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TOMATO INFO

LOCAL OBSERVATIONS

I can't recall a smoother planting season than our current spring season. While there has been plenty of strong northerly winds and some rainy episodes, the bulk of the season has been easier to plan and continue on a smoother routine schedule of activities than recent past years. One area that shouldn't be overlooked is to check soil moisture status at 3 to 5 foot depth at some point in the early plant growth stage.

A couple of insect pests that appear more active this year are the darkling ground beetle and wireworms. Once field-seeded tomatoes reach 3 or 4 true-leaf stage, the ground beetle damage risk is largely over. With transplants, these beetles can be problematic beginning with setting transplants into the ground and continuing for a couple of weeks later. Damage can occur almost immediately. Some of the highest populations are associated with high crop residue or in perimeter areas where adjacent crops like wheat begin drying. Sevin® (carbaryl) bait is effective.

Wireworms are active in several fields I've visited this year. In direct-seeded fields, the wireworm can feed on seed as well as young seedlings. With transplants, the wireworm burrow into stems below ground and hollow out sections of the stem. First symptoms are wilting of plants. Stand loss is expected as a result of seedling feeding. Soil incorporating Admire is listed as a UC IPM Guideline treatment. Check with your processor for approval to use diazinon. In limited field tests, soil incorporated Warrior® has some activity on wireworm. The label includes soil applications to tomatoes for garden centipede control. The larval stage of the wireworm causes the damage. Life cycle is several years. The adult form of the wireworm is the click beetle.

COST OF PRODUCTION

A sample cost of production study was produced with UC Ag Economist Karen Klonsky and Pete Livingston for processing tomato grown in the Sacramento Valley. We initially met with a small group of growers to develop a list of typical operations, field efficiencies, equipment and labor. The study is that of a hypothetical 2900-acre row crop farm with 900 acres of tomatoes.

Assumptions were many. All land was rented on a percent share of the gross basis with tomatoes set at 12%. Expected yield was 35 tons per acre at a $63 per ton price. Labor rate was increased to 2008 minimum standards of $8.00 per hour and thus we adjusted machine labor to $10 per hour. All wages were increased by 48% to account for taxes, benefits, insurance, etc. Fuel price was $2.30 per gallon for diesel and $2.80 for gasoline. Water costs was $30.61 per acre-foot as a mix of

well and canal water. Hand weeding labor was $150 plus additional $50 per acre for direct seed while transplant method was assumed to require only $50 per acre. Transplant cost for seed, greenhouse plants, and custom transplanting was $500 per acre for 8700 plants. Direct seed expense including replanting 10% of the acreage was $219 per acre but included starter fertilizer and a generous 52,000 seeds per acre. Cost of establishing the crop with sprinklers was higher with direct seed method.

Adjustments would be expected to customize the costs to an individual operation as well as to coordinate with the whole enterprise. Overhead might be distributed in different fashions. The equipment mix might be more complex and include a high carryover of older equipment as well as some failed inventions. The issue of retained labor crews during slack periods adds to the farm costs as does various overhead expenses. We also did not account for excess acres to cover contractual obligations.

Table 1. Sample cost to produce processing tomatoes, Sacramento Valley, 2007.

	Operation	Cost/acre direct seeded	Cost/acre transplanted
1	ground prep	206	205
2	growing	1160	1156
3	harvest	279	277
4	misc. & interest	92	91
5	cash overhead & rent	393	393
	TOTAL CASH COSTS	2130	2121
6	non cash overhead	153	136
	TOTAL COSTS	$2,283	$2,257

Areas of efficiencies that were not considered were use of drip irrigation, wider row crop cultivators and planters beyond 3-row units, and reduced tillage practices.

There was no attempt to compare direct seed vs. transplants beyond some elementary level. It remains fairly clear that transplants require less attention to seed bed condition, require less finesse to establish the stand, have less hand weeding expense, but have a higher initial cost. Direct seeding will be cheaper given stand establishment is efficient and initial weed control is effective. And within that comparison, adjustment to input levels would change the relative advantages/disadvantages.

Bottom Line: The ability to reduce input costs while increasing fruit yield output is obviously a key to maintaining profitability. Compared to our previous study in 2001, the cash cost of doing business increased over 30%. Basic input prices have risen: seed, fuel, labor, iron, water, and fertilizer.

BACTERIAL SPECK

Should wet, cool weather conditions continue this spring, applications of copper may be needed to reduce disease levels. Early, preventive treatments are more helpful than post-infection sprays. Applications timed before rain events are better than after. If allowable, adding Dithane to the tank mix with copper improves control slightly. The chemical control program is only a protectant, not an eradicant. Good coverage is important.

Since we are in the late spring when temperatures normally become warm and dry, the threat of speck should not persist.

Should rainy episodes continue, the warm rainy events might trigger outbreaks of late blight. Therefore, the monitoring, the strategy and the control programs should shift focus from bacterial speck toward late blight. If bacterial spot was the problem, this could persist with moderate temperatures coupled with wet conditions.

MATRIX HERBICIDE

UC Weed Specialist Tom Lanini reports that Matrix® provides better weed control as a pre-emergent herbicide compared to post. Users of post emergent selective herbicides for tomato production when trying to control nightshade, walk a thin line between excellent control and crop safety. Dr. Lanini reports that in a collection of his tests over the years, Matrix post emergent results in a slight yield reduction compared to pre-emergent applications. Yield loss is about 1 ton.

If nightshade escapes the pre-treatment, an option might be to direct the spray toward the base of the tomato plants to avoid contact with the bulk of the canopy.

In the many early tests with Matrix/Shadeout, results did not show a statistically significant yield reduction. We have frequently seen the color reaction and the slight, temporary stunting of tomato plants but not an impact at harvest.

ROADSIDE WEED CONTROL

We reported that glyphosate-resistant ryegrass appears to be well established in our area, especially along many roadsides. The ryegrass species is *Lolium multiflorum* or a hybrid crossed with *L. rigidum.*

Changes in weed control management may well be needed where this winter annual ryegrass persists. Care should especially be taken with the weed control program along ditch lines and roadways where repeatedly sprayed ryegrass now dominates and appears less controlled by glyphosate.

Malva or cheeseweed is another example of a glyphosate-tolerant weed that now is widespread in many fields. Keeping the borders clean will help reduce the spread into our production fields.

NEW VIRUS THREAT FOR THE CENTRAL VALLEY?

In March 2007, the virus that causes tomato yellow leaf curl was discovered in a non-commercial tomato greenhouse in the Imperial Valley. A brochure is available with photos to help identify diseased tomato plants.

This virus is particularly damaging to tomato plants causing severe stunting and reduction in fruit yield. *Tomato yellow leaf curl virus* (TYLCV) is a problem in several other production areas with the closest occurrence to us in Mexico.

Our saving grace is that the vector, sweet potato/silverleaf whitefly (*Bemisia argentifolii* or *B. tabaci*) is not a pest in our area. Presumably, our winters are too cold for the insect to survive. This virus is also not seedborne nor mechanically transmitted. The common greenhouse whitefly is not a vector for TYLCV.

However, tomato transplants can be our Trojan horse. We are vulnerable to disease spread from infected plants coming from the desert areas should TYLCV become established there. Along with infected plants, the silverleaf whitefly could be hitching a ride from the greenhouse directly to the field.

UC Davis plant pathologist Bob Gilbertson is an expert on TYLCV. His lab is equipped to quickly identify plant specimens suspected of this virus. Our office can serve as a facilitator to submit local samples to the Gilbertson lab.

The brochures are being produced by UC IPM program with funding support by the California Tomato Research Institute and the California Tomato Growers Association. These should be available sometime this month and on-line at http://ucipm.ucdavis.edu/PMG/selectnewpest.tomatoes.html.

Submitted by,

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