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## CONSERVATION TILLAGE, THE FUTURE OF FARMING

### Offering bigger profit margins and helping to improve air quality

JCA custom farming, owned and operated by Johnny Azevedo in Patterson, Calif., has been working with reduced tillage for five years. Azevedo says he became interested in reduced tillage, when he began working with a farmer from Turlock, Calif., that wanted to try no-till.

On the farm he did no-till, Azevedo says after chopping, they spread gypsum and manure on the

ground, pre-irrigated and planted. "The soil quality in the field we planted was terrible, and there were drainage issues, so the yields were slightly below conventional in this particular situation," he notes.

However, the ability to reduce passes and still maintain comparable yields piqued his interest. After attending a University of California Tillage field day, Azevedo looked into strip-tillage.

Strip-till is one more pass than no-till. "You work a small strip 10-inches wide and 1-foot deep to make the seed bed, so you can plant the corn," he notes. "I believe strip-till is more successful because it takes out the variability of seed depth. With no-till it is hard to get consistent depth, due to compaction caused by truck paths during harvest."

Even though you reduce the number of field passes, Azevedo says, there are a lot more things involved. "You have to take into consideration soil quality, soil pH, organic matter and many other things," he notes. "To be successful you have to look at all of these things."

Nutrition of the plant also becomes increasingly important with reduced tillage. "You need to concentrate on feeding the plant correctly," he says.

And, Azevedo notes, not one thing works the same everywhere.

Sometimes when farmers try conservation tillage they go half-way. "If you're not going to address the whole picture, it's not going to be successful."

Conservation tillage is really the future of farming, says Azevedo. Profit margins get slimmer and

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# A SYSTEMS APPROACH TO CONSERVATION TILLAGE

## Taking a closer look at the big picture

To be successful with conservation tillage, you need to look at your entire farming system, notes Alan Hoekstra, principal for California Ag Solutions in Fresno, Calif.

There are many things that come into play when you decide to make the switch to conservation tillage, notes Hoekstra. Every input decision needs to compliment every other farming decision.

Hoekstra and his team, try to offer farmers a comprehensive systems approach to crop production.

“There is so much more to take into consideration when it comes to conservation tillage,” says Hoekstra. “You need to analyze everything, from seed variety to soil audits, to plant nutrition.”

Here is a closer look at areas to take into consideration.

### Soil quality

Perform a comprehensive soil audit. It is important to understand the condition of soil you are working with. “Understand what your soil is capable of throughout the growing season,” says Silas

Rossow, conservation tillage specialist with California Ag Solutions.

Things to look at are soil nutrient level, soil tilth, and ability to absorb water.

“If you have hard pan, you may need to rip before switching to conservation tillage,” says Rossow. To get the land ready for conservation tillage you might have to physically or chemically (with gypsum or sulfur) alter the soil.



**Alan Hoekstra examines soil profile.**

If you improve soil quality, you improve the soil environment. And, a better soil environment provides for better rooting activity and more biological activity which creates a better plant.

### Cropping plan

Look at your cropping plan for not only this year, but even 5 or 6 years out, says Rossow. “It’s important to understand where you are at in crop rotation and timing wise.” Border spacing’s may be different for different crops. You want to minimize extra

passes in the field, and by looking at your cropping plans 5 and 6 years out you can set your border spacing’s to work with future crop rotations.

For example, Hoekstra says he has a farmer who is seeding alfalfa this fall, putting in border spacing’s to fit, strip-till planters, for strip-till in 3 or 4 years for when he makes the switch to corn.

This saves time, fuel and labor.

### Equipment

The equipment needed for conservation tillage will be significantly less than conventional. In most cases, farms eventually sell their conventional tillage equipment, notes Hoekstra.

### Irrigation

Irrigation schedules with conservation tillage will be slightly different. “You need to analyze your irrigation methods to ensure you are meeting the plants needs, and not saturating the soil,” says Hoekstra. The soil might not be able to handle the amount of water you would normally put on.

In a lot of cases, farmers are over irrigating crops, which creates an anaerobic environment that is not beneficial to the plant.

It has been our observation, that water utilization improves with conservation tillage and you irrigate less, adds Hoekstra.

## Fertilizer

The amount of fertilizer needed and method of application is significantly different with conservation tillage. "The method of applying fertilizer is more efficient with conservation tillage, than conventional," says Hoekstra.

In some cases, Hoekstra says, you can put all of the Nitrogen the plant needs on at one time.

## Plant nutrition

Plant nutrition is very important with conservation tillage. "We recommend three critically planned foliar nutrient applications," says Hoekstra. These applications are timed and targeted to specific plant growth stages.

These applications provide immediately energy to the plant and induce aggressive additional rooting activity.

## Seed variety

The seed variety that you use for conventional tillage may not be the best choice for conservation tillage.

"Our goal is to make sure farmers are successful with conservation tillage," says Rossow. The key to success is understanding all systems and how they interact with each other.

In the past conservation tillage has gotten a black eye because some farmers have failed to implement a full systems approach, notes Hoekstra. "One

**"Systems" continued on page 8**

## CT SIDEBAR: PUTTING A DOLLAR FIGURE TO IT

There are a lot of different areas to look at when considering conservation tillage. Reducing the number of passes in the field certainly increases profit margins. But is there a return for improving on all of these areas? California Ag Solutions says there is. Here is a look at each area and the potential dollar savings. These figures are provided by California Ag Solutions and are calculated using the "Nu-Till" System.

### **Improved Nitrogen efficiency** (Increased revenue and savings: \$25+)

A larger root system intercepts a larger amount of N in the soil profile before it leaches and converts to an unavailable form. Increased biological activity helps convert organic N to a useable form.

### **More flexible irrigation management** (Increased revenue and savings: \$10+)

The first irrigation can be applied earlier on the Nu-Till system, therefore filling the soil profile and never having to play catch-up with irrigation. No more stressed corn, better grain fill.

### **Decreased tillage passes on corn** (Increased revenue and savings: \$60+)

With the Nu-Till system there is one tillage pass and a planter pass compared to conventional which is considerably more.

### **Earlier planting, earlier harvest** (Increased revenue and savings: \$20+)

Planting earlier allows you to take advantage of the peak growing season, when the temperatures are optimum for growing corn. Harvesting can be done earlier so you have more time to prep the ground for the next crop.

### **Improved soil quality** (Increased revenue and savings: \$30+)

By tilling less and building a stronger root system the Nu-Till system will improve soil health, water holding capacity, decrease salts and increase organic matter. The system addresses fundamental soil chemistry needs to insure that the plant's roots are growing into the best environment.

### **Optimized variety to soil type** (Increased revenue and savings: \$20+)

The Nu-Till system takes into account how each variety performs in various growing conditions. By placing the right variety in the right soil we optimize the varieties potential.

### **More milk produced per acre of silage grown** (Increased revenue and savings: \$10+)

With optimum nutrient levels in the plants and soil, there is more energy that is used to grow a bigger and healthier ear. Better grain to stover ratio. In side-by-side field trials the Nu-Till system consistently shows a 2 to 3 ton advantage. ■

# BMP CHALLENGE WORKS FOR ROSSOW



## BMP Challenge offers a risk free opportunity to try a new style of farming

Seth Rossow, farm manager for Bert Wilgenburg, enrolled in the Best Management Practices (BMP) challenge offered by Sustainable Conservation and American Farmland Trust this past spring prior to planting.

The BMP challenge provides farmers with a risk-free opportunity to try reduced tillage. "The opportunity to try reduced tillage, without the risk of losing money really piqued my interest," says Rossow.

Rossow enrolled 120 acres of white grain corn in the program. "The BMP challenge is a great way to try something new. New things never work perfectly the first time and this program is able to help you step out and take the risk not entirely on your own," he says. Rossow is looking at continuing the program next year too.

Strip till did significantly better, notes Rossow. But, he says they did have a first class fertilizer program and worked with people that had significant experience with strip till.

There is a learning curve with reduced tillage. Rossow says, "Make sure you get the field level before you plant, because you

"The opportunity to try reduced tillage, without the risk of losing money really piqued my interest."

- Seth Rossow

"Rossow" continued on page 5

## TAKE THE CHALLENGE

### How much can you save?

Wouldn't it be great to have a guarantee for conservation practices that can also save you money? Farmers in the Mid-West States have been taking advantage of just such a guarantee. Now we are bringing this opportunity to farmers in California! Seeing is believing! The BMP CHALLENGE protects your income so you can see how reduced tillage or nutrient management practices perform, in your own fields, without risk.

Thanks to a grant from the USDA Natural Resources Conservation Service, the BMP CHALLENGE is available for corn silage in California for the 2009 spring planting.

"In my opinion, the BMP Challenge Program is a no-brainer. There is no way a farmer can lose," says corn producer and BMP CHALLENGE participant.

The BMP CHALLENGE process is easy from start to finish. Working with a crop advisor or the Conservation Tillage Workgroup, you select a field to enroll. You apply your usual nutrient application rate or tillage practice on a check strip in the same test field while the rest receives the BMP nutrient rates or reduced tillage. At harvest, you and your advisor compare yields and net returns. We compensate you any net income loss. It's a great risk-free educational experience for farmers and advisors.

This program has been used successfully in conjunction with grant-funded projects including EPA 319. To date, participating producers have saved more than 150,000 lbs. of nitrogen and an estimated 2,000 tons of sediment loss in the Mid-West.

The BMP CHALLENGE is a collaborative project of Agflex, the IPM Institute of North America, American Farmland Trust, California Conservation Tillage Workgroup, and Sustainable Conservation.

For more information you can contact the BMP CHALLENGE contact: California Conservation tillage workgroup: Dr. Jeff Mitchell (559) 303-9689 or Sustainable Conservation: Ladi Asgill - (209) 576-7729 



## CONSERVATION TILLAGE WORKS FOR WINTER CROPS



**John Knutson**

John Knutson, JB Dairy in Oakdale, Calif., has used conservation tillage on his 330 acres since 2005.

Knutson plants two crops each year. In a normal year, Knutson will follow his corn with sorghum

sudan, but three fields are lying fallow due to an overgrowth of fiddleneck weed. Knutson's operation is organic so he cannot spray for weeds, and has to take different measures to eliminate weeds.

"We like to plant the sorghum sudan on the pieces of ground with high nitrates," says Knutson. The sorghum sudan pulls nitrates out of the soil. Knutson plans to follow his corn this coming year with sorghum sudan again.

The one thing Knutson says that has been a learning curve for them is the trucks and equipment knock down the irrigation levees.

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### *"Rossow" from page 4*

do not have furrows to compensate for uneven dirt work. You also need to get a heavy dose of Cruiser and/or Micro or any other pesticide for the seed coating, because wire worms and cut worms will be worse due to the added organic matter on the top of the soil." Weed control is also essential he says. "If you are growing a Roundup Ready variety, life is a breeze. But, if you are growing a non GMO you really need to be on top of your game with herbicide timings and the chemicals you use for weed pressure."

"Obviously you are increasing the organic matter for the microbial activity to eat which in turn will

JB Dairy has been able to reduce the number of passes in the field down to three. "We do two passes in the field with a disk, create furrows and plant," says Knutson.

Following harvest, Knutson will till the residue in the field. Last year the dairy planted grain corn, and disked the stalks into the ground. "The stalks were gone by the next season, and the ground held the water better. We could definitely tell there was more humus in the ground," he says.

JB Dairy uses manure from its cows for fertilizer. The operation does soil testing to ensure they are putting on what the field needs. To prevent cut worms the dairy uses garlic powder.

In regards to yields, Knutson says, "Our yields went down because we went organic, not because we switched to conservation tillage." Knutson current yields average 22 tons per acre. In addition, cropping costs dropped significantly. Costs for JB Dairy include custom farmer and seed costs. ■

eventually help offset fertilizer costs, and increase beneficial worm activity. You are also introducing more carbon into the soil, as well as improving the tilth of the soil. Where soil is very hard it is able to provide what it needs to become more balanced but this takes year of making it work, not just trying it out for a year or two. There is a huge difference in those two attitudes, says Rossow.

"BMP takes some of the financial risk out of the equation to try a new style of farming. But if the farmers' attitude going into it is to make it not look as good as conventional, because they don't want to change their practices, it will fail." ■

# TERRATILL. BREAKS UP COMPACTION

## A unique tool that breaks up compaction without destroying soil structure

Hard pan and compaction are soil concerns for all farmers. But, in particular it can be a concern for those who farm with conservation or reduced tillage. Bigham Brothers from Lubbock, Texas offer TerraTill as a solution for farmers to break up compaction without destroying soil structure.

“The TerraTill is a deep tillage tool that goes down deep into the soil and breaks up hard pan with virtually no surface disturbance,” says Jack Young, national sales manager with Bigham Brothers. “Approximately 92 to 95 percent of the residue is left in tact”

As a benefit, you get rid of hard pan, compaction and have better use of water, notes Young. “As the moisture table goes down, so will the root system.”

The TerraTill was developed with a leg or shank that is bent at a 45 degree angle, which allows it to enter the soil without disturbing the top. In average field conditions each TerraTill leg loosens a zone approximately 12 inches to 18 inches wide up to a 17 inch operating depth. High clearance TerraTill legs provide frame clearance for deep soil penetration. Four, six and eight leg machines are equipped with coulters for operation in heavy residue.

Rear bedding tools on the TerraTill frame may



combine deep tillage and ridging or bedding in the same pass to save trips across the field.

TerraTill loosens a narrower zone to allow maintenance of a firm traffic lane in row spaces from 30 inches to 32 inches. And, it fits well with narrow row space cotton (particularly on a stale seedbed) as well as corn, milo, soybeans and other crops traditionally produced on narrow rows. It also works well on wide-row patterns – 38 inches and 40 inches, notes Young.

The TerraTill can replace up to three different implements or passes in the field, says Young. Cost for the TerraTill range from \$11,000 for a 4-row to \$20,000 on an 8-row. Other row configurations are also available.

“The TerraTill is pretty unique and doesn’t compare to many other pieces of equipment on the market,” says Young.

**For more information:** Call Bigham Brothers at (800) 692-4449 or go to: [www.bighambrothers.com](http://www.bighambrothers.com) ■

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slimmer each year, and conservation tillage offers bigger profit margins. It also helps improve air quality by reducing passes.

Azevedo does practice what he preaches. “We have gone from nine passes down to two passes on our home operation. And we’ve been able to maintain our yields.” Even if the yields come in slightly less, Azevedo says you have to compare your total input cost to what you are getting.

JCA custom farming offers no-till planting for small grains, winter forages and corn, and strip-till for corn. They operate in Merced, San Joaquin and Stanislaus counties.

**For more information, contact:** Johnny Azevedo at (209) 495-3055 or email: [johnny1982@sbcglobal.net](mailto:johnny1982@sbcglobal.net) ■



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# VISIT US AT WORLD AG EXPO

Best Management Guarantee Program, BMP Challenge, will be at the World Ag Expo in Tulare, Calif.; February 9-11th.

Stop by and visit us in booth #M52 to learn more about how your farming operation can participate in our yield guarantee program.

Staff members will be on-hand to answer all of your questions and provide additional details.



*“Systems” from page 3*

of the key features of the Nu-Till system is the implementation of research based, field proven products. Through this technology growers are able to see physiological changes in the plant that are not the same as just making a change in tillage practices and planter applied nitrogen,” says Hoekstra.

*For more information: Call California Ag Solutions at (559) 440-6535 or email: [info@calagsolutions.com](mailto:info@calagsolutions.com)* ■



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## **CALIFORNIA TILLAGE NEWSLETTER**

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