



Western Connection

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Growth Regulator/Fertilizer Program Solves Puzzling Problem

Research consultant Dr. Jack May of Los Osos, California often records higher yields and better crop quality with products ranging from fertilizers to materials that promote uniform bud break or regulate plant growth.

But when growers adopt a new program, results can be hard to measure without untreated checks. In other cases, however, there's a marked response. An example he cites is a grower who began applying Auxigro and First Choice® KeeP™ to a wine grape variety that had a continuing problem of low Brix.

Metabolic Priming

Auxigro belongs to a product category called metabolic primers and is labeled for a variety of crops. A foliar application triggers production of gamma aminobutyric acid (GABA), a substance plants produce when they're under stress. By opening metabolic pathways GABA enhances nutrient uptake, root and plant growth, flowering and disease resistance. KeeP, a monopotassium phosphate fertilizer (0-51-33), is rapidly absorbed by plant tissue and complements metabolic priming by promoting peak nutrition and plant health.

Two years ago May recommended the Auxigro/KeeP program to Bill Mosby of Mosby Winery and Vineyards in Buellton, Santa Barbara County. He specializes in Italian wine grapes and a Cortese variety with low sugar was almost pulled before a turn around occurred. "I was going to give it one more year," notes Mosby, who couldn't push Brix above 18%.

In 2000 he applied the materials at full bloom and veraison and Brix reached 22%, allowing wine production for the first time. He used the same approach last year and the trend to higher Brix continued, ranging from 23.5% to 23.8%. Besides Auxigro, Mosby tank mixes KeeP

with all foliar sprays, including wettable sulfur. He's confident that the new program would allow him to increase yield and keep sugar at or close to last year's levels. But, he prefers to manage for maximum quality rather than higher tonnage. He also notes a side benefit of keeping mildew in check with sound nutrition and fungicide sprays. "I haven't used dusting sulfur for the

last two years," he reports. It may be partly due to lower pressure, but the Auxigro/KeeP program is the main reason, Mosby believes.

May isn't surprised that Auxigro and KeeP applications impact powdery mildew. The metabolic primer is labeled as a preventive treatment in grapes. Monopotassium phosphate is a component in Nutrol™, a new fungicide/plant nutrient that's labeled for powdery mildew control. When it comes to higher sugar, he points to experience with KeeP in the Paso Robles area.

Several years ago Western Farm PCA Mike Hollerman evaluated KeeP when cool weather slowed sugar development. Grapes treated with KeeP had higher Brix levels than other fertilizers and the monopotassium phosphate has become a standard nutritional tool, says the PCA.

Budbreak Trials

Hollerman adds that other nutritional products are currently undergoing testing. This spring he monitored pre-registration research Dr. May conducted at the Pacific Vineyard Company of San Luis Obispo to promote uniform budbreak. CAN-17, a calcium ammonium nitrate solution, was tank mixed with a non-ionic surfactant, First Choice Break-Thru™ and produced impressive results, he reports.

George Donati of Pacific Vineyard says the results were also surprising. After two years of adequate chilling hours his area experienced a warmer winter. "We have a lot of areas on tops

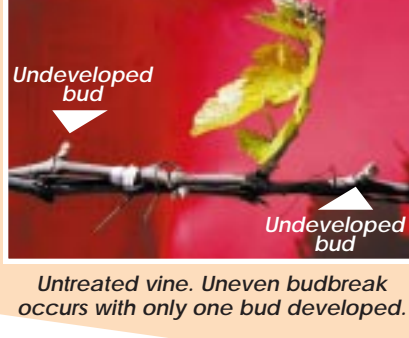
of hills that don't get enough chilling hours," he says. Even with good chilling hours it's not uncommon to have poor bud break and Donati was surprised to see the uniform bud push that occurred after vines were treated with Can 17 and Break-Thru.

Depending on factors like temperatures and variety, CAN-17 can also promote earliness, says May. He estimates that grapes will mature about a week early at Pacific Vineyard. Break-Thru, an organo-silicone surfactant that's a wetter, spreader and penetrant, enhances results achieved with CAN-17, adds May. WFS is now working to have calcium ammonium nitrate labeled to promote uniform budbreak in grapes, as well as cherries and apples.

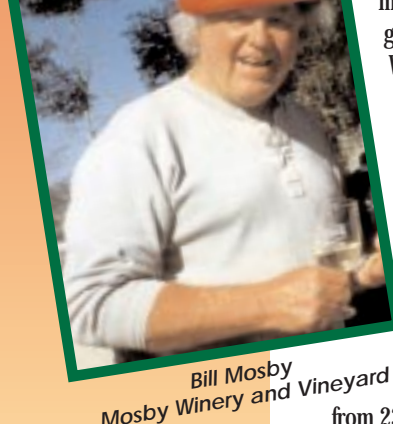
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Vines treated with Can 17. Even bud-break occurs throughout the cane.



Untreated vine. Uneven budbreak occurs with only one bud developed.



Bill Mosby
Mosby Winery and Vineyard



Multiple Potassium Sources Offer New Options

Skip Purdy, Senior Agronomist for Central Valley Division

Low soil potassium levels are well documented and plant functions such as photosynthesis or disease resistance decline before visual symptoms appear. Potassium chloride (KCL) is the most commonly used K fertilizer, but potassium nitrate (KNO3) is becoming more economically viable.

Western Farm has a new source of KNO3 and other suppliers are entering the market, says Skip Purdy, WFS Senior Agronomist for the Central Valley Division. KNO3 has a low chloride content and contains nitrogen to help improve plant absorption of potassium, giving it a good fit for foliar application or fertigation. According to Purdy, University of California research showed that foliar applied KNO3 could supply all K needs in prunes during a normal growing season.

High-analysis fertilizers are also available to supply readily available potassium and other nutrients, Purdy adds. For example, First Choice pHortress (0-37-25) is a monopotassium phosphorus acid that was introduced in 2000. Like First Choice KeeP, a monopotassium phosphate, pHortress is highly water-soluble. Last year WFS introduced a low chloride P-K suspension with sulfur. First Choice Foliar Supreme (0-16-10-30%S) is based on monopotassium

phosphate and an unusually high combination of sulfur and micronutrients. The phosphate in each of the fertilizers helps boost potassium uptake.

Proper Balance

Regardless of the fertilizer, balanced nutrition maximizes the investment in potassium and other nutrients. Purdy recommends an intensive monitoring program. The WFS Crop Monitor Program (CMP) uses more frequent tissue testing and identifies optimum thresholds for more than 30 crops. The CMP features a database built on more than 20 years of soil and tissue test results, plus nutrient thresholds that maximize production.

Time frames are established for tissue sampling at key growth stages. Test results reveal how major nutrient levels compare to top producers in the CMP database. By presenting optimum N-P-K levels and preferred levels of other nutrients, CMP provides a blueprint for balanced nutrition and optimum production. The Crop Monitor Program is offered to growers through Western Farm PCAs.



New Generation Surfactant Makes Pesticides Work Harder

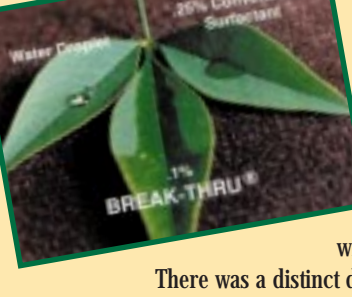
Advances in spray tank additives offer new opportunities to improve pesticide performance through better wetting, spreading or plant penetration. First Choice Break-Thru, a non-ionic, organo-silicone surfactant, does all three jobs and gets high marks from Henry Carrasco of Western Farm's Salinas branch, a veteran PCA and past president of the State of California Agricultural Consultants Association and the California Agronomy Society of America.

Interest in the product started with a simple paper test, says Carrasco. A representative of the Break-Thru manufacturer did a demonstration with NuFilm-P, Kinetic and water.

There was a distinct difference when the materials were spread on cardboard paper. Break-Thru there was "complete coverage" with Break-Thru and the PCA began researching the surfactant before introducing it to growers.

Break-Thru is a new generation surfactant with 100% active ingredient. It's based on organo-modified siloxane technology for use with water-based pesticide formulations. Carrasco, who has worked as a PCA for more than 30 years, uses a thorough evaluation process before making product recommendations.

He consulted with WFS agronomists before working with cooperating growers to evaluate results under field conditions. After verifying product performance Carrasco made Break-Thru a standard tool. It's used in all pesticide sprays to promote superior wetting, spreading and penetration in crops like lettuce and broccoli. Increasing the amount of spray mix that spreads across plant surfaces and penetrates hard-to-reach areas not only improves results, but can also lead to extended control. Carrasco calls Break-Thru a "high-end product" and the end result is better pesticide performance.



First Choice Product Boosts Nutrient Availability

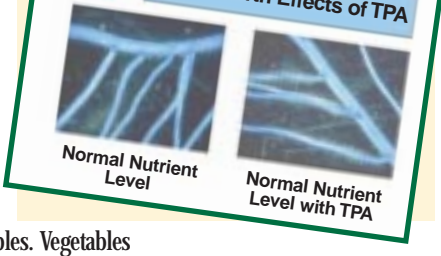
Chuck Hormung, WFS Southwest Division Marketing Manager

Western Farm Service is adding TPA to its First Choice product line after conducting extensive trials to verify efficacy. When mixed with nutrients, the product's active ingredient prevents fertilizer from crystallizing in the soil.

First Choice TPA's biggest benefit is combating phosphate fixation that normally occurs soon after application, thereby making more phosphorus available for plant uptake. Mixing the material with starter fertilizer helps ensure adequate nutrition for early root growth and seedling development. The result is a greater root mass, including longer roots and more root hairs, allowing plants to extract more nutrients and the potential for higher yields. Efficacy has been verified in university research as well as WFS field trials.

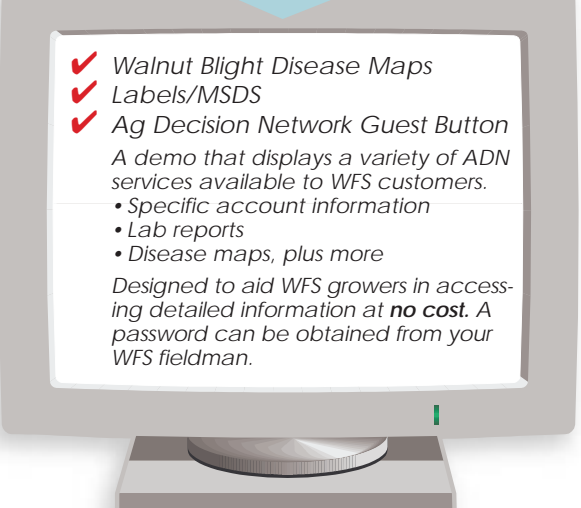
There's an especially good fit when crops are planted into cool soil, a condition that further reduces plant uptake of phosphorus. The First Choice product has performed well in crops like corn, onions and other vegetables. Vegetables in particular have shown a consistent response.

Other possible uses are application with liquid fertilizers like 10-34-0 or in fertigation programs for trees and vines. Although phosphorus is critical for proper root and seedling development, plant uptake continues in annual crops up to harvest. Non-deciduous perennials like citrus absorb phosphorus year-around. TPA is a complementary tool that enhances the potential for higher yields and better crop quality, plus a greater return on your fertilizer investment.



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A Different Approach to Mite Control

A recent change in mite control programs is giving corn growers an added bonus of broad spectrum insect control and application flexibility. Capture® 2EC, an insecticide/miticide received registration for field and sweet corn in late 2000 and passed its first major test in corn last year, says Bret Horner of FMC Corporation.

He worked closely with Western Farm PCAs and notes that the insecticide/miticide has a good margin of crop safety that allows application even when there's moisture in whorls. Besides mites, Capture also controls worms, aphids and leafhoppers. The latter two insects, of course, are vectors of viruses that can plague corn and significantly reduce production.

Capture can be used alone for mite control or tank mixed with dimethoate if conditions favor heavy pressure or if population of twospotted spider mites are building. Although the insecticide/miticide provides broad-spectrum control, there were no outbreaks of secondary insects in 2001, Horner maintains. He adds that the product has no posting, permit or notice of intent requirements and a 24-hour reentry interval for field corn.

Grower Feedback

The first year of use in corn went extremely well, says Western Farm PCA Henry Soares of Turlock, who received positive comments from growers. He cites crop safety as a major reason for adopting a Capture program. The insecticide/miticide was tank mixed with dimethoate and Foliar Pride™, a 7-14-8 fertilizer that also contains small amounts of zinc, iron and humic acid.

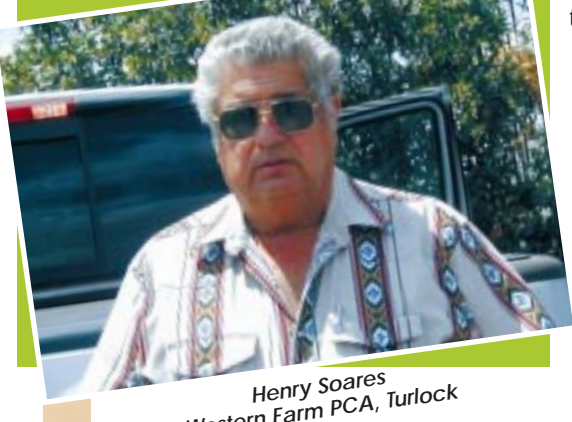
Compared to the standard mite control program, the three way tank mix is a little more expensive, he notes. But, it delivers results that pay off in the long run. Before Capture, the possibility of phytotoxicity canceled out the option of adding fertilizer to mite sprays. Corn grown on alkaline soils was especially prone to leaf burn, he adds.

Soares started the new approach on a field that was split and treated with the standard miticide and the Capture/dimethoate/Foliar Pride combination. Response to the insecticide/fertilizer tank mix was readily evident within four to five days. "Corn didn't wilt, it was nice and green and plants looked healthier," says the PCA.

Crop safety with Capture also fits his philosophy of trying not to treat too early to extend control later into the season. Larger plants have bigger whorls and previously there was a potential for more plant damage. By adding dimethoate there's an additional benefit of better aphid control, while Foliar Pride supplies an important nutritional boost.

Initially, Soares says he was reluctant to adopt the Capture program. But soon after making the first applications the benefits were evident and feedback from growers confirmed that the new option was the right choice.

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A Valuable Addition to Site-Specific Monitoring Programs

Growers who use Western Farm's Weather Information Network are finding that precision irrigation is a valuable addition to site-specific climate data generated by Adcon® field stations.

Recent experience shows that wireless capacitance or C-probes can significantly reduce water use, says PCA Tom Gibson of Western Farm's Walnut Grove branch. C-probes were introduced three years ago and when the monitoring tool is placed in the soil, notes Gibson, it usually shows that standard irrigation programs apply too much water.

Over irrigation was evident when Bill Stokes of Stokes Farms, Lodi, began using two C-probes last year. Stokes has three weather stations in his vineyards and uses the weather monitoring system "religiously." Adding C-probes was a move that probably saved the equivalent of a full irrigation on 280 acres of wine grapes. With last year's high electricity costs, pumping less water was a major plus.

Sensors in C-probes take moisture readings every 25 minutes and weather stations relay the data to a WFS base station at 15-minute intervals. Growers access the information on command from their own computers without having to do on-site monitoring.

Drip and Flood Irrigation

Stokes used C-probes to monitor drip and flood irrigation, placing sensors at depths ranging from six to 36-inches. The technology was espe-

cially valuable in reducing water use by fine-tuning drip irrigation schedules, he says.

For Stokes, C-probes fit into a package that lets him manage more efficiently. He installed his first weather station five years ago and "the system paid for itself the first year." One payoff is the powdery mildew model that allows more precise application timing instead of a "fixed program." Even with a sensitive variety like Chardonnay, he normally controls mildew with five applications of dusting sulfur and one to two sterol inhibitor sprays.

Other major uses include frost alerts and high-low temperature data to track omnivorous leafroller hatchings. Temperature information is also a valuable marketing tool to present to wineries. Having access to Western Farm's weather surrounding provides a good overview of trends in his neighborhood area, Stokes adds.

According to PCA Gibson, interest in weather monitoring and C-probes is getting more attention. This season, he notes, a number of growers are taking advantage of Western Farm's new 90-day trial program.

During the 90 days, growers can use WFS weather stations and receive technical and agronomic support for a fee of \$300 for three months. After three months, growers can purchase the equipment or return it without any major commitment.

Adcon is a registered trademark of Adcon Telemetry

"Adding C-probes was a move that probably saved the equivalent of a full irrigation on 280 acres of wine grapes."
Bill Stokes
Stokes Farms, Lodi