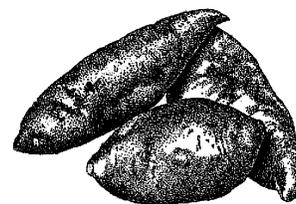




University of California Cooperative Extension

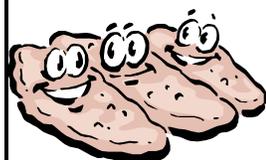
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SWEETPOTATO TIPS

In this issue:

- 2000 & 2001 production estimates.
- Telone update.
- Plant bed production tips.
- Planned re-search for 2002
- Variety update
- Announcements



February, 2002

SWEETPOTATO ACREAGE AND PRODUCTION

California's 2001 sweetpotato production is forecasted at 5.875 million boxes (235,000 bins), 11% below last year. Harvested acreage was estimated at 10,200 acres, with a yield of 575 boxes/A. This smaller crop as compared to 2000 has helped stabilize prices a little in our area. Nationally, however, sweetpotato production was largest in the U.S. since 1985, with a production of almost 36 million boxes. This increase was due in part to two things: a 33% acreage increase in Mississippi (from 12,000 to 16,000 acres) and overall good production in every state. See the table below for all the details.

State	Area Harvested Acres		Yield per Acre Boxes/A		Production 1000 Boxes		Price \$ per box	
	2000	2001	2000	2001	2000	2001	1999	2000
AL	3200	2900	363	425	1160	1233	7.00	6.00
CA	10,500	10,200	625	575	6562	5875	11.50	9.60
GA	500	400	350	250	175	100	5.60	5.60
LA	24,000	22,000	325	363	7800	7975	5.75	5.30
MS	12,300	16,000	300	350	3690	5600	8.70	5.80
NJ	1200	1200	250	262	300	315	9.40	10.00
NC	37,000	36,000	375	388	13,875	13,950	5.00	5.00
SC	600	500	212	200	128	100	6.50	4.40
TX	5100	3800	112	125	575	475	6.60	6.60
VA	500	500	435	550	220	275	3.50	5.30
US	94,900	93,500	362	385	34,485	35,887	7.00	6.10

Source: CA Field Crop Review, 2002: 23, 1, and NASS.

HOT BED (OR COLD) PRODUCTION:
Use clean seed and cut slips above the soil line to minimize disease problems.
More tips on page 3.

HOT BED TIME



COOPERATIVE EXTENSION WORK IN AGRICULTURE, HOME ECONOMICS AND 4-H, U.S. DEPARTMENT OF AGRICULTURE, UNIVERSITY OF CALIFORNIA, AND COUNTY OF MERCED COOPERATING



TELONE UPDATE

As methyl bromide is phased out, Telone (1,3-dichloropropene, or just 1,3-D) use has increased, and township caps have begun

to limit applications. This would have happened in 2000/2001 in the Atwater/Livingston area (specifically, Township 6S, Range 11E, 7S 11E, and 7S 12E) had the cap not been temporarily increased for these townships. In the future, the caps will be even more constraining for sweetpotato production, because the maximum application rates will return to normal.

California's DPR (and the U.S. EPA) have restrictions on the amount of Telone that can be used because of concern with chronic exposure to this chemical. The caps are designed to limit air concentrations over an extended period of time in a certain area. Current restrictions limit Telone to no more than 9,600 "adjusted" gallons (90,250 lbs 1,3-D) in any 36 square mile township. Adjusted pounds are the actual pounds multiplied by an application factor. It is 1.0 when the Telone is applied deep (> 18 inches) and is not December or January. It is 1.9 for shallow applications. In Merced County, shallow applications in December or January are not allowed. Thus, all growers using Telone should shank it in to 18" in the fall or spring to maximize the availability of this chemical.

Air inversions are common in Merced County in December and January, which is why Telone is restricted at this time. An air inversion acts as a lid, keeping the Telone from dispersing.

Compared to Vapam (metham sodium) or chloropicrin, Telone has greater use restrictions: 300 ft buffers around occupied residences (100 feet in certain situations), 35 gal/acre maximum application rate (332 lbs ai per acre; however, for sweetpotatoes maximum rates are limited to 15 gals/A), 7 day field reentry interval, use of full face respirators and chemical resistant clothing for field workers, moist soil conditions during application, and a soil "seal" following application. Be sure to contact the Agriculture Commissioner for all the details.

Telone EC and Inline, new water soluble formulations from Dow AgroSciences, can be used with a drip system, but the drip tube must be covered by plastic. All drip applications have an application factor of 1.16. Because of these restrictions, Telone through the drip tube is not practical for sweetpotato production in California.

It is important to note that Telone has its limitations. It will not provide good weed control, nor will it give protection against the organism that causes stem rot (*Fusarium oxysporum*). This is why stem rot was so bad in Hannas and Golden Sweets last year: these varieties do not have resistance to Stem Rot, and the Telone didn't clean up the fields.

Other Alternatives.

Fumigation sure was a lot easier when you could just use methyl bromide, but I am confident that we can find economical ways to use alternative methods and get very good control of nematodes and disease. The USDA is working very hard on methyl bromide alternatives, and because of this a drop-in replacement for methyl bromide, iodo methyl, may have fast track registration approval. Nonetheless, it will still be several years before this fumigant will be practical to use for sweetpotato production. The current fumigant alternatives are chloropicrin (Pic, TriClor), metam sodium (Vapam), and combinations of these materials and Telone.



Stem rot on Golden Sweet is caused by Fusarium, a soil borne fungus not controlled by Telone.

Chloropicrin + Telone combinations (Telone C17 and C35) can be shanked in the same manner as Telone alone, and will increase the amount of acres within the Telone cap when used at the 15 gallon per acre rate. Chloropicrin has excellent antifungal properties and will improve control of Stem Rot in the field. However, applications within 1/2 mile of any city limit or "housing density" need to be tarped. Because of increased interest in Pic, additional restrictions in the future are likely.

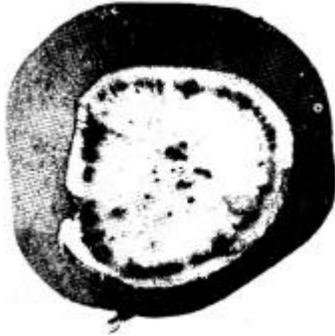
Metam sodium (Vapam) can be applied by shank, drip, sprinkler, and flood irrigation at rates up to 75 gallons per acre. The soil must be moist and the surface sealed by tarps, water, or cultivation after application.. The main restriction for its use is the 500 ft minimum buffer zone to "sensitive sites". Basically, a sensitive site is any occupied structure where the occupant may not like the idea of fumigation going on near his place (or it's a school, day care, church, etc). You'll know this when you take your NOI to your neighbors.

Metam sodium is a liquid and does not fume like Telone, but it will provide good nematode and disease con-

(Continued on page 4)

PLANT BED PRODUCTION TIPS

Disease. Clean seed is your best bet for limiting disease in the beds as well as what is carried out to the field. Be especially careful with the whites this year—you could have a lot of stem and/or surface rot in your seed and not even know it. To check for this, “tip” the end of some potatoes and look for a dark ring or dark spots just under the outside edge of the potato. Ideally, you should throw out all roots that have this problem. Practically speaking, however, you will probably end up with some stem rot going into the beds. To minimize the amount that could go to the field, take these preventative steps:



- Group older seed into one part of the bed, and mark its location so you'll remember where they're at.
- Cut slips about 2 inches above the soil line. This is slower than pulling slips, but should be done for this section of the bed because it will greatly reduce the amount of stem rot (and Scurf and many other diseases) going into the field.
- Dip the slips into a fungicide like Benlate (no longer for sale), Topsin (may get registration soon), or Mertect.
- Once in the field, runner cuttings can be taken from healthy plants to replace those that show symptoms of stem rot.

Scurf can be controlled by spraying the seed bed with Botran or Mertect or dipping the seed roots in a solution with these fungicides before putting them into the bed. Again, use cuttings above the soil line for any area of the bed where you had Scurf in your potatoes.

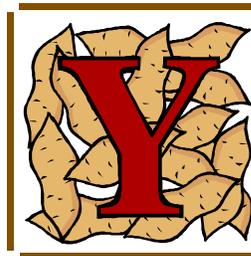


Scurf will get worse with too much water. Control Scurf by using clean seed, registered fungicides, slip cuttings, and by not over irrigating in the field.

All disease problems become worse under excessively wet conditions. Don't over water your beds.

Temperature. Keep an eye on the bed temperature under the plastic on sunny days. Excessive heat stresses the plants, which makes the plants more susceptible to disease problems. Best temp is between 70° and 85° F.

Varieties. Hanna and Golden Sweet are susceptible to stem rot. Beauregard is super susceptible to nematodes. Diane, Jewel, and Koto Buki are all susceptible to Pox. Next year, we may have a limited supply of L94-96, which has some resistance to all three problems.



PLANNED RESEARCH FOR 2002

- Collaborators Trial. Annual review of possible new varieties. In addition to many new lines and some carry over from last year, this year we plan to evaluate three Beauregard clones: the original Beauregard from Louisiana (B63), the Beauregard the fine folks in North Carolina prefer (B14), and our California Beauregard that the Council has maintained for a number of years (B1 Bomber).
- N & K Fertilizer Trial in Drip Irrigated Beauregards. The trial continues in what will probably be its last year.
- Fumigation and cover crop trial. This one is already established. In this trial we are looking at the effect of different rates of Telone, metam, and Mocap combined with different cover crops (fallow, forage, white vetch, and radish).
- Devrinol/Dacthal evaluations. Can they make a definite reduction in hand weeding costs?
- Degree Day Evaluation. Continuation of work from last year to increase the size of the data set to determine a degree day model for sweetpotato root development.
- Albion foliar nutrients.
- Skinning trial?
- Late season N and water management?

I am always open for research suggestions if you would like to see something done. Please give me a call.

This year, the field day may be earlier in the season so that the treatment affects are more obvious. Depending on transplant date, probably in late June or early July.

(TELONE—Continued from page 2)

trol with high rates (60—75 gals/acre) and good coverage. It also provides weed control, which Telone does not. Metam sodium flood applied to the hot bed area should work as an excellent substitute for methyl bromide, for a lot less money.

Fumigation rigs have been modified to deliver Telone and metam sodium at the same time. The Telone is shanked to 18" to control nematodes, while the metam is cultivated into the top 6" for weed control. The two together are reported to have a synergistic affect, and Telone rates could be reduced while still giving good control. The 500 ft metam buffer would still apply, however.



Nematodes, your main reason for fumigation. Telone gets these pretty well, as does Vapam. Resistant varieties and field management are also important to minimize damage.

Other chemical alternatives for nematodes include Mocap and Temik. Previous research on Mocap here on California sweetpotatoes showed only marginal control. We are evaluating Mocap this year in conjunction with cover crops to see if this will improve control. Temik use is restricted by its 120

day pre-harvest interval. Carefully consider your expected harvest dates before using this pesticide.

Neither Mocap nor Temic will provide control of weeds or diseases.

Fallowing and solarization can be very effective for reducing disease and nematode pressure, provided they are done correctly and you have the time, money, and patience to do them. Research at the USDA center in Fresno has shown a significant reduction in nematodes with only a one year fallow, and three years completely eliminated them. A fallowed field should be kept weed free, as many weeds can also act as hosts.

Certain cover crops, especially in the *Brassica* family, have been shown to have nematicidal and fungicidal properties. For example, broccoli residues plowed into the soil decay and release certain chemicals that kill/suppress *Pythium*, *Verticillium*, *Rhizoctonia*, and root knot nematodes. Whether this would work in sweetpotato production remains unanswered. We are evaluating some of these cover crops this year in conjunction with

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different rates of fumigants.

Possibly the best hope for fumigation alternatives lies in the hands of the sweetpotato breeders. Hopefully in the not too distant future we will have both orange and white flesh types that are resistant to nematodes, Pox, and Stem Rot. In the meantime, do not plant Hanna's and Sweet's back to a field if you had stem rot problems and you used Telone to fumigate. Next year, try L94-96 in fields with high nematode pressure.



VARIETY UPDATE

The loss of methyl bromide and the lack of any drop-in replacements that can do as good a job of pest control has made variety development just that much more important for the sweetpotato industry in California. Compared to many other crops, our commercial varieties are genetically old and have a lot of agronomic weaknesses. For example, Beauregard was released in 1987, and is the "newest" variety grown in California. It is still a good producer of #1's, but has no nematode resistance.

Starting this year, **L94-96** will be commercially available to growers in Louisiana, and should be available here next year in limited quantities. It will be renamed to something else by then. In numerous tests done here and throughout the U.S., L94-96 has been a consistent yield performer, usually slightly more or less than Beauregard in any given year. It also performs well in bake and taste tests—usually a little better than Beauregard.



Nematode resistance is the biggest agronomic improvement in L94-96, and the main reason you should consider growing some for your own evaluation next year. L94-96 has better root knot nematode resistance than Jewel, while also having resistance to Pox and Stem Rot. Resistance to Stem Rot is intermediate.

What we don't know about L94-96 is how well it stores on a large scale, though in our trials it was no worse than Beauregard (we only store 80 lbs a year, and only for about 4 months).

L94-96 may not replace Beauregard, but it definitely deserves a close look, especially in areas of the field you did not fumigate because of buffer restrictions.

We are still evaluating a new line from South Carolina called **97-27** as a premium red candidate. It has good deep red to purple skin color (though not quite as purple as Garnet), and is sweeter than Beauregard. It's main problems are that it easily skins and develops veins in storage. We will try to select out this veining tendency.

Dr. LaBonte from LSU should send us a Stem Rot resistant white this year for evaluation in the Collaborators Trial (**L99-19**). Hanna and Golden Sweet are very old lines that may become very problematic to grow without some *Fusarium* resistance.



Sweet Potato Council of California

The Council is now in its 25 year and continues to promote the California sweetpotato industry through its website, recipes, and clean seed program. The Council just finished hosting a very successful National Meeting in Napa. Membership to the Council is voluntary and dues are very reasonable—just \$5 an acre. All growers, shippers, and supporting industry are encouraged to become members. Contact Bob Weimer (761-2760) or Jason Tucker (761-8177) for more information.

Bill Weir
Farm Advisor

Scott Stoddard, SRA

ANNOUNCEMENTS

- The summer field meeting will be earlier this year so that field treatments can be more easily evaluated. Probably June or July.
- The 2001 Sweetpotato Research Progress Report is available. This report summarizes all the research that we did last season. Many of you will receive a copy by mail. If you do not, please contact our office for a copy.
- Methyl parathion (Penncap-M) tolerance revocations are being proposed by the US EPA. This suggests that there is a good chance this product will lose its registration for sweetpotatoes. This should not cause a big problem for pest control here in California, as safer alternatives are still available.
- Benlate (Benomyl, DuPont) is no longer available for purchase. The status of Topsin (Cerixagri), a replacement, is not known at this time.

