*University of California Cooperative Extension*

# *FIELD CROPS REPORT*

**San Joaquin County**

420 South Wilson Way Stockton CA 95205-6299 (209) 468-2085 Fax: (209) 462-5181

**August 2002**

## *IN THIS ISSUE:*



*This year for the first time low levels of Bakanae disease have been identified in the Escalon area rice fields. The following article explains some of the research activity being done to control the problem.*

## BAKANAE DISEASE UPDATE

*The following article is by:*
*Jack Williams, UC Farm Advisor*
*Sutter/Yuba Counties*

We have seen a sharp rise in the incidence of bakanae this season, with perhaps as many as 80% of Sacramento Valley rice fields having some level of infestation. Now in its fourth season in California, bakanae has spread and increased by traveling in the planting seed. Beginning with only scattered plants in a few fields the first two years, we now see some fields with over 30% incidence. The rapid spread and high incidence level is reason for concern and makes it a primary focus of current research. The primary means of spread is from seed contaminated during harvest. The disease overwinters on seed much like dust, although it does not cause infection until the seed gets planted. Seed treatment aimed at cleaning off the contamination and providing protection is most likely to give us the upper hand with this disease. Our chemical seed treatment trials and commercial efforts this year have only provided partial control. For example, in our two trials in growers' fields, we are testing Maxim (at 0.16, 0.32 and 0.64 oz/cwt) and Nusan (at .75, 1.5 and 3.0 oz/cwt), the middle rate being the one thought to be most likely to be effective without damaging rice. All rates of Maxim worked similarly and provided about a 25% disease reduction − based on visual estimates of percent−infected plants. Seedling vigor was unaffected. Nusan provided a 65 to 80% reduction but seedling vigor was affected as rate increased. Maxim currently has a registration in California while Nusan should be available next season.

We did not include sodium hypochlorite (bleach) treatments in this trial. Concerns about how well it will work, reduction in

vigor, disposal of wastewater and high hopes for other products put bleach on a back burner. However, the Rice Experiment Station (Kent McKenzie and Jeff Oster) is taking a fresh look at this product and recently planted a trial to look at bleach concentrations and duration of soak, among other things. If it shows positive results, this trial will be shown at Rice Field Day. Other seed treatments that may be considered in the future include ozone, peroxide and heat.

Other research conducted at both Davis (Bob Webster) and the RES (Oster) is aimed at understanding the biology of bakanae and effect on the rice crop. For instance, we do not know if it moves from plant to plant in the field, nor do we know to what extent inoculum in the straw and soil from the previous season contributes to a current year's problem. Soil persistence is 6 to 9 months when not associated with straw. Another concern is the role of field draining, as is widely done for weed control and stand establishment. Observations and literature suggest that bakanae is more severe when a field is drained. Yet another consideration is the role of nitrogen. Literature suggests that high rates promote the disease, yet field observations suggest that well fertilized rice is better able to compensate for lost plants. Recent work at RES suggests there are varietal differences in bakanae susceptibility. Preliminary results show that M−401, S−102 and CT−201 are most susceptible, while A−201, L−205, M−103, M−402 and Koshihikari are least susceptible. Others are in between. Finally, we do not have any information on the impact of bakanae on rice yield. Our two county trials have yield as a component, but we don't know if the infection level is high enough to reduce yield. I suspect some of the more highly infected commercial fields will experience yield loss due to bakanae.

Methods of application may have some impact on how well the seed treatments work. For example, research in other countries has shown that Maxim works better when seed is soaked in a solution of the material compared to seed applications. However, soak water disposal is a concern and is the reason we are focusing on treating wet seed after it is soaked. Bleach shares a similar concern. Bleach has no rice use on the books and cannot be discharged into waterways. However, there are some seed use registrations. The California Rice Commission is looking into registration possibilities for bleach, possibly a Special Local Need status.

Seed producers and handlers should take a close look at their fields now and inspect them for bakanae. Those with more than a few scattered plants should probably not be used as seed. Unfortunately, we do not have good guidelines to evaluate at what level one should reject a field. The higher purity categories of seed (breeders and foundation) are grown at the RES and are being cleaned up with intensive rouging and seed treatment.

## RAPTOR REGISTRATION FOR ALFALFA

Raptor is a new herbicide registered in July 2002 for use in seedling and established alfalfa to control broadleaf and grass weeds. Raptor® is in the same chemical family as Pursuit® and may become the primary herbicide choice in many situations.

**Some differences between Pursuit and Raptor:**

1. Raptor has a shorter soil life approximately half that of Pursuit. Even though both are used for post emergence weed control, there is soil

persistence. Having a shorter plant back restriction is important especially with the multiple cropping patterns in the central valley.

2. The active rate per acre is half of Pursuit. The use rate range is 4-6 oz of product/acre. During the winter months when conditions are foggy and cold, the 6 oz rate is needed. In spring or warmer temperatures when weeds are SMALL lower rates are acceptable.

3. Raptor controls most broadleaf weeds and many grasses eliminating the need of adding a grass herbicide. Pursuit is excellent on broadleaves but weak on most winter grasses or volunteer cereals and requires a grass herbicide added. Some differences do exist, i.e., *Pursuit controls redmaids but not lambsquarters; Raptor does not control redmaids but works fairly well on lambsquarters!* Check the label.

**Some observations and recommendations for obtaining best results with Raptor:**

1. **Spray weeds at the smallest growth stage possible.** At the 1-2 inch height, 95 to 100% control can be expected. Waiting until weeds are 4-6" size or delaying application by a couple of weeks can lower control to 80-85%.

2. **Applications should begin when seedling alfalfa reaches the 2-3 trifoliate leaf size.** The younger the alfalfa the smaller the weeds. Spray coverage is improved on the smaller plants.

3. **Avoid spraying stressed plants.** This chemistry is not forgiving when weeds are moisture stressed. Weeds must be growing vigorously for maximum herbicide uptake and translocation.

4. **Adjuvants are always needed.** Raptor needs to be combined with an oil adjuvant or non−ionic surfactant. Ammonium nitrogen based fertilizers added to the spray solution can also enhance results.

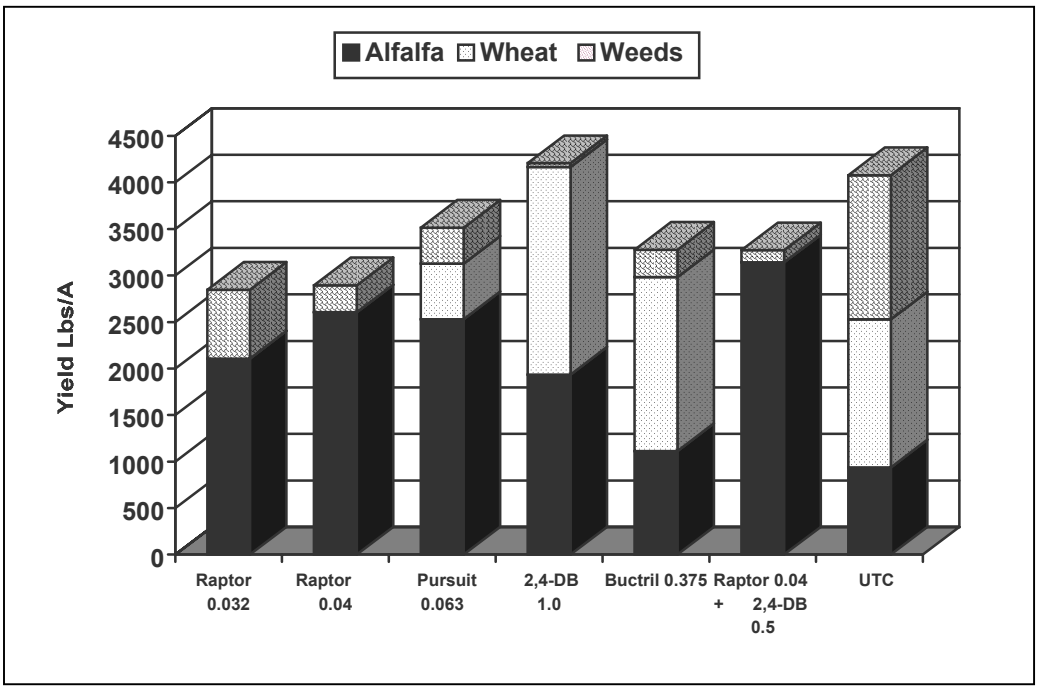
Raptor will also have a fit in established alfalfa production. It can be applied between cuttings where susceptible weeds are present with a 21 day pre−harvest interval. This is especially important since we are limited in what we can now use in season on broadleaf weeds. 2,4−DB is restricted in many locations, especially grape growing regions once vines begin to break dormancy. Buctril is restricted in seedling alfalfa when temperatures exceed 85° F and Gramoxone has a 60-day pre−harvest interval.

Raptor, like Pursuit, is an ALS inhibitor herbicide, which are noted for developing resistant weed problems quickly when over used. There is not a set number of application times known before this problem may develop. However, as in the case with all pesticides, rotate chemistries and use the lower rate when possible to avoid resistance.

The alfalfa chart (chart 1) compares 1st cut yields of various herbicide treatments made to seedling alfalfa. The different color bars represent the amount of yield in Lbs/A of alfalfa, weeds and volunteer wheat that were in the trial. The relative feed value number on top of each bar represents the quality of hay. The higher the RFV number the better the quality.

Chart 1.

**Alfalfa Yield Study**




***Weeds: Sowthistle, Shepherdspurse, Malva, Chickweed, Henbit, Wild Oat, Vol Wheat*** ***Stockton CA 1999***
**RFV=Relative Feed Value*

## ANNUAL RYEGRASS VARIETY TRIAL

We have completed a two-year study in Lodi evaluating a number of different annual ryegrass varieties in a dairy lagoon water project. Growing ryegrass as a single crop or over seeded into older alfalfa stands is not new but is gaining in popularity. The objective was to find a cropping system that would enable dairies to utilize more of their lagoon water.

Our results found the ryegrass to be very tolerant under saturated soils conditions more so than most other winter forages. It is able to withstand excessive water and nitrogen amounts, an important issue with dairies in winter months. Annual ryegrass can accumulate high levels of nitrates under continuous supply of manure water that is dangerous to livestock. It is advisable to test nitrate levels of the hay or forage if grown under these conditions.

The feed quality of ryegrass is superb as reported by dairies who feed it and nutritionists that recommend it. It is very palatable, digestible and a good source of fiber. Ryegrass made into hay is also popular for horse owners. Increasingly, I hear reports of ryegrass hay being requested over many other type hays for horses.

The information in Table 1 (next page) lists yields by variety for both testing years. In 2001 we were only able to make one harvest on 4/26/01. In 2002, two harvests were taken in April and May. In general, ryegrass can produce two high yield cuttings and a lower yielding third cutting in June. Beyond that, hot temperatures cause it to seed out quickly with little growth. The yields are expressed on a 100% dry matter basis per acre.

Table 1.

# Annual Ryegrass Variety Trial
## Van Exel Farms
## Lodi CA

### 1st harvest 4/26/01

| VARIETY | *YIELD[1] |
|---|---|
| Big Daddy Tetraploid Annual Ryegrass | 3618 a |
| Bartali Italian Ryegrass | 3490 a |
| Bison Intermediate Ryegrass | 3469 a |
| Westerwold Annual Ryegrass | 3460 a |
| FLX1995X4NLS Annual Ryegrass | 3410 a |
| Ribeye Annual Ryegrass | 3322 ab |
| Surrey Annual Ryegrass | 3232 ab |
| Jumbo Tetraploid Annual Ryegrass | 3176 ab |
| Bartissimo Italian Ryegrass | 3070 ab |
| Hercules Annual Ryegrass | 2996 abc |
| Major Annual Ryegrass | 2774 abc |
| Barmultra Italian Ryegrass | 2650 abc |
| 1700 Triticale | 2351 bc |
| Barista Tetraploid Perennial Ryegrass | 1976 c |

*LSD @ 5%= 913.87 C.V.: 17.0*

### 1st harvest 4/3/2002

| VARIETY | *YIELD[1] |
|---|---|
| Jumbo Tetraploid Annual (Loeshe M.) | 4142 a |
| Big Daddy Tetraploid Annual (Loeshe M) | 3832 ab |
| "Westerwold" Annual | 3701 abc |
| NS-1 Diploid Annual(Pennington) | 3692 abc |
| Bison Intermediate (Int'l Seeds) | 3563 abc |
| Bartali Italian ryegrass (Barenbrug) | 3470 abcd |
| Ribeye Annual (Barenbrug) | 3470 abcd |
| Surrey Annual (Int'l Seeds) | 3444 abcd |
| Major (Int'l Seeds) | 3384 abcde |
| Hercules Annual (Int'l Seeds) | 3283 abcde |
| FLX1995X4NLS Annual (Int'l Seeds) | 3224 bcde |
| Paserel Plus Diploid Annual (Pennington) | 3220 bcde |
| [2]Graze-N-Gro Diploid Annual | 3136 bcde |
| Barmultra Italian (Baerenbrug) | 3133 bcde |
| [2]Tetrone Tetraploid Annual | 3037 bcde |
| Axcella Diploid Annual (Int'l Seeds) | 3025 bcde |
| Tetrelite Tetraploid Intermediate (Int'l Seeds) | 2909 cde |
| [2]Aurelia Italian Tetraploid Annual | 2696 de |
| [2]Monarque Italian Tetraploid Annual | 2541 e |
| Wheat (Dirkwin) | --- |
| Triticale (TriCal 2700, Resource Seeds) | --- |
| Oats (Montezuma) | --- |

*LSD @ 5%= 739.23 C.V.: 13.5*

### 2nd harvest 5/8/2002

| VARIETY | *YIELD[1] |
|---|---|
| NS-1 (Pennington) | 4340 a |
| FLX1995X4NLS Annual (Int'l Seeds) | 4163 ab |
| Surrey Annual (Int'l Seeds) | 4061 abc |
| Graze-N-Gro (Forage Genetics) | 3933 abcd |
| Hercules (Int'l Seeds) | 3908 abcd |
| Jumbo (Loeshe M.) | 3753 abcd |
| Major (Int'l Seeds) | 3678 abcd |
| Ribeye Annual (Barenbrug) | 3675 abcd |
| Aurelia (Forage Genetics) | 3565 abcd |
| Tetrone | 3516 abcd |
| "Westerwold" Annual Ryegrass (from Farm) | 3511 abcd |
| Axcella (Int'l Seeds) | 3502 abcd |
| Bartali Italian Ryegrass (Barenbrug) | 3501 abcd |
| Paserel Plus (Pennington) | 3397 bcd |
| Big Daddy Tetraploid Annual (Loeshe M) | 3336 bcd |
| Bison Intermediate (Int'l Seeds) | 3277 cd |
| Monarque (Forage Genetics) | 3241 cd |
| Tetrelite (Int'l Seeds) | 3193 d |
| Barmultra Italian (Baerenbrug) | 3192 d |
| Wheat (Dirkwin) | 0 e |
| Triticale (TriCal 2700, Resource Seeds) | 0 e |
| Oats (Montezuma) | 0 e |

*LSD @ 5%= 729.13 C.V.: 12.8*

**Lbs/A 100% DM*

*[1]Average of 3 replications*

*[2]Seed Research/Oregon*

**ANNUAL CALIFORNIA RICE FIELD DAY**

**Wednesday, August 28, 2002 at the Rice Experiment Station (RES), Biggs, CA**

| | |
|---|---|
| 7:30 A.M. | **REGISTRATION** |
| 8:30 A.M. | **GENERAL SESSION** |
| 9:30 – NOON | **FIELD TOURS** |
| 12 NOON | **COMPLIMENTARY LUNCH** |

CE units applied for

*This year will mark the 90th anniversary of the founding of the Rice Experiment Station. The purpose of the Rice Field Day is to give rice growers and others an opportunity to observe and discuss research in progress at RES. Rice Field Day is sponsored by the California Cooperative Rice Research Foundation and University of California. RES also seeks and receives support from many agricultural businesses.*

**The RES is located at 955 Butte City Highway (Hwy 162**), approximately two and a half miles west of Highway 99 north of **Biggs, California.**

**CONSERVATION TILLAGE CONFERENCE 2002**
**Tuesday, September 17, 2002**
**7:30am − 3pm**
**UC Davis**
**Western Center for Agricultural Equipment**
**Hutchinson Drive ½ mile west of Hwy 113**

- *Highlighting research and farmer innovation related to Conservation Tillage in California*

**On−line registration information available at: http://groups.ucanr.org/ucct**

# *BEAN FIELD DAY

Friday, August 30, 2002
9:30am − 12noon
Eugene Caffese Farms
5527 Van Allen Road, Farmington CA

Please join us at the Eugene Caffese Farm on Friday morning for a short discussion & tour to see some interesting research & demonstration trials

- *Program*
- *Field Tour*
- *BBQ Lunch*

*A detailed meeting notice will be mailed out