water Field Day, November 17th***

Carol Collar  
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Kings County