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**Take Your Water Future
into Your Own Hands
with On-Farm Recharge**

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Mark & Donna Hutson have been farming for over 40 years and are now investing 40-acres of good farmland for groundwater recharge purposes.

Mark Hutson Farms a Canvas of Possibilities

Takes Water Future into His Own Hands with On-Farm Recharge

By Matthew Malcolm, Editor (matthew@malcolmmmedia.com)

Howchilla almond and walnut grower Mark Hutson believes that farming is 50% science and 50% art – that each field is a different canvas to paint on with its own unique needs and possibilities. While water is the major limiting factor these days, the possibilities are nearly endless in the diverse agricultural landscape of the Central Valley of California. When it was time to rip out an old 40-acre block of walnuts, Hutson decided to do something completely new with his “blank canvas”, something that

will leave a more lasting impression on the land.

While almond and walnut prices have been less than ideal and drought conditions persist, Hutson determined to dedicate the land, for the time being at least, for groundwater recharge. “We have been looking into this for some time now, and we have partnered with the NRCS on a groundwater recharge pilot project,” he expressed. “Our well also went out over the summer, though we were fortunate to have a nice neighbor that has helped us out

with some water to get through the season. Due to the drought and the lack of surface water deliveries in the area, the aquifer is overdrafted and our pumping water level dropped 70 feet in just a year.”

With some incentive funding and assistance from the NRCS, Hutson is now in the midst redesigning the field to capture excess surface water flows when they occur in the wet years. While most people picture a recharge basin as being wide and deep, Hutson plans to build up some dirt borders around the field so that the basin can support 3-4 inches of water (deep) spread across 40 acres. “Think of it like hay borders in an alfalfa field,” Hutson noted.

Though wet winters are never guaranteed, Hutson is praying and literally “banking on it” as they prepare the dirt borders. He has also spent quite a bit of time preparing the ground by removing hardpan layer to improve drainage and leveling the field. Hutson described his investment in groundwater recharge as putting money back into the bank.



Mark Hutson refers to his recently removed 40-acre walnut block as a blank canvas, and is working with NRCS funding to convert it into a shallow recharge basin that can still be farmed.

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Mark Hutson

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“We can’t just keep drawing from it and not giving anything back,” he expressed. “If everybody does their part, a little bit adds up to a lot.”

Workshop Helps Growers Think Outside the Box (or Basin)

To help facilitate more on-farm efforts in recharging the groundwater supply, Hutson hosted a Grower Recharge Workshop on his property, supported by the Madera/Chowchilla Resource Conservation District, the Almond Board of California, Sustainable Conservation and the Natural Resources Conservation Service (NRCS). Under the shade of his walnut trees, growers heard from experts on the feasibility and success of various groundwater recharge methods. Among the speakers, Chase Hurley from Triangle T Water District shared that their region had been experiencing some severe subsidence due to the loss of too much water from the deep ground aquifers. They worked with farmers to come up with some solutions, which included the construction of a farmer-built 300-acre basin within their district. While the first three years were dry without floodwater upon completion of the project, two flood years have come so far and they were able to sink just shy of 80,000 acre-ft. of water back into the ground.

“The key to mitigating land subsidence issues is not pumping water from the deep aquifers,” Hurley said. The 80,000 acre-ft. of water they were able to put back into the ground allowed for farmers to utilize their shallow wells to meet their water needs.

“Let’s continue recharging (and pumping from) the shallow aquifers,” Hurley noted. “We tried convincing other growers to build small basins to get ready for wet winters coming, but most farmers didn’t want to take land out of production to do so, but we really need to think long-



Over the summer, Mark Hutson hosted a Grower Recharge Workshop on his property, supported by the Madera/Chowchilla Resource Conservation District, the Almond Board of California, Sustainable Conservation and the Natural Resources Conservation Service (NRCS) to help facilitate more on-farm efforts in recharging the groundwater supply.

term. Let’s do what we can to fix the groundwater issue on our own through recharge to keep that state from further regulating/restricting our water supply.”

Recognizing that there still is a cost for winter recharge water, Hurley reminded growers, “It all goes through a meter, and you paid for it, so there is some ownership. When you put it in the ground under today’s law, that is your stored surface water now, and that is very



Chase Hurley from Triangle T Water District shared a great success story about how they were able to replenish their groundwater supply with 80,000 acre-ft. of water in only two flood years with a 300-acre farmer-built basin.

valuable. Sure, it will cost more when you need to pump it back out of the ground, but at least it’s yours.”

Hurley also pointed out that there really is a lot more flexibility in recharge basins than one may think. “You just got to start thinking differently,” he said. “For people like Mark Hutson with his open field, he can plant a row crop in the basin, and maybe he’ll have the ability to recharge once or twice every three to four years depending on hydrology. In the meantime, he can still farm cotton, melons or wheat for example; and when mother nature brings the flood water, he can abandon the wheat crop and flood it out. Once the floodwater sinks into the ground by spring or early summer, he can choose whether to grow a late corn crop or something like that.”

As Hurley suggested, Hutson does not plan to leave his recharge field idle as he awaits potential winter water flows. “I plan to plant the field with grain and a cover crop and pray for rain, because that’s how it will be irrigated,” he expressed. “We hope to turn a profit but understand that depends on water. We’ll be happy to sacrifice the crop should the district allow for excess water flows over the

winter to flood the field and recharge our groundwater supply.”

Orchard Flooding for Groundwater Recharge

Fortunately, there is more than one way to skin a cat with regard to groundwater recharge, because not all farmers are willing to set aside land for the primary purpose of groundwater recharge. Some growers have had success with recharge by flooding vineyards during dormancy, and Jesse Roseman from the Almond Board of California shared positive results from recent studies of their own on flooding dormant almond orchards.

“Irrigation districts have been doing groundwater recharge through ponding basins for many years, but what is different and new is the opportunity to recharge over about 1.6 million acres of almonds in the Central Valley, as well as other crops,” Roseman explained. While Almond Board research concluded



Jesse Roseman from the Almond Board of California shared positive results from recent studies on groundwater recharge by flooding dormant almond orchards.

that applying excess water during the wet season and flooding the orchard floor did not harm the trees, Roseman encouraged growers to check out a newly published Almond Board

guide to help determine whether groundwater recharge is a good fit for their individual operations. The guide starts off with four questions to keep in mind:

- Do I have access to surface water?
- Is my orchard soil suitable for recharge (sandy, well-drained soil is best)?
- What type of recharge would be most suitable?
- How will groundwater recharge impact my operation?

Regarding how it might impact some orchards, Roseman suggested that for growers with regular windfall issues, the orchard flooding form of recharge may not be a good idea – developing an on-farm basin may be more suitable. More growers have also been adopting cover crop practices and any extended periods of orchard flood conditions may limit the growth and success of a cover

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crop. Under such circumstances, growers may consider cover cropping every other row and flooding the alternate rows. Overwinter orchard flooding for an extended period of time will also limit orchard access for the duration of the event for growers wanting to apply crop protection materials and orchard sanitation practices such as mummy shaking. “Obviously you wouldn’t want to apply nitrogen fertilizer right below a flooding event,” Roseman noted.

Roseman admitted that on-farm groundwater recharge is a new frontier for the almond industry and there still is a lot to learn; however, “This is an opportunity to take your (groundwater) future into your own hands... so we invite you to consider it.”

Incentive Funding for On-Farm Recharge

There’s nothing like a little incentive funding to help farmers consider new sustainable practices, such as on-farm groundwater recharge. That’s why NRCS started a number of recharge pilot projects this year with Central Valley farmers like Mark Hutson. Wendy Rash, State Water Quality Specialist for the NRCS, explained, “We need to test out the cost and efficacy of groundwater recharge methods before our national office will adopt them as full-fledged conservation practices and get more incentive funding available. So, we’ve been doing a small pilot program in Madera County and with the Chowchilla Water District.”

NRCS is testing out flooding active farm fields, as well as utilizing basins and trenches. They are working with applicants like Hutson to develop a conservation plan and determine what additional setup needs they may have, such as a pipeline, diversion box, flow meter, etc....

“We had a smaller pilot area this



Wendy Rash, State Water Quality Specialist for the NRCS, talked about new incentive funding for on-farm groundwater recharge and the local NRCS pilot program.

year, but plan to expand next year,” she noted. “We are working in sites where districts are willing and able to deliver water during the wet months for recharge. We are also asking our applicants that they have access to a well nearby so that we can monitor water levels and look at water quality to measure the impact.”

The current NRCS payment rate for the growers installing basins is around \$4,000/acre feet of storage. Recharge trenches are paid by the cubic yard that is excavated at \$3.56/cubic yard, and on-farm recharge pays \$94-99/acre per year for up to three years. “We understand that the incentives are not going to cover the entire cost,” she admitted. “But we hope it will be enough to help get farmers started.”

Hutson confirmed that the amount of funding could be better. “That’s why this is a pilot program, and we need to get more farmers involved,” he expressed. “We need to educate the folks from the national NRCS offices what the installation costs are to hopefully increase that incentive funding for these projects.”

Hutson believes that groundwater recharge is a way farmers can be part of the solution to the State’s

water issues. Farmers can’t just wait around more dam storage and water infrastructural improvements that may never come in their lifetimes. “We’re not young anymore,” Hutson said. “My wife and I don’t have too much time left in the business. We would like to leave this farm and land in a more sustainable position than when we found it.”

“Water is more important than anything I’m growing,” he continued. “We must remember that the ground is our bank, and I want the value of my land to be maintained. My land value goes up if my groundwater levels are there. If we can do this, our groundwater quality will also improve. The solution to pollution is dilution. Subsidence will be lessened, and we’ll increase our groundwater storage.”

Hutson’s advice to others is that if they are taking out an old orchard and they’re in a water district, to consider bringing back their return/flood systems to have the infrastructure for on-farm recharge. “Whether you’re recharging .15 or .3 acre-feet/acre per day, a little adds up to a lot,” he says. “We can go a long way in recharging our shallow aquifers, and I can drill three shallow wells at the same cost as one deep well.”

He concluded, “This blank canvas you have after removing an old orchard is your chance to be creative and find out how you can incorporate groundwater recharge on your farm.”

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Editor’s Note: Visit NutGrower.org to learn more about Mark Hutson, and PacificNutProducer.com for more information and resources about on-farm groundwater recharge.



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