Pepper News

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California Pepper Industry Report

Chairman, California Pepper Commission
Glen Fischer, Saticoy Foods

The California Pepper Commission continues to focus its efforts on improving the chemical, disease and pest issues that concern the pepper industry. The Commission met earlier this year with the purpose of discussing any current and future issues and finding research projects that can improve the California pepper industry.

Our annual newsletter contains summaries of the research projects completed during the 2011-12 year. Each of these projects was considered by the Commission's Research Committee and then recommended to the Commission for approval. Most of our projects have been ongoing, focusing on the more practical issues of farming peppers, while some focus on more basic research that the Commission feels deserves attention.

For the last couple of years the Commission has worked with Valent and the Department of Pesticide Regulation on obtaining a Special Local Need (SLN) 24C on Chateau. Earlier this year the three groups were finally able to finalize and make available a SLN 24C Label where Chateau is available to growers for a pre-transplanting application for weed control on mallow in the furrow bed. The Label can be found on the Valent website www.valent.com.

Dual Magnum continues to be available as a SLN 24C label from Syngenta through their website www.farmassist.com. You can also find a pepper-related pesticide list, which is provided to the industry by the California League of Food Processors at their website www.clfp.com. You can sign in to view this list on the Pesticide Program page with the ID: **nathan@tabcomp.com** and password **nathan93618**.

For the past several years the Commission has been a member and active participant with the California Specialty Crops Council (CSCC). The CSCC provides the Commission the opportunity to work with similar groups to focus on research, education, and regulatory activities, which may affect California agriculture. By representing a variety of groups, the CSCC is well supported when communicating industry issues with state and federal agencies. The CSCC also acts as a conduit of information between its members and various entities. For more information you can visit the CSCC website at www.specialtycrops.org.

As sustainability becomes a bigger topic in the agricultural community a Multiple Commodity Sustainable Practice Program has been actively working on an in house analysis where growers will be able to do a self-assessment on their operations. Once the self-assessment sustainability program is written, it will be revised specifically for the pepper industry. This will provide us with procedures set and implemented by those with the agricultural community avoiding possible federal and state guidelines written by those who may not be familiar with our practices.

Among Commission activities and research reports, this newsletter can be found on the website www.calpeppers.com. You will also find links to the SLN Labels for Chateau and dual magnum along with a link to the CLFP site.

For those of you who have worked on or have been involved with the Pepper Commission either know or have at least met Jerry Munson who had been the Manager of the Pepper Commission since its inception in 1988. After 42 years of working with several agricultural marketing orders including the Pepper Commission, Jerry retired at the end of the 2011 year turning the company Monfort Mangement Services over to JD Allen. Nathan Sano who had been the Assistant Manager for the past four years has taken over as Manager.

The Commission and staff are always available to answer questions or assist in any way they can. Nathan Sano (nathan@tabcomp.com) is the Commission Manager, and Kim Sakamoto (kim@tabcomp.com) is the Assistant Manager, and they can be contacted via email or at 531-D North Alta Avenue, Dinuba, CA 93618 and at 559/591-3925.

2011 Project Reports

Pepper Preemergence Weed Control Trials in the Coastal Production District

Richard Smith, UCCE Farm Advisor Monterey County and Michelle LeStrange, UCCE Farm Advisor Tulare County

Peppers are a long-season vegetable that has several effective registered herbicides; however, there are gaps that remain in the spectrum of key weeds controlled by currently registered herbicides. As a result, growers may spend significant amounts of money, especially later in the season, to control weeds in peppers.

Dual Magnum and Prowl H20 are now registered for layby use on peppers and provide excellent control of a number of broadleaf and grass weeds such as lambsquarter, nettleleaf goosefoot and mustard. Dual Magnum specifically controls hairy and black nightshade, and yellow nutsedge. None of the currently registered layby herbicides are effective against malva (*Malva parviflora*) or field bindweed.

Over the past several years we evaluated flumioxazin (trade names = Chateau 51 WG in row crops and Broadstar 0.25 G in ornamental crops, both manufactured by Valent Corp.) as a preemergent on the bedtop as a layby application.

One issue that is confusing to growers is that we did get a registration for the use of Chateau on peppers in the furrow bottom. This use pattern is specifically targeted to peppers grown with plastic mulch on the beds and is a welcome addition to the list of materials available for use on peppers. However, this is different than the bedtop use pattern at layby. The challenge with this technique is to apply the Chateau safely and not damage the pepper leaves and fruit. To achieve this goal we have tried many techniques such as shielded sprays; using the granular formulation of flumioxazin, Broadstar; applying Chateau to granular fertilizer and applying it to the beds; and using a water repellant adjuvant. For various reasons, each of these techniques have not worked out.

In 2011, we tried applying the Chateau through the sprinkler and found that this technique was clearly not acceptable as it was too phytotoxic to the peppers. Interestingly, the peppers did recover but were delayed in their maturity. This is probably the end of my evaluations of the use of Chateau as a layby application of for use on the bedtop of peppers as we simply have not found a technique that is safe or affordable to apply the Chateau to the bedtop.

Other materials that we evaluated in 2011 include Zeus (sulfentrazone, FMC Corp). Zeus provided good weed control but burned the foliage where the spray contacted the leaf tissue; the good news was that it controlled malva.

In summary, the good news is that the combination of Prowl H2O and Dual Magnum will provide good layby weed control in fields that do not have problematic weeds. We are still looking for a material or technique that can help reduce late-season weeds in peppers, but no immediate solution is available.

Insect Pest Management on Peppers

John T. Trumble, William Carson, and Greg Kund, UC Riverside

Pepper field trials were conducted at the University of California South Coast Research and Extension Center (SCREC). The project included both a chemical screening trial and an IPM trial. The chemical screening trial was used to identify new compounds that can potentially be used in a commercial IPM program. The IPM program was conducted using a large scale commercial field design and was used to evaluate treatment rotations against a complex group of insects for efficacy as well as economic benefits for pepper growers.

Chemical trials examined Admire Pro SC, Oberon 240 SC, Baythroid, 2EC, Movento 240 SC, Synapse 240 WG and Radiant individually and in combinations. Admire Pro was applied once at 14 oz/Ac via drip irrigation as part of treatment in one treatment, followed by Oberon, Baythroid, Movento, and Synapse were used in a rotation. Some of the other treatments consisted of experimental compounds MBI 203 and MBI 206, and Radiant. Intrepid 2F and Pounce 3.2 EC were used together as a treatment and Tolfenpyrad was tested by itself.

The IPM trials examined a rotational treatment and a chemical standard. The IPM treatment consisted of Voliam Flexi 40 WG, and Dipel DF. The other treatment representing a chemical standard was Lannate 2.4 LV, combined with Pounce 3.2 EC. The materials used in the IPM trial were applied according to rotational strategies that would support a commercial grower operation. The low input treatment had Voliam Flexi applied twice and Dipel once. The chemical standard of Lannate and Pounce were applied six times. The fruit from the chemical and IPM trials were harvested and assessed for insect damage. The chemical screening trial focused primarily on insect damage and the IPM trial included insect damage and a harvest yield component.

Worm pressure populations were low this field season. Pepper weevil numbers were high this season with the control sustaining 56% damage. Several treatments reduced pepper weevil damage significantly. Whitefly and leafminer pressure were low in the chemical and IPM trials. We did see some differences between the treatments for psyllid (*Bactericera cockerelli*) numbers. Peppers treated with Lannate and Pounce had higher psyllid numbers at harvest. These insecticides either stimulated the psyllids to oviposit or negatively affected beneficial populations which help control the psyllids. The use of these types of materials has been shown to actually increase populations of psyllids in the field in other locations. For a complete copy of the report contact the California Pepper Commission.

Additional behavior and developmental studies on leafminer and potato psyllids are being conducted. We identified the repellency of several essential oils against psyllids. Field testing of these materials is scheduled. Investigations on the sampling and biocontrol of psyllids were completed this year. *Tamarixia triozae* and *Chrysoperla* species were identified as the most common natural enemies of psyllids in pepper fields.

Funds from UC ANR, the USDA Pesticide Management Alternatives Program, and USDA RAMP also supported our pepper research.

Evaluating Nitrogen Uptake in Peppers

Aziz Baameur, UCCE Santa Clara County, and Richard Smith, UCCE Monterey County

One of the most challenging aspects of growing pepper, and few other crops, is the lack of empirical information on nutrient uptake. To adequately manage the crop nutritional need, growers rely on soil monitoring, crop and plant tissue analyses. However, as regulatory environment gets tighter, there is an increasing need to tackle the difficult task of evaluating plant consumption of nutrient and their relative partition.

The main objective of this first year trial is to investigate the nutrient uptake by pepper crops.
Eight fields were included representing bell and jalapeno peppers. The cooperating growers carried out all the management logistics. We selected and replicated plots of five linear plants in each field. At each harvest, we collected all fruit, weighed it, count it and categorized it by salable or reject. At the last harvest, we made up composite samples of fruit and

others of aboveground plant material. Plant and fruit samples were submitted to UC Davis Analytical laboratory for NPK analyses. Soil samples were also collected and submitted for same nutrient analyses.

Plot production ranged between 24-40 tons/acre for jalapenos and 34-56 tons/acre for bells. Dry matter (DM) production was similar for both type of crops (26-27 tons/acre).

Based on laboratory analyses, nutrient content of above ground biomass varied between 224 and 240 lbs/acre of N for bells and jalapenos, respectively. Bells and jalapenos did uptake about 270 lbs./acre of K and around 30-33 lbs./acre of phosphorus. When we compared uptake to growers input, about 72% of N, 48% of P, and almost all of the K was taken up by the crop.

In addition, data collected from this first trial indicate that to produce one ton of fruit, jalapenos needed 8 lbs. of N, 1 lb. of P and 9 lbs. of K. Similarly, bell plants would require inputs of 6 lbs. of N, 1 lb. of P, and 7 lbs. of K.

Additional work is needed to validate the data presented here.

Effect of Nitrogen Fertilizer on Yield & Quality

Michelle Le Strange, UCCE Farm Advisor Tulare Co. and Marita Cantwell, Postharvest Specialist, UC Davis

Many growers use drip irrigation and apply liquid nitrogen fertilizers through the drip system. Nitrogen Best Management Practices have not been updated for many years, nor has there been a recent study that investigates the relationship between nitrogen fertilizer and pepper quality at harvest, when grown under drip irrigation. For three years a field study was conducted at the UC WSREC in Fresno County to investigate 5 rates of nitrogen (N) fertilizer (60-315 lbs N/A) on the yield and postharvest quality of drip irrigated bell peppers.

In 2011 the cultivar 'Double Up' was transplanted and grown without plastic mulch or poles on 40-inch beds with a manifold system that allowed different N rates to be applied simultaneously through subsurface drip irrigation to different parts of the test plot. Prior to planting the soil tested very low (about 5 ppm nitrate-N) in the top foot of soil for residual nitrogen. Whole leaf samples were collected four times every few weeks during the growing season beginning at first flower, and analyzed for N content. The field was picked twice for yield, quality attributes, and postharvest evaluations.

The peppers showed a significant yield response to the varying levels of N fertilizer. Total marketable yield ranged from 7.3 to 20.4 tons per acre. The two lower N treatments (60 and 135 lbs/A) were definitely insufficient for maximum yield and size, but there were only subtle differences between the three higher rates (195, 255, 315 lbs N/A). The two highest rates produced more extra-large fruit compared to the lower rates. *So in a completely nitrogen depleted soil approximately 250 lbs N/A is needed to produce maximum yield and size in a 16-week crop grown under California's Central Valley conditions.*

Postharvest evaluations of mature green fruit at the first harvest revealed that there was no differences in form, firmness, or dry weight, but fruit weight and pericarp thickness were significantly less in the two lowest nitrogen rates. At the second harvest mature green fruit were more firm, weighed more, and had higher dry weights at the higher nitrogen levels. Green color hue was darker in lower N fruit of the first pick, but there were no hue differences in the second pick. Bruising and cracking differences were noted between the nitrogen treatments, but did not follow a consistent trend. *In summary, postharvest evaluations of mature green marketable fruit were inconsistent and indicated that nitrogen content was not necessarily a driving factor.*

As expected red fruit had higher fresh and dry weights than green fruit, but only fresh weights were affected positively by increasing nitrogen. Red color was similar among all treatments except the low N treatment in which the fruits were orange-red.

Note: A project being conducted by Jim Prince of California State University, Fresno titled "Bio-control of Powdery Mildew" has been extended to the 2012-13 fiscal year at the researcher's request.

Complete research reports available
from the Commission office

Farm Advisors

The following is a list of Farm Advisors by county, who are part of the University of California Pepper working group. Not all counties or farm advisors are listed. For more information go to www.sfp.ucdavis.edu.

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Listing of 2012-13 Approved Projects

Baameur/Smith –	
Evaluate Efficacy of Fungicides	11,300
Antoon Ploeg –	
Root Knot Nematode Damage to Peppers	6,020
Smith/LeStrange –	
Pre-emergence of Weed Control	9,856
John Trumble –	
Insect Management	22,000
Bill Weir –	
Effect of Nutrients on Yield and Quality	5,000
Total	**$54,176**

2011-12 Financial Report

The accompanying Financial Report shows that the Commission continues to be in excellent financial shape, due partly to exceeding the expected income from marketed peppers. The Commission budgeted on the basis of receiving income from the equivalent of 380,000 tons of fresh peppers, which would bring in $133,000 at the $.35 per ton rate. However, the actual tonnage from the 2011 crop brought in $139,898. While the surplus carry-over might seem large, the Commission has chosen to keep a

substantial reserve to prevent the possibility of needing to fund a project without having the money available.

The Commission's books are audited annually by an independent Certified Public Accountancy firm, and any pepper industry member wanting a copy of said audit may apply to the Commission office.

California Pepper Commission

Financial Report

Fiscal Year: March 1, 2011 through February 29, 2012

Account Name	*Amount*
INCOME	
Carry-over from 2010-11	$187,681
Assessment Income, 2011-12	139,898
Assessments Prior	0
Interest Income	1,821
Total Available Funds	**$329,400**
EXPENDITURES	
Management Services	$40,200
Audits	2,588
Office Supplies	864
Telephone	548
Postage	600
Reports & Publications	88
Travel & Mileage	797
Meetings	481
Insurance	685
Website	2,200
Marketing Branch, CDFA	7,031
California Specialty Crops Council	6,000
Production Research	64,500
Chemical Research	3,050
Total Expenditures	**$129,632**
Carry-over to 2012-13	199,768
Total Expenses & Reserve	**$329,400**

California Pepper Commission 2010-13

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