



UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

FIELD CROP NOTES

SISKIYOU COUNTY

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Saving Seed: Past, Present and Future (Is it Legal? Is it Wise?)

It has been a common practice for growers to hold back or “save” seed to plant the following year. This practice has been especially common for cereal crops. One important question is whether or not this practice is legal. Another important question is whether or not this practice is wise, even when it is legal.

Is it legal?

Yes it is legal provided:

1. The variety is not patented
2. The crop would normally produce viable seed before harvest of the commodity
3. The grower did not agree contractually not to save any seed when the seed was purchased.

Many varieties, especially the newer varieties, are protected by the Plant Variety Protection Act (PVPA). For a PVP variety, a grower can hold back seed for planting the following year on his or her land only. Seed cannot be sold to a neighbor or another farmer. Growers can still save and sell seed of public varieties that are not protected under the PVPA. However, nearly all varieties released by private companies since 1970 are protected by the PVPA. Many public varieties (varieties released by universities) are also protected by the PVPA. If a variety is protected under the PVPA, it must be clearly marked on the seed tag or bulk label. The seller is responsible for informing the buyer if a variety is protected. Variety protection under the PVPA expires 20 years after protection has been granted.

Growers can only hold back seed of a PVP crop if that crop naturally produces seed before harvest. An example would be onions. Onions produced in Siskiyou County are harvested for the bulb much earlier than when seed production occurs. (Most onion varieties are hybrids rather than open pollinated so growers would not want to save seed anyway).

In addition to the PVPA, some varieties have utility patents, which are the same types of patents used to protect any other invention. This is a way of protecting varieties that contain specific genes. Sometimes these varieties are developed through genetic engineering. Farmers may not sell or even save seed for their own use of any variety protected under a utility patent without the consent of the patent owner. Clearfield wheat is an example. Clearfield wheat varieties have been found to be valuable in Siskiyou County because they are resistant to the herbicide Beyond (same active ingredient as Raptor) so growers can selectively control grasses like downy brome and bulbous bluegrass and suppress cereal rye in a Clearfield wheat field without injuring the wheat. The Clearfield trait was developed through mutagenesis rather than genetic engineering, but since the varieties are patented, growers cannot save seed even for their own use. Many growers are familiar with the triticale variety TriCal 102, which has performed very well for grazing and haying. A new triticale variety, TriCal 1033 BB, has just been released which has almost no awns or “beards”. It is illegal to save seed of this variety for your own use. Roundup Ready alfalfa varieties are expected to be available in time for fall plantings this year. There is considerable excitement about this new weed management system. Not much alfalfa seed is produced in our region, but Roundup Ready alfalfa is another example of a crop where it will be illegal to save seed even for your own use.

Is it wise to save seed?

If it is not legal, it is obviously unwise to save or sell seed because there can be major penalties, fines and sanctions. However, even if it is legal to save seed of a variety it may not be wise. The grower needs to analyze the true cost of saving seed including the cost of seed

cleaning, handling, storage, and transportation, and often “saved” seed is poorer quality than commercial seed.

More and more plant breeding and variety development is being done by private companies that must recover the money they expend in variety development in order to survive and re-invest in future development. These new varieties have traits desired by the agricultural industry—increased yield potential, higher quality, better disease and insect resistance, and herbicide tolerance. If growers choose to take advantage of these new varieties, they should consider their obligation to follow the law and not sell seed of PVP varieties or save seed of varieties with a utility patent. “You get what you pay for” may be applicable here—the few cents per pound of seed may not only purchase improved value in better yields and disease resistance in today’s crop, but will help fund research in both public and private sector that will create tomorrow’s better seed. After all, to produce awnless (beardless) forage varieties or to keep up with issues like rust in wheat requires constant vigilance, field and lab work and knowledgeable people, all of which require money.

The ethics and legality of saving seed is tied in not only with the down-side risk of ‘getting caught’ with illegally saved seed, but with the ability of agriculture to support future innovations in the crops we grow. With private industry developing more and more varieties, an increase in the use of biotechnology for variety development, and Universities needing additional funding to support their efforts on the behalf of growers; we are likely to see more patented varieties in the future. Therefore, growers will need to be increasingly careful when they save seed in the future to make sure they are not breaking the law. The economic value of these patented varieties (such as herbicide resistance, awnless varieties, improved yield, or pest resistance) should be weighed against the value of the non-patented varieties which can be more freely produced by growers. However, the law is clear with regards to patented varieties—don’t save seed unless specifically permitted by the patent.

**Alfalfa Weevil Season Approaching:
Discussion of Preliminary Data**

In the past alfalfa weevil was a periodic problem. It was only necessary to treat fields occasionally—perhaps one in three years and some fields never seemed to need treatment. However, in recent years weevil pressure has been much more severe and some fields have required treatment each year. Why this increase in the prevalence of weevils has occurred is unknown. Some suspect that mild winter temperatures in recent years are the cause. Weevils survive in the Midwest and other growing areas that are significantly colder than our area so mild winters may not be much of a factor. However, the bottom line is that weevils seem to be worse than in the past and they can cause significant damage.

It is important to recognize weevil damage and treat at the proper time when necessary. Weevil injury first appears as tiny holes in the leaves of new alfalfa growth. The holes become larger as the weevils develop (see photo). Weevils go through four instars or growth stages. Once you

begin seeing holes in the leaves start monitoring fields on a regular basis. Monitor fields at least twice a week during the “weevil season”. Weevil populations are monitored with a sweep net. Every grower should own their own sweep net (for a list of suppliers contact our office). The most accurate sampling method is to swing the net through the alfalfa (hitting the upper 1/3 of the growth) using a 180 degree arc (hip to hip). Angle the net slightly with the bottom edge of the net leading so the insects accumulate in the net.



The economic threshold (or the weevil population level at which treatment is economically justified) is 20 larvae per sweep. This economic threshold has been used for years but some agricultural professionals have felt that the level should be lower (i.e., treat earlier). Field trials conducted by Larry Godfrey, Entomology Specialist at UC Davis, in 2002 and 2003 demonstrated a significant yield reduction with weevil populations less than 20 weevil larvae per sweep. These results and opinions that the economic threshold may be off inspired multiple-location study in 2004 to re-evaluate the alfalfa weevil threshold value. The trial locations and treatment timings are shown in Table 1.

Table 1. Trial locations and treatment timings of alfalfa weevil studies.

| Treatment Timing | Yolo Co. | San Joaquin Co.-Tango Variety | San Joaquin Co.-WL 325 Variety | Colusa Co. | Shasta Co. B | Siskiyou Co. C |
|--------------------|----------|-------------------------------|--------------------------------|------------|--------------|----------------|
| Start of egg hatch | 3/5 | 3/2 | 3/2 | 3/15 | 5/2 | 4/22 |
| 1 wk. later | 3/12 | 3/9 | 3/9 | 3/22 | 5/13 | 4/26 |
| 2 wks. later | 3/19 | 3/16 | 3/16 | 3/29 | 5/23 | 4/29 |
| 3 wks. later | 3/26 | 3/23 | 3/23 | 4/5 | --- A | 5/3 |
| 4 wks. later | --- A | --- A | --- A | --- A | --- A | 5/9 D |
| harvest | 4/2 | 3/29 | 3/29 | 4/15 | 6/1 | 6/10 |

A—Treatment not made. B—Treatments made ~10 days apart. C—Treatments made ~5 days apart. D—one additional application on 5/14.

The Siskiyou County site was in Scott Valley and plots were treated approximately every 5 days from the 22nd of April to the 14th of May. The effect of treatment timing on alfalfa yield for all the sites is presented in Table 2. The yield is expressed as a percentage of the yield for the untreated plots. As seen in the last row of the table, the weevil pressure varied dramatically between sites with the highest weevil populations occurring in the

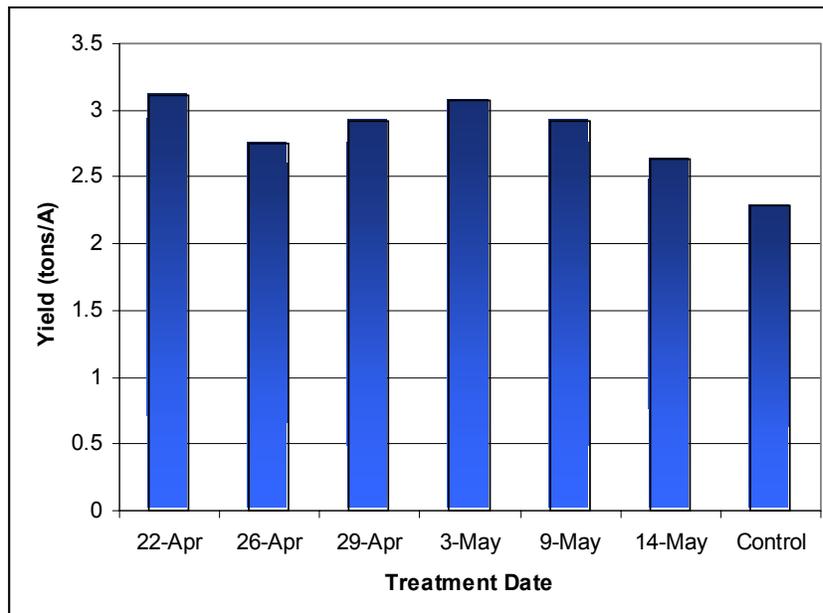
intermountain area (90 and 39 weevils per sweep for the Shasta and Siskiyou County sites, respectfully). Insecticide treatment did not dramatically increase yield at the Central Valley sites. This was most likely due to relatively low weevil populations at most sites and unseasonably warm temperatures last spring which resulted in a short weevil season and the warm temperatures enabled the alfalfa to recover from the weevil damage.

Table 2. The Effect of Alfalfa Weevil Treatment Timing on Yield Compared with Untreated Control

| Treatment Timing | % Yield Increase Compared with Untreated Plots | | | | | |
|--|--|-----------------------|---------------------|------------|--------------|----------------|
| | Yolo Co. | San Joaquin Co.-Tango | San Joaquin Co.-325 | Colusa Co. | Shasta Co. B | Siskiyou Co. C |
| Start of egg hatch | 2.8 | 5.8 | 0 | 0 | 22.2 | 36.5 |
| 1 wk. later | 1.0 | 11.4 | 7.7 | 5.6 | 13.9 | 20.2 |
| 2 wks. later | 0 | 3.4 | 0.3 | 0 | 8.3 | 28.0 |
| 3 wks. later | 0.7 | 1.8 | 0 | 6.0 | --- A | 34.8 |
| 4 wks. later | --- A | --- A | --- A | --- A | --- A | 28.0 |
| <i>untreated – peak larvae per sweep</i> | 8.2 | 15.4 | 11.8 | 9.1 | 90.0 | 39.3 |

^A Treatment not made. ^B Treatments made 10 days apart. ^C Treatments made 5 days apart.

The effect of weevils on alfalfa yield was more dramatic at the Scott Valley site where the earliest treatment yielded 3.11 and the untreated plots yielded 2.28 tons per acre (a 0.83 ton difference). There was not a consistent relationship between treatment date and yield but yield tended to decline for treatments made after May 3. In general, as long as the alfalfa was treated yield improved considerably.



What do these results mean as far as an economic threshold?

The results from last year's trials do not provide conclusive evidence as to whether or not the current economic threshold of 20 larvae per sweep should be altered or not. Further research is planned for next year. These first year results suggest that the economic threshold is likely complicated and that it likely depends on weather conditions and the alfalfa growth rate. For the current time I would stay with a threshold between 15 to 20 larvae per sweep especially if cool weather is forecast. In our area it is sometimes difficult to get fields treated exactly when you want. Therefore, it may be necessary to schedule a treatment slightly before the economic threshold is reached.

Alfalfa Market Update for 2005

*By: Seth Hoyt,
California Agricultural Statistics Service*

Hay stocks on December 1, 2004 in California were down 17% from the previous year. December 1 hay stocks in three of the major states that truck alfalfa hay into California were also down; Nevada off 14%, Utah down 7% and Arizona declined 11%.

Hay stocks in the seven western states on December 1, 2004 were down 6%, while stocks in the entire U.S. were up 3% from the previous year. On March 1, 2005, high quality alfalfa hay supplies were short in the West while middle to lower quality hay inventories were mixed. Limited unsold supplies of all qualities of hay in California were verified by alfalfa hay in-shipments from other states.

Record High

Total alfalfa hay shipments into California in January were a record 76,544 tons, up 44% from a year ago and up 11% from the previous high in January 2002. About 30% of the total shipments were delivered to Tulare County. The increased shipments of dry cow quality alfalfa hay from Utah to California in December and January was very unusual. Historically, a large

percentage of alfalfa hay shipped from Utah into California has been higher quality milk cow hay. Short supplies of Fair quality alfalfa hay pushed delivered prices to the Tulare-Visalia-Hanford dairies to an average of \$142.64 per ton in January, according to Market News. Similar quality hay in Utah ranged from \$50.00 to \$70.00 per ton, fob. It is not surprising that January alfalfa hay shipments into California from Utah were up 68% from a year ago and that 60% of the hay went to Tulare County.

Holding Steady

Record high prices on high quality alfalfa hay delivered to Tulare-Visalia-Hanford last fall haven't abated. In November, Supreme alfalfa traded from \$170.00 to \$200.00 per ton delivered to dairies, compared to \$165.00 to \$205.00 per ton delivered the first week of March 2005, according to Market News.

The market in Tulare-Visalia-Hanford around March 1 of last year ranged from \$162.00 to \$168.00 per ton delivered. Supreme quality alfalfa hay, mainly clippings, in the Imperial Valley in February 2005 averaged \$141.85 per ton, fob. Near record rainfall in the southern desert made it a challenge for growers to produce high quality alfalfa hay clippings in January and February. Harvest of first cutting alfalfa hay began in the desert the first week of March with strong interest from central California dairy hay buyers.

After a return to month to month dairy cow growth of around 4,000 head in California through the first nine months of 2004, growth stalled in the last quarter due to the CWT buyout program and muddy conditions at dairies. Dairy cow slaughter in California, down 13% in the January through October 2004 period, reversed late in the year and was running 10% higher in November and December.

Dairy cow slaughter in January 2005 was up 15% from the previous year. Demand was good for light supplies of springer dairy heifers. In early March, good Holstein springer heifers in central California traded from \$1800 to \$2200

per head, with occasional sales at auctions up to \$2500.

While dairy replacement heifer shipments into California were up 28% in 2004, the largest increase was in the first half of the year.

Outlook for 2005

The big question many are asking is what will alfalfa hay acres and production do in 2005? We will have a glimpse of all hay acres in the Planting Intention report released on March 31. Seed company representatives believe acreage will be unchanged to slightly higher than 2004 with a couple projecting 10% more acres in their areas.

Alfalfa seed sales were up but some growers weren't able to plant last fall due to rain. There may be some spring planted alfalfa if the warm, clear weather holds the second week of March. One thing the seed people agreed on is that there would probably not be a big upsurge in acres that occurred in 2002.

Alfalfa hay acreage in the southern desert in February, 2005 was down 14,000 from the same period last year (9,500 fewer acres in Palo Verde Valley and 4,500 less acres in Imperial Valley). This will offset some increases in acreage in other areas. The 4,500 fewer alfalfa hay acres currently in the Imperial Valley compares to the year-to-year decline of 16,000 to 20,000 acres through the first ten months of 2004, according to the Imperial Irrigation District.

When looking at alfalfa hay production in 2005, it will depend on acreage and weather. Prospects for ample surface water for irrigation are much brighter in 2005, particularly in the central valley where there were shortages in 2004. The exception is in the northern mountains where they have had below normal snow and rain this winter.

Possible Delay

The new crop season may start later than 2004 in many areas, depending on March weather. Growers will do all they can to maximize yields

with strong alfalfa prices projected for at least the first half of the 2005 season and possibly longer.

Tight supplies of higher quality alfalfa hay in the West will bode well for California hay growers. Prices on Supreme quality alfalfa hay in California could be bullish much, if not all of 2005. After a profitable year for dairy producers in 2004, milk prices are projected to remain at profitable levels in 2005. High quality alfalfa hay is a key ingredient for dairies to maintain milk production. Concentrate (grain) fed to milk cows could go up a little in California in 2005 if grain prices continue at lower levels and if higher quality alfalfa hay prices remain strong.

Prices on Good to Fair quality alfalfa hay could be bullish the first half of the season in California until the pipe line is filled. Dry cow quality alfalfa could find some resistance in mid-season because of plentiful supplies of some by-product feeds, combined with silage and possibly higher grain hay production due to above normal rainfall. Much will depend on weather. Good quality alfalfa for horses should be more plentiful in late spring and summer but look for light supplies until then.

Idaho Factor

Those who purchase hay in Nevada and Utah should keep an eye on what is currently going on in Idaho. You could see more competition from Idaho dairy hay buyers unless the situation changes dramatically. The Northwest has missed many of the storms we've had in California.

Snow pack in Idaho is 60% of normal. Irrigation water supplies in Idaho may be tight again this year and some growers, particularly Junior Water Rights holders may have to idle acres. There has been strong growth in the Idaho dairy industry the past ten years. If alfalfa hay production is below what dairy producers need, they will go to surrounding states to find alfalfa hay, particularly high quality hay.

Even with Record High Fertilizer Prices- You Cannot Afford to Skimp on Fertilizer

By: Rob Wilson,
Farm Advisor Lassen County

High natural gas prices in combination with increased global demand triggered fertilizer prices to reach record highs in 2005. Nitrogen fertilizer prices are up 15 to 25% from last year and are unpredictable from day to day. Phosphorus fertilizer prices are up 6 to 7% compared to 2004. Although fertilizer prices are extremely high, it's still important to adequately fertilize the crop. The goal this year is to reduce input costs without sacrificing yield. When fertilizer prices are high, it doesn't pay to apply extra fertilizer. But, applying too little fertilizer will reduce yield and decrease returns significantly.

One of the best ways to maximize returns from fertilizer is to collect soil samples and/or plant tissue samples to estimate yearly fertilizer needs. Yes, soil/plant testing is a hassle and costs money, but the amount of money saved from properly estimating soil nutrient levels outweighs any testing costs. Soil tests do a good job estimating phosphorus and potassium levels; plant tissue tests work well for all nutrients (especially sulfur and micro-nutrients).

For alfalfa production, periodic phosphorus and sulfur fertilization is needed to maximize yields. Throughout Lassen County (*and Siskiyou County*), both phosphorus and sulfur should be applied when planting new alfalfa stands. If phosphorus and sulfur levels are really low, applications are needed every few years. Since alfalfa fixes its own nitrogen, 11-52-00 or 0-45-0 are typically the cheapest phosphorus fertilizers for alfalfa. If your soil tests for Olsen-P (phosphorus) are below 5 to 8 ppm, yields can often be increased 20 to 25% by applying phosphorus to established stands. Elemental sulfur or gypsum are the cheapest sulfur fertilizers for alfalfa. If plant tissue tests indicate sulfur is below 0.20% S (whole tops,

1/10 bloom), yields can often be increased 16 to 20% in established stands.

For irrigated grass pasture or hay, nitrogen is needed to maximize yields. In Lassen field trials, tall fescue yields often increased 30 pounds for every pound of nitrogen. So, applying 400 lbs of urea this year may cost \$72 per acre, but the added nitrogen will likely increase hay returns \$250 per acre assuming a hay price of \$90 per ton. (*These trials were conducted on grass hay fields. The nitrogen needs of a grazed field with sufficient clover would be less.*) Applying nitrogen in split-applications (once in early spring and after each cutting) provides the most efficient use of the fertilizer. Occasionally, phosphorus and sulfur can become deficient in grass hay. If soil tests indicate Olsen-P (phosphorus) is below 4 to 6 ppm, apply 100 lbs of P₂O₅ per acre. If sulfur is deficient, use ammonium sulfate as your nitrogen fertilizer.

For wheat, the rule of thumb is 3.5 lbs of nitrogen per 100 lbs of grain. For forage wheat, 100 to 120 lbs of nitrogen per acre is common. Remember to consider previous crop history and soil nitrate levels when fertilizing small grains. When following alfalfa, a 50 to 75 lb N/acre credit should be included in fertilizer calculations. Split nitrogen applications usually work best for winter cereals. Along with nitrogen, phosphorus is important in small grain production. Cool soil temperatures (common during fall and spring seedlings) limit phosphorus availability to plants. For this reason, N + P starter fertilizers benefit seedling establishment and young root development. 11-52-00 is a good starter fertilizer that can be applied with the seed if your drill has a fertilizer box. If soil tests indicate Olsen-P is below 6 ppm, apply 40 to 50 lbs of P₂O₅ per acre. As with grass pasture, use ammonium sulfate as your nitrogen source if soils are low in sulfur.

FIELD CROP NOTES

DATED MATERIAL

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