DAIRY NOTES

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION KINGS COUNTY

November 2001

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WINTER FORAGE SELECTION AND PLANTING

What to plant - There are many choices. The list includes wheat, barley, triticale, oats or a forage mix. There are multiple cultivars or varieties within each species from which to choose. 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, 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. The idea is 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.

Crop	Irrigated (lbs/ac)	Dryland (lbs/ac)
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 $^{3}/_{4}$ to $1^{1}/_{2}$ inches; barley and oats can germinate when planted as deep as 2 inches. Planting deeper than this will reduce stand, seedling vigor and yield.

How much fertilizer - 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. 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. The following table provides reasonable N fertilizer rates for an entire season:

Suggested seasonal rates of nitrogen fertilizer for small grains.

Crop	Irrigated (lbs N/ac)	Dryland (lbs N/ac)
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_4-P less than 10 ppm usually respond to P_2O_5; apply 40 to 80 lbs/acre depending on severity of deficiency. 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.

Dairy manure solids and liquid manure water 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. Managing manure nutrients for forage crops has been the focus of an educational program for growers and dairy producers developed by UC Cooperative Extension farm advisors. The class will be offered again this winter. Watch for the announcement in an upcoming newsletter.

When to apply fertilizer - 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 3 tons of wheat forage before mid-winter, then apply 3 x 16 = 48 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 50 lbs. of N per acre preplant, then you could reasonable apply about 60 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.

Results of winter forage variety trial - The 2001 winter forage trial was conducted in cooperation with den Dulk Farming. The field was planted on December 12, 2000 in a 35-acre field east of 4th Ave and north of Excelsior. Each of the nine forage entries was planted in four blocks or plots. The plots were planted in random order in strips that were 20 feet wide by 1/4 mile long. The field was harvested on May 22. A 15' swath was cut down the center of each plot and immediately chopped into an empty truck. Trucks were weighed and forage samples were collected at the silage pit.

Yield and feeding value data are in the table that follows. The first column in the table below shows yield in tons per acre on an "as harvested" basis. These yields ranged from a little over $14^{1}/_{2}$ tons for Yecora Rojo wheat to 21 tons per acre for Trical 111 triticale. The next column shows the percent dry matter at harvest. Last May was exceptionally hot which caused the field to dry down rapidly the week prior to harvest. This explains the high dry matter (low moisture) at harvest. The forage trial averaged 40% dry matter (60% moisture), which is a bit too dry. Ideally one should shoot for 30 to 35% dry matter to ensure a good pack in the silage stack.

The next column shows the yields of all the entries adjusted to a common dry matter of 30%. The adjusted yield data make it possible to compare the relative yields of the different forages at the same moisture level, just like adjusting milk production to a common milk fat percentage allows you to compare milk production of individual cows. Baglietto SSK wheat had the highest corrected yield in this trial, although from a statistical standpoint there were no differences among the entries. Statistical tests of the data reveal that any of the other varieties could have ranked on top. The numbers in bold at the bottom of the table relate to the statistical analysis. The percent crude protein (CP) and acid detergent fiber (ADF) for each of the forages are listed in the next two columns. Crude protein ranged from 10.5% for Trical 111 to 12% for Brooks. Acid detergent fiber ranged from 27.5% for Yecora Rojo to 32.5% for Trical 111. The triticale was taller than all the wheat entries and despite its height it had very little lodging. Lodging was a problem for Zancor, the tallest wheat, and also for Brooks and Baglietto SSK wheat.

Rust, a leaf disease of winter forages was most severe for Yecora Rojo wheat, but it was also heavy in the Brooks and Eldon wheat plots. For more information on winter forages and to see results of other local, regional or statewide grain trials there are websites that you can visit. Local forage trials are posted on my website, http://countyofkings.com/kingsce. From there you can link to the UC Davis Small Grains website if you want more information on varieties that don't appear in our tests. The grain trials provide information on grain yield, disease and lodging ratings and other characteristics that can help give you a sense of how the varieties compare to one another. Forage yield is not listed, but can be estimated from grain yield and plant height.

I am especially grateful to cooperator Gil den Dulk for his willingness to provide a site, a planter and some extra time for planting the trial. Special thanks also go to the harvesting crew from Netto Ag Inc. for the care they took in harvesting it. Without help like this from the ag community we would not be able to provide unbiased information from field trials like this one. Let them know you appreciate their support of the UCCE forage program next time you see them!

THE VALUE OF CERTIFIED SEED -CALIF. CROP IMPROVEMENT ASSOC. (CCIA)

The CCIA is a non-profit corporation that provides seed certification services in California. Seed certification is a voluntary quality assurance program for various crops including small grains. Varieties that are entered into this program have been evaluated for their genetic integrity and for their unique agronomic characteristics of pest resistance, adaptability, uniformity, quality and yield. Seed production is closely monitored to prevent out-crossing, weed, other crop, and disease contamination that may negatively affect seed quality. The certification process provides a tracking and inspection system that ensures reliability. Many small grains planted for forage are enrolled in the CCIA program and others are not. The tag on the seed bag identifies seed that is CCIA certified. Two of the wheat entries in our forage trial were non-certified, Baglietto SSK and Zancor. Use of

common seed that is not certified has a certain amount of risk because you must take on good faith that what is delivered is reliable.

2001 CALIFORNIA ALFALFA & FORAGE SYMPOSIUM

December 11-13, 2001, Modesto, CA

Featuring:

Production methods, utilization, quality, marketing, pest control, and waste recycling in alfalfa, corn silage, winter cereals and alternative forages.

The symposium will be held at the Doubletree Hotel, in Modesto**.** (Contact the Doubletree for room reservations: 209-526-6000 or 800-222-TREE). The California Alfalfa Symposium is in its 30th year, and has become the important source of information relating to irrigated alfalfa production in Western States. This year, the program has been designed to feature not only alfalfa, California's premier forage, but also corn silage, small grain forages, and alternative forages which may fit in to many farm situations, especially dairy, horse, and beef applications.

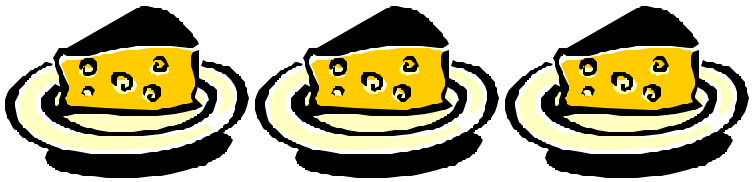
PRE-SYMPOSIUM TOUR – DEC 11th

See interesting and unique agricultural sites in the Modesto/Turlock areas including forage production, experimental plots of alternative forages, innovative manure management, cheese factory, and dairy production. (Separate registration required, meet at lobby of Modesto Doubletree at 11:45 a.m.--COST $25 including lunch).

SYMPOSIUM – DEC 12th-13th

The complete program agenda, including a registration form is available from the UC California Alfalfa & Forage Systems Workgroup webpage at **http://alfalfa.ucdavis.edu/**

The symposium begins at 8 a.m. on both days. Registration for the two-day program is $85 if you register before November 17th. After that date the registration fee is $125. Registration includes admission for both days, ONE copy of the proceedings, TWO BANQUET LUNCHES, and refreshments, plus loads of fun! Banquet lunches are guaranteed only with registration before the deadline. Follow instructions at the website for mailing the registration form and your check to UC Davis.



AWARD WINNING HANFORD CHEESE!

Local cheese made from milk in Kings County won top honors in a recent competition conducted by the American Cheese Society. *Hanford Jack*, *St. John* and *St. John-Santa Fe* cheese made by Fagundes Old World Cheese won first place awards in the American Originals and the Hispanic and Portuguese-style cheese categories. California cheese won 15 first place awards – more than any other state. And three of them were from Hanford! Congratulations to John and the rest of the Fagundes family for their award-winning cheese!

2001 Kings/Tulare Counties UC Cooperative Extension
Winter Forage Trial

Cooperator: den Dulk Farming, Gil den dulk *** denotes non-certified seed;**

UC FARM ADVISORS: CAROL COLLAR (KINGS) AND STEVE WRIGHT (TULARE) ALL OTHERS WERE CCIA CERTIFIED

HARVESTED BY:. DIAS & FRAGOSO

Planted: December 12, 2000 @ 135 lbs/acre Feed analysis provided by Dairyland Lab

Harvested: May 22, 2001

Cultivar	cereal type	tons/acre as harvested	% DM at harvest	tons/acre at 30% DM	plant ht. (in)	% CP	% ADF	% lodging
Baglietto SSK *	Wheat	18.4	40.3	24.7	42	10.6	30.6	33
Kronos	Durum wheat	19.8	36.3	23.8	38	11.1	27.6	3
Bonus	Wheat	17.1	41.6	23.7	35	11.8	28.0	1
Brooks	Wheat	15.6	44.9	23.4	39	12.0	28.4	33
Trical 111	Triticale	21.0	33.2	23.3	46	10.5	32.5	4
Eldon	Wheat	18.0	38.2	23.0	39	10.6	28.0	3
Express	Wheat	17.3	39.7	22.8	38	11.5	29.8	0
Yecora Rojo	Wheat	14.6	46.7	22.6	35	11.7	27.5	9
Zancor *	Wheat	17.2	39.5	22.6	40	11.3	31.9	44
Mean (4 reps)		**17.7**	**40.0**	**23.3**	**39.2**	**11.2**	**29.36**	**14.25**
CV %		**6.82**	**6.10**	**8.09**	**7.02**	**3.27**	**4.08**	**122.4**
LSD(.05)		**1.761**	**3.570**	**2.760**	**4.03**	**0.537**	**1.754**	**25.51**

CP=Crude protein **ADF**=Acid Detergent Fiber – a measure of cellulose and lignin; the fibrous, less digestible parts of the plant.

Description of statistical terms (in bold): Mean = the numerical average; **CV%** = the coefficient of variation. It is the standard deviation expressed as a % of the mean of all the plots. For example there was very little variation in % crude protein (CV is 3.27) but huge variation in the % lodging (CV is 122.4). Generally, the lower the CV, the more confidence you can have in the data.

LSD = Least significant difference. It is a statistical test used to determine whether differences between varieties are real or are just the result of random variation within a field or analytical process. If you compare two varieties in a column, and the difference between them is greater than the LSD value, then you can be 95% sure that the difference is real, and not just due to chance.