IMPERIAL AGRICULTURAL BRIEFS

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Features

PAGE

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DON'T MISINTERPRET SCIENTIFIC DATA

Keith S. Mayberry

Agricultural experimentation plays a vital role in testing new products and ideas. Some kinds of experiments are used to compare cultural practices, evaluate fertilizer rates, determine irrigation needs, and develop pest control strategies.

The results from an experiment are scrutinized by submitting the data to statistical analysis. The statistics program challenges the data and the experiment to see if there is too much variability among the treatments and replications. If the experimental results pass the test, then the scientist can conclude with a relatively high degree of certainty (usually 95% confidence level) that *the information is valid for the test at the specific location, under the specific environmental and soil condition, at a specific time, and using a specified set of cultural practices and variety.* The results offer support that one treatment (variety, fertilizer rate, pest control chemical) is or is not better than the others tested.

There is no scientifically sound basis to say that the conclusions from a single experiment and a single location will be valid at other locations with a different set of conditions (different soil type, different microclimate, change in variety, etc.).

Consider the following example: Assume that a scientist has a nitrogen fertilizer experiment comparing different rates of ammonium nitrate application for growing iceberg lettuce. The soil may be a Glenbar silty clay loam and the previous crop may have been processor onion. The researcher applies the fertilizer treatments in the fall and collects the data. Statistical analysis of the data showed that 100 pounds of nitrogen per acre is sufficient for maximum yield. Can the researcher say that the entire lettuce crop in Imperial Valley needs only 100 pounds of nitrogen per acre to maximize yield? Absolutely not…and here is why. Perhaps the scientist was unaware or did not account for the residual nitrogen that left over from the processing onion crop. The lettuce in the experiment was feeding both on the nitrogen the scientist supplied and that which was left over from the soil. If the experiment on lettuce were conducted in a different field, the results would most likely be significantly different. However, it should be noted that the results of the experiment were valid *for the specific site* the test was conducted.

Experiments need to be repeated over a wide range of soil types and conditions to develop a pattern of repeatable results before sound scientific conclusions can be made. It is not valid to extrapolate results from limited testing to large acreages. Serious mistakes in misinterpreting experimental results can be made when this occurs.

Irrigation and fertilizer experiments are far more subject to producing variable results than are experiments on pest control. The reason being that fields are variable. Sandy soils have different irrigation needs than loam soils or different yet from silty clay soils even when farmed to the same crop. The same is true of fertilizer experiments with the added variability of residual fertilizer in the soils.

Before conclusions can accurately be made on a cultural practice such fertilizer requirements, irrigation requirements, or even varieties, the experiments need to be conducted over a wide range of conditions and even years. Variety data can show some alfalfa varieties perform better during the spring than in the fall. If the scientist did not grow the experiment year round and continue testing for several years, then the ranking of the top producers for the life of an alfalfa stand could never be established. Taking the results of one cutting does not tell the whole story and leads to false conclusions.

SUGAR BEET STAND ESTABLISHMENT

Herman Meister

Land Preparation

Pre-irrigation of ground before planting of sugar beets is necessary to form a good seedbed as well as to leach salts, germinate weeds, and decay debris in the soil. A common practice is to follow alfalfa with sugar beets. It is imperative to rid the soil of rotting debris before germinating the sugar beet seeds. Rotting debris attracts various soil insects and enhances the soil

environment for *Rhizoctonia* fungi. Flat flood irrigation followed by discing, triplaning, and listing beds for a second pre-irrigation of the beds is ideal. Every attempt must be made to achieve a good stand of sugar beets for high tonnage and sugar yields.

Insect Control
Steve Kaffka (Agronomist, UCD) and I have worked with various insecticide treatments for insect control at planting for several years. Growers currently rely on organo-phosphate insecticides for control of pests during germination and early stand establishment. These chemicals will become restricted in the near future due to environmental concerns.

The study reinforced the concept that various pests attack and destroy germinating seeds and seedlings. Stand emergence was greatly improved where insecticides were used in comparison to no insecticides at planting. Overall, post emergence loss to insects was much less than expected, averaging less than 10% for the 3-year period.

Lorsban at planting plus Lorsban post-emergence sprays were compared to Imidicloprid (Gaucho) seed treatments at 20 and 45g per 100,000 seeds. Seventy to 80 percent of the seeds resulted in successful plants in the treated plots while only 55 percent survived in the untreated treatment. The Guacho seed treatment performed as well as the Lorsban treatment for protecting the seeds during germination. The Gaucho treatments also provided flea beetle control for a period of time after emergence reducing the need for post-emergence insecticide use for flea beetle control. The Gaucho seed treatment is available currently at the 30g rate per 100,000 seeds. The seed treatments are especially necessary in space plantings to reduce seed costs and eliminate thinning costs.

Weed Control
UpBeet is the most widely used herbicide for weed control on sugar beets in the Valley. Timing of the second irrigation is critical in relation to weed size and field entry. If the field remains wet and entry is delayed, then certain weeds like malva will not be adequately controlled. Precision listing is a benefit when spraying with ground rigs larger than the planter pattern. If the spray rig is wider than the lister pattern, and the guess-row is a few inches wide or narrow, then the band spray can be affected resulting in partial coverage of the top of the bed.

Fertilizer application
Fertilizers high in ammonia concentrations are discouraged due to the high probability of injury to seedling beets. If they must be used, place far enough away from the seed line to avoid injury to plants or inject in the beds prior to the pre-irrigation of beds.

Seed Selection
Choosing a large size seed to plant does not always indicate a stronger and larger endosperm. The large size could be due to a thicker seed coat, which could take more time to germinate. A longer germination time requires more water and increases exposure to pests.

For more detailed information about this study, visit the web site, http://sugarbeet.ucdavis.edu/

EVALUATION OF INSECTICIDES DURING 2002 FOR CABBAGE LOOPER CONTROL IN CAULIFLOWER

Eric T. Natwick

The experiment was conducted in a 1.5-acre block of cauliflower. Plots measured 50 ft x 13.33 ft on 4-beds per plot. The experiment consisted of 13 treatments in a randomized complete block design with 4 replicates. Treatments were applied on 14, 24 October, and 14 November with a Lee Spider Spray Trac operated at 35 PSI delivering 53 gpa using 3 TJ-60 11003VS nozzles per bed. Cabbage looper larvae were counted on 20 plants in each plot on 15, 22, 28 October, 4, 12, 18, 25 November, 2, 9 December 2002.

Seasonal cabbage looper means for all of the insecticide treatments were lower (P=0.05) than the seasonal mean for the check (8.6) (Table 1). Capture 2 EC at 5.12 fl oz per had the lowest seasonal cabbage looper mean (0.5) followed by Avaunt 30 WG at 3.5 dry oz/acre (0.9), and Avaunt 30 WG at 2.5 dry oz/acre (1.1) and Warrior T at 3.8 fl oz/acre plus Lannate L at 64.0 fl oz/acre (1.1).

There were no differences in cabbage looper numbers one day after the first treatment, but all treatments except S1812 35 WP at 6.86 dry oz/acre and Avaunt 30 WG at 3.5 dry oz/ acre had means lower than the check 8 days after the first treatment. Capture 2 EC at 5.12 fl oz per acre had the fewest cabbage looper larvae/ twenty plants (0.8) 8 days after the first treatment followed by Lorsban 75 WG at 21.33 dry oz/acre (1.3) and Success 2 SC at 4.0 fl oz/acre (1.5) compared to the check (6.0).

Four days after the second treatments were applied only S1812 35 WP at 6.86 dry oz/acre and Dipel at 8.0 dry oz/acre had means that were not significantly lower than the check. Warrior T at 3.8 fl oz/acre plus Lannate L at 64.0 fl oz/acre and Avaunt 30 WG at 3.5 dry oz/acre had the fewest cabbage looper larvae (0.3) followed by Avaunt 30 WG at 2.5 dry oz/acre (0.5), Confirm 2F at 8.0 fl oz/acre (8.0), and Capture 2EC at 5.12 fl oz/acre (1.0) compared to the check (7.5) four days after the second treatment.

Eleven days after the second treatment the check mean was 19 cabbage loopers /twenty plants which was greater than all the insecticide treatments. Capture 2 EC at 5.12 fl oz/acre had the fewest cabbage looper larvae (0.3) followed by Avaunt 30 WG at 3.5 dry oz/acre (1.0), Avaunt 30 WG at 2.5 dry oz/acre (2.0), and Warrior T at 3.8 fl oz/acre plus Lannate L at 64.0 fl oz/acre (2.0) eleven days after the second treatment.

Nineteen days after the second treatment the check mean was 10 cabbage loopers /twenty plants which was significantly greater than all the insecticide treatments except S1812 35 WP at 6.86 dry oz/acre with 7.5 looper larvae. Capture 2 EC at 5.12 fl oz per acre (1.3) and Avaunt 30 WG at 2.5 dry oz/acre (1.3) had the fewest cabbage looper larvae followed by Warrior T at 3.8 fl oz/acre plus Lannate L at 64.0 fl oz/acre (1.5), and Avaunt 30 WG at 3.5 dry oz/acre (1.8) nineteen days after the second treatment.

Four days after the third treatments were applied insecticide treatments had means that were not lower than the check. Avaunt 30 WG at 3.5 dry oz/acre had the fewest cabbage looper larvae (0) followed by Capture 2EC at 5.12 fl oz per acre (0.8), and Avaunt 30 WG at 2.5 dry oz/acre and Warrior T at 3.8 fl oz/acre plus Lannate L at 64.0 fl oz/acre (1.0) compared to the check (9.0) four days after the second treatment.

Eleven days after the third treatment the check mean was 10.8 cabbage loopers /twenty plants which was greater than all the insecticide treatments. Capture 2 EC at 5.12 fl oz per, Avaunt 30 WG at 3.5 dry oz/acre, and Avaunt 30 WG at 2.5 dry oz/acre had the fewest cabbage looper larvae (0) followed by, and Warrior T at 3.8 fl oz/acre plus Lannate L at 64.0 fl oz/acre (0.3) eleven days after the second treatment.

Eighteen days after the third treatment the check mean was 6.5 cabbage loopers /twenty plants which was greater than all the insecticide treatments except S1812 35 WP at 6.86 dry oz/acre. Avaunt 30 WG at 3.5 dry oz/acre and Confirm 2F at 8.0 fl oz/acre had the fewest cabbage looper larvae (0) followed by Capture 2 EC at 5.12 fl oz per (0.3) and Warrior T at 3.8 fl oz/acre plus Lannate L at 64.0 fl oz/acre (1.0) eighteen days after the second treatment.

Twenty-five days after the third treatment the check mean was 8.0 cabbage loopers /twenty plants which was greater than all the insecticide treatments. Avaunt 30 WG at 3.5 dry oz/acre, Confirm 2F at 8.0 fl oz/acre and Capture 2 EC at 5.12 fl oz per had the fewest cabbage looper larvae (0) followed by Avaunt 30 WG at 2.5 dry oz/acre (0.3) twenty five days after the second treatment.

Table 1. Mean Numbers[z] of Cabbage Looper Larvae per Twenty Cauliflower Plant Following Various Insecticide Treatments, Brawley, CA 2002.

Treatment	oz/acre	15 Oct	22 Oct	28Oct	4 Nov	12 Nov	18 Nov	25 Nov	2 Dec	9 Dec	Mean
Check	----------	0.5 a	6.0 a	7.5 a	19.0 a	10.0 a	9.0 a	10.8 a	6.5 ab	8.0 a	8.6 a
S1812 35 WP	6.86 dry	2.5 a	4.0 abc	5.8 ab	7.8 b	7.5 ab	4.3 b	6.3 b	9.8 a	4.5 b	5.8 b
S1812 35 WP + DiPel	6.86 dry + 8.0 dry	0.8 a	3.5 bcd	4.8 bc	5.8 bcd	4.8 c	3.3 bc	2.0 cde	2.5 bcd	1.0 cd	3.1 cde
DiPel	8.0 dry	0.8 a	2.3 bcde	5.0 abc	7.0 bc	5.5 bc	2.8 bcd	4.5 bc	6.0 ab	3.5 bc	4.1 c
Avaunt 30 WG	2.5 dry	0.5 a	3.3 bcd	0.5 d	2.0 cde	1.3 e	1.0 cd	0.0 e	1.0 cd	0.3 d	1.1 fg
Avaunt 30 WG	3.5 dry	1.0 a	4.3 ab	0.3 d	1.0 de	1.8 de	0.0 d	0.0 e	0.0 d	0.0 d	0.9 g
Comfirm 2 F	8.0 fl	1.5 a	1.8 cde	0.8 d	3.8 bcde	4.0 cd	2.0 bcd	2.5 cde	0.0 d	0.0 d	1.8 efg
Proclaim 5 SG	2.4 dry	1.3 a	3.3 bcd	1.3 d	7.5 b	5.3 bc	2.8 bcd	2.3 cde	4.0 bcd	1.8 cd	3.3 cd
Success 2 SC	4.0 fl	2.0 a	1.5 de	1.8 d	4.5 bcde	4.8 c	3.0 bc	1.5 de	1.5 cd	1.5 cd	2.4 def
Warrior T + Lannate L	3.8 fl + 64.0 fl	0.5 a	2.3 bcde	0.3 d	2.0 cde	1.5 de	1.0 cd	0.3 de	1.0 cd	1.0 cd	1.1 fg
Capture 2 EC	5.12 fl	0.0 a	0.8 e	1.0 d	0.3 e	1.3 e	0.8 cd	0.0 e	0.3 d	0.0 d	0.5 g
Lorsban 75 WG	10.67 dry	1.3 a	2.3 bcde	2.5 cd	7.5 b	4.8 c	1.8 bcd	1.5 de	4.8 bc	2.5 bcd	3.2 cd
Lorsban 75 WG	21.33 dry	2.5 a	1.3 de	1.8 d	5.3 bcde	3.0 cde	4.0 b	2.8 cd	1.8 cd	1.3 cd	2.6 de

[z] Means within columns followed by the same letter are not significantly different by ANOVA and LSD (P# 0.05).

TERMINATING COTTON IRRIGATION FOR DEFOLIATION

Herman Meister

There are several important factors to consider in managing defoliation. Factors such as water stress, nitrogen levels, whitefly honeydew, and weather conditions following the defoliant application are all important in terms of the final defoliation results.

The timing of the last irrigation puts into motion the final steps that lead to defoliation. The most important consideration in making the last irrigation should be based upon maturing the fruit intended for harvest. Approximately 600 heat units (about 3 weeks in August and September) are required to mature a bloom to a full-sized, hard boll, the stage at which fiber length development is complete. Under these conditions, one would need to maintain adequate soil-water conditions to provide for the development of bolls intended for harvest over a period of about three to four weeks.

A very general approach toward timing the defoliation is that the time interval between the last irrigation and the application of the chemical defoliant should be about twice the normal time span used between the late-season irrigations. This should provide for the basic water needs of the late fruit intended for harvest, and then allow some degree of crop dry-down, which in turn promotes crop senescence.

Another way is to identify the period of "cutout". Cutout is defined as that point when the top white flower is at 5 nodes or less when counting down from the terminal node. Once cutout has been reached, identify the last flower intended for harvest. From bloom to a full size mature boll will require about 3 weeks in August. Time the final irrigation in order to provide plant available soil moisture for that 3-week period to fully mature that boll. After boll maturity (full fiber elongation), an additional 2 weeks will be required to open the boll this time of year.

For example, you have identified the point of cutout and have decided that you want to harvest an August 6th flower. Using the 3-week rule to mature that flower or one-day-old boll, adequate soil moisture must be available through August 27. The previous irrigation was August 3 and you are on a 12-day irrigation interval. The next and final irrigation will be on August 15 and will provide adequate soil moisture through August 27. Consumptive use of water also slows dramatically once bolls start to open. The final target irrigation date should be August 15.

IRIS YELLOW SPOT VIRUS PRESENT IN IMPERIAL VALLEY ONIONS

Thomas A. Turini

During the 2002 growing season, white to yellow or dead oval spots appeared on seed stalks of Imperial Valley onion plants. These spots were sunken, ¼- to 1 ½-inches in length and were usually on one side of the plant. A high percentage of the affected seed stalks lodged before the seeds were completely formed.

These symptoms were caused by Iris yellow spot virus (IYSV), which is in the *Tospovirus* genus. Another virus in this genus is Tomato spotted wilt virus, which is widespread in California and causes damage on greenhouse-grown ornamentals.

Only thrips transmit *Tospoviruses*. Thrips acquire *Tospoviruses* as nymphs and are capable of transmitting the virus after they become adults.

IYSV is transmitted by onion thrips (*Thrips tabaci*), which are common in Imperial County onion fields. Western flower thrips (*Frankinella occidentalis*), which also feeds on onion, does not appear to transmit this virus. This virus does not appear to be seed-borne and has never been detected in bulb tissue (A. Krizman et al., 2001).

In addition to onions, IYSV has been reported in iris, jimsonweed, chives and leek. The presence of this virus has been confirmed in tissue from seed stalks of symptomatic bulb and dehydrator onions in Imperial Valley.

IYSV was previously reported in Netherlands, Israel and Brazil. In the United States, it was first reported in Idaho in 1993. It has been widespread in southwestern Idaho and eastern Oregon onion, leek and chive seed fields for more than 10 years.

In other areas in which the disease has been reported, the symptoms appear as white to

yellow or dead diamond shaped lesions on the seed stalk. Often, the lesions are clustered around the bulb-like swelling on the lower portion of the seed stalk. Symptoms are commonly limited to the seed stalk. However, in 2001, IYSV caused lesions on the leaves of commercial bulb onion plants in Colorado, Idaho and Utah (K. Mohan and N. C. Moyer, 2002).

Yield loss has not been well quantified. In rare cases, the disease has been so severe on seed onions that fields were not harvested due to this disease. In Colorado, Israel and Brazil, in bulb onion crops, substantial reduction in bulb size was reported where this disease was severe.

There are no management strategies for this disease at this time. The symptoms can resemble spray damage or damage due to other causes. Therefore, recognition of the symptoms associated with this virus can be important.

Currently, studies comparing susceptibility of onion varieties are being conducted in Idaho by Krishna Mohan. However, there is not enough data to make conclusions at this time.

References:

Kritzman, A., Lampel, M. Raccah, B., and Gera, A. 2001. Distribution and transmission of Iris yellow spot virus. Plant Disease 85:838-842.

Mohan, K. and N. C. Moyer. 2002. Iris Yellow Spot Virus: A New and Devastating Pathogen of Onion. North Carolina State University web site; http://www.cals.ncsu.edu/plantpath/Faculty/moyer/moyer_jw/posters/iysv/iysv.html

MEETING ANNOUNCEMENTS

The National Hay Association will host the 108th Annual Convention on September 18-19, 2003 at the Catamaran Hotel in San Diego, CA. For more information, see the website, http://www.haynha.org/

Conservation Tillage Field Days will be held by UCCE on the following dates and locations:

October 7th, Tuesday, Tulare County UCCE Conference Center, Tulare, CA.

October 8th, Wednesday, UC West Side Research and Extension Center, Five Points, CA.

October 9th, Thursday, LTRAS Project Equipment Building, Davis, CA.

HORSE NUTRITION

Juan N. Guerrero

I routinely receive a number of telephone calls regarding horse nutrition and the sources of the best available alfalfa hay in the Imperial Valley. I always ask three questions, "How old is the horse and what does the horse weigh?" and "What kind of physical activity does the horse have? In Southern California, in most cases, horses are pleasure horses and do very little strenuous activity. A light work-out for a horse is the animal striding in at least a canter for several hours. A medium work-out is ranch work, roping, or barrel racing. Since this level of physical activity is not attained by most southern California horses, mature horses should be fed at maintenance levels only.

How much should your horse eat? Table 1 depicts the National Research Council (*Nutrient Requirements of Horses, 1989)* recommendations (NRC) for expected feed consumption of horses. For example, if your mature horse weighs 1050 lb and you only leisurely ride the horse along ditch banks for three hours three or four times per week (a horse at maintenance), your horse should only be fed,

at most, 23 lb of hay daily (hay at 10% moisture).

There is an abundance of high quality alfalfa hay in the Imperial Valley. Perhaps out of misplaced good intentions, many persons wish to feed only the "best" feed to their horses. One must always remember that horses evolved on grasslands, with coarse grasses as their principal feed. NRC recommendations for the nutrient content of horse diets are in Table 2. Medium quality alfalfa hay (100% dry matter) and bermudagrass hay have 1.03 and 0.95 Mcal/lb of energy, about 19 and 12% crude protein, about 1.37 and 0.32% calcium and 0.24 and 0.20% phosphorous, respectively. Comparing the NRC recommendations (Table 2) for the nutrient content of horse diets with the nutrients in alfalfa and bermudagrass hays it is readily apparent that a horse at maintenance fed only alfalfa hay is being fed too much of everything.

Feeding only alfalfa hay to a horse at maintenance also has other associative risks. For a horse, and for most other herbivores as well, the proportion of calcium to phosphorous must be maintained. For horses, this Ca:P ratio should be from 1:1 to about 6:1. The Ca:P ratio of alfalfa hay is about 7:1, too high for horses, if alfalfa hay is the sole source of feed. The excessive amount of crude protein and the excess minerals in alfalfa hay may contribute to the formation of "enteroliths" in horse digestive systems. Enteroliths are stone-like structures that form in the intestines of horses that under certain circumstances may cause death. Enteroliths may become so large that they impede passage of ingesta in the intestines and may cause severe cases of colic. On the other hand, lowly bermudagrass hay for a horse at maintenance (Table 2) is adequate. Feeding horses is not that difficult, unfortunately uninformed yet well-intentioned horse owners are far more difficult.

TABLE 1. Expected Feed Consumption by Horses (% body weight)[a]

	Forage	Concentrate	Total
Mature horses			
Maintenance	1.5 – 2.0	0 – 0.5	1.5 – 2.0
Working horses			
Light work	1.0 – 2.0	0.5 – 1.0	1.5 – 2.5
Moderate work	1.0 – 2.0	0.75 – 1.5	1.75 – 2.5
Intense work	0.75 – 1.5	1.0 – 2.0	2.0 – 3.0

[a]Air-dry feed (about 90% DM).

TABLE 2. Nutrient Concentrations in Total Diets for Horses and Ponies (dry matter basis)

	Digestible Energy		Diet Proportions		Crude	Cal-	Phos-
	(Meal/kg)	(Meal/lb)	Conc. (%)	Hay (%)	Protein (%)	cium (%)	phorus (%)
Maintenance	2.00	0.90	0	100	8.0	0.24	0.17
Working horses							
Light work[a]	2.45	1.15	35	65	9.8	0.30	0.22
Moderate work[b]	2.65	1.20	50	50	10.4	0.31	0.23
Intense work[c]	2.85	1.30	65	35	11.4	0.35	0.25

[a]Horse at a canter gait
[b]Horses used in ranch work, roping, cutting, barrel racing, jumping, etc.
[c]Examples are race training, polo, etc.

REVIEW OF GENERAL ALFALFA PRODUCTION PRACTICES

Herman Meister

Land Preparation

Successful hay production begins with the selection of a suitable soil type for growing the crop. Almost any soil type in the Valley will grow alfalfa providing it has adequate drainage. The most successful soils are the loams with tile installed for good drainage capacity.

During the land preparation process, several trips across the field with a landplane or laser leveling will be money well spent. A good leveling job prevents low places in the field that permits water to collect for long periods of time. Alfalfa that is grown in areas that are frequently waterlogged will not compete well and grasses such as watergrass and sprangletop will eventually take over.

Stand Establishment Weed Control

A pre-emergence herbicide such as Balan or Eptam should be considered to reduce weed competition in the first cutting. Balan will provide good control of purslane, wild beets, summer and winter annul grasses and fair control of goosefoot and lambsquarter. Balan will not control the mustards such as london rocket and shepards purse in alfalfa planted after the middle of October. Balan requires incorporation for successful weed control. Eptam offers weed control similar to Balan with some added control of purple nutsedge and Eptam can be applied in the germination water.

Several post-applied herbicides are commonly applied for broadleaf weed control such as Pursuit, Raptor, and 2,4-DB. Various combinations of these herbicides plus Poast and Prism are applied for grass and broadleaf weeds. Identification of the weeds present is critical to recommending the right combination. Other herbicides are available such as Buctril and Sencor, but these materials frequently cause objectionable injury to the alfalfa under our conditions.

Insect Control

Monitor fields twice weekly during emergence. Flea beetles are especially attracted to alfalfa seedlings and may require control if large numbers are migrating in from old hay fields nearby. Also watch for the spotted alfalfa aphid as last year it caused considerable damage to seedling alfalfa in parts of the Valley. Thrips and whitefly damage can cause undue stress to small alfalfa seedlings. These pests may have to be controlled prior to herbicide applications to prevent stand loss in weak areas of the field.

Varieties

Spending a little extra for an improved alfalfa variety is a wise decision since it will be one you will have to live with for 3-4 years. The results of the 2001 and 2002 harvests of 17 released and 27 experimental varieties planted in October of 2000 are reprinted from the alfalfa web site (Table 11), http://alfalfa.ucdavis.edu/, for your convenience. Four released varieties and ten experimental varieties were better than CUF 101 in the first two years of the study. UC Cibola, a 1984 release and selection from Salton was the top yielding variety to date. UC Cibola ranked 9th in the 1997 planting. The 2nd best according to the overall ranking was DS995, a Dairyland Seeds variety. The 3rd best variety was a SW 100, a variety that is marketed locally by Western Farm Service. The IVS9002 experimental variety is La Jolla, a variety owned and released by IV Milling. La Jolla ranked 7th overall in production. The WL 711 WF is a new dormancy 10 variety with some whitefly resistance developed By Waterman-Loomis.

For more information on the yields of each cut during the year and other previous years trials, see the alfalfa web site, http://alfalfa.ucdavis.edu/

Table 11. Imperial Valley Alfalfa Cultivar Trial 2001-02 Yields. Planted 10/11/00

	2001 Yield		2002 Yield		AVERAGE		% OF CUF 101
			dry t/ac				%
Released Varieties							
UC Cibola	11.83	(3)	9.74	(2)	10.79	(1)	107.70
SW100 (SW101)	11.38	(8)	9.99	(1)	10.68	(3)	106.70
59N49 (Y59N49)	11.93	(1)	9.21	(8)	10.57	(4)	105.60
Mecca III	11.26	(11)	8.90	(14)	10.08	(11)	100.60
CUF 101	11.16	(15)	8.88	(17)	10.02	(15)	100.00
WL 711 WF	10.85	(29)	9.09	(10)	9.97	(18)	99.50
UC Impalo WF	11.18	(14)	8.51	(25)	9.85	(22)	98.30
58N57	11.25	(12)	8.44	(29)	9.84	(23)	98.30
Highline	10.81	(32)	8.77	(19)	9.79	(24)	97.70
Magna 901	10.86	(28)	8.60	(21)	9.73	(26)	97.20
SW9720	10.70	(36)	8.50	(27)	9.60	(31)	95.80
El Tigre Verde	10.84	(31)	8.32	(30)	9.58	(32)	95.60
Prestige	11.10	(17)	7.95	(36)	9.53	(33)	95.10
WL625HQ	10.88	(26)	8.08	(34)	9.48	(34)	94.60
Pershing	10.67	(38)	7.81	(39)	9.24	(36)	92.30
Salado	10.46	(41)	7.34	(44)	8.90	(43)	88.90
WL 525 HQ	10.15	(44)	7.51	(42)	8.83	(44)	88.20
Experimental Varieties							
DS995	11.84	(2)	9.63	(3)	10.73	(2)	107.20
CW89061	11.12	(16)	9.55	(4)	10.33	(5)	103.20
ZS9995	11.54	(5)	9.13	(9)	10.33	(6)	103.20
IVS9002	11.41	(7)	9.00	(12)	10.20	(7)	101.90
UC-412	11.10	(18)	9.28	(5)	10.19	(8)	101.70
CW89064	11.47	(6)	8.82	(18)	10.15	(9)	101.30
FGI9609	11.21	(13)	8.52	(24)	10.13	(10)	101.10
SW9022	10.84	(30)	9.28	(6)	10.06	(12)	100.40
UC-411	11.07	(19)	9.01	(11)	10.04	(13)	100.20
FGI9710	11.37	(9)	8.69	(20)	10.03	(14)	100.10
UC-409	11.04	(21)	8.89	(15)	9.97	(16)	99.50
CW89068	10.98	(25)	8.96	(13)	9.97	(17)	99.50
SW1028	10.98	(24)	9.27	(7)	9.96	(19)	99.50
ZS0001	10.87	(27)	8.88	(16)	9.88	(20)	98.60
IVM2000	11.26	(10)	8.48	(28)	9.87	(21)	98.50
FGI9709	10.98	(23)	8.50	(26)	9.74	(25)	97.30
UC-414	10.77	(34)	8.60	(22)	9.72	(27)	97.00
CW78118	11.07	(20)	8.28	(32)	9.67	(28)	96.60
SW9031	11.02	(22)	8.30	(31)	9.66	(29)	96.40
CW79115	10.75	(35)	8.54	(23)	9.65	(30)	96.30
DS994	10.78	(33)	7.85	(38)	9.31	(35)	93.00
UC-410	10.37	(42)	8.07	(35)	9.22	(37)	92.10
CW79084	10.51	(40)	7.90	(37)	9.21	(38)	91.90
DS991BR	11.67	(4)	8.21	(33)	9.14	(39)	91.20
ZS0000	10.52	(39)	7.75	(40)	9.13	(40)	91.20
ZS9992	10.69	(37)	7.48	(43)	9.08	(41)	90.70
UC-413	10.34	(43)	7.74	(41)	9.04	(42)	90.30
Mean	11.02		8.59		9.82		
CV	5.60		10.60		13.50		
LSD (.05)	0.86		1.27				

Trial planted at 25 lb/acre viable seed on Imperial clay loam soil at the UC Desery Research and Extension Center, Holtville, CA.

Entries followed by the same letter are not significantly different at the 5% probability level according to Fishers (protected) LSD.

CIMIS REPORT

Khaled M. Bali and Steve Burch*

California Irrigation Management Information System (CIMIS) is a statewide network operated by California Department of Water Resources. Estimates of the daily reference evapotranspiration (ET_o) for the period of September 1 to November 30 for three locations in the Imperial County are presented in Table 1. ET of a particular crop can be estimated by multiplying ET_o by crop coefficients. For more information about ET and crop coefficients, contact the UC Imperial County Cooperative Extension Office (352-9474) or the IID, Irrigation Management Unit (339-9082).

The Irrigation Management Unit (IID) provides farmers with a weekly CIMIS update. Farmers interested in receiving the updated CIMIS report on a weekly basis can call the IID at the above number. Please feel free to call us if you need additional weather information, or check the latest weather data on the worldwide web (visit http://tmdl.ucdavis.edu and click on the CIMIS link).

Table 1. Estimates of daily Evapotranspiration (ET_o) in inches per day

Station	September		October		November	
	1-15	16-30	1-15	15-31	1-15	16-30
Calipatria	0.30	0.27	0.23	0.19	0.14	0.10
El Centro (Seeley)	0.29	0.26	0.23	0.17	0.13	0.09
Holtville (Meloland)	0.30	0.27	0.22	0.18	0.13	0.10

* Irrigation Management Unit, Imperial Irrigation District.

Khaled M. Bali
Acting County Director