Resource Kona

RESOURCE KONA **December 2009**

KONA SOIL AND WATER CONSERVATION DISTRICT

Why Does Conservation Cover Help?

Kona has organic soils originally created through forest dieback and regeneration. Soil organic matter helps to build soil structure, increase the supply of plant nutrients, increase water storage capacity and serves as a host to many beneficial soil bacteria and fungi.

Prior to World War II land clearing in Kona was generally accomplished by hand or with light mechanization. After the war, with left over military equipment more acreage was cleared for coffee and pasture more effectively. This clearing slowed the cycle of dieback and regeneration therefore nutrients needed to be supplied chemically. Pastures provided some cycling of nutrients because of the pasture cover but in coffee areas the ground cover was thought to compete with the coffee for the available nutrients. Efforts were underway to eradicate groundcover completely thus stopping nearly all of the natural nutrient cycling causing the need for even more fertilizer and increasing the opportunities and incidences of erosion.

For the past few years coffee farmers have been heading in a new direction by growing a variety of ground covers. Some are uncomfortable with continuous reapplication of chemical fertilizers because of the potential harm to our groundwater. Fertilizer that makes (cont on page 2)

Above are pictures from three different farms where conservation cover has been installed. It will increase organic matter to the soil, protect it from erosion and help retain soil moisture

Inside this issue:

Special points of interest:

- Do you want to learn more about conservation on your land? Give us a call.
- If you want to become active in the Kona Soil and Water Conservation District please give us a call at 322-2484 ext 100

Why Does Conservation Cover Help? *(cont. from pg 1.)*

its way past the root zone can end up in our groundwater. Other have learned that the root system of ground cover holds soil in place and prevents erosion. Still others have learned that conservation cover can reestablish, to some degree, the nutrient cycling that took place when the area was forested. When you mow or weed whack the grass and leave the clippings in the orchard the nutrients in those clippings go back into the soil.

There are a variety of grass species that are appropriate for conservation cover. The species that work best for any individual farm is dependent on rainfall which is generally dependent on elevation. Some species are challenging to get established, but once they are they can be maintained with a minimum amount of effort. Some ground covers will actually take nitrogen from the air and make it available to other plants around them. Some grasses are better at mitigating the risk of erosion, some are better suited for pastures than for coffee orchards and some, sun hemp for instance, provide an excellent source of green manure but would have to be seeded regularly.

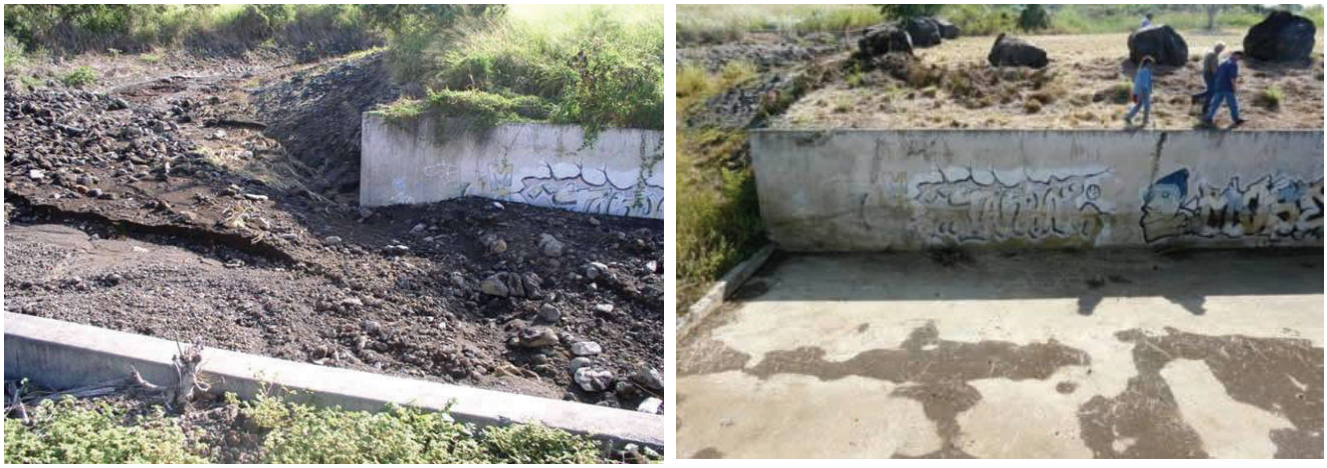
Whether or not to plant grass in an orchard is a decision each farmer would have to make and the Kona SWCD can help them determine which species will best suit their needs.

The Kona SWCD Tour Flood Control Structures With County Officials

The Kona Soil and Water Conservation District hosted a tour of the flood control structures in North and South Kona with guests: Department of Public Works Director Warren Lee, Council Member Brenda Ford from S. Kona and Council Member Kelly Greenwell from N. Kona.

Overall, the structures where in good shape though there was concern about when sediment basins were last dug out in order to maintain the purpose of their designs. There was also graffiti on concrete walls and though that does not impact general performance of the structure the graffiti is an eye sore.

The Sunset Mill Coffee Cooperative diversion structure did exactly as it was designed to do, and during the November 2007 floods protected the coffee cooperative. The County has seen to the removal of the sediment that accumulated from that storm.



On the left what the concrete channel looked like on Dec. 1, 2007. On the right the channel is cleared of sediment.

Local Work Group Advises NRCS

The Natural Resource Conservation Service (NRCS) recently held their quarterly State Technical Committee meeting in Honolulu. It was teleconferenced to all the islands so that local NRCS employees and local Soil and Water Conservation District members could participate.

The meeting called for Local Work Groups to meet and review their local resource concerns and to assist in the development of ranking questions. These ranking questions help determine which NRCS contracts with local farmers are funded.

The Kona Soil and Water Conservation District Local Work Group met with the Acting District Conservationist Pam Aguon to review and update the findings of the last Local Work Group meeting held in March 2007.

The group did reprioritize the resource concerns of our local farmers putting Water Quantity as the number one concern. Some of our local producer who have county water do not have sufficient water pressure to irrigate their fields. There are also producers who rely on capturing rain water in catchment tanks in order to irrigate and some producers have livestock on pastures who rely on rainwater to fill water troughs. These producers are especially hard hit during drought.

The other resource concerns the Local Work Group considered, in order of importance, were soil condition, water quality (particularly near-shore water and ground water), soil erosion, plant condition, fish and wildlife (restoration efforts), domestic animals and, finally, air quality. (Domestic animals would be cattle and other livestock). The work group felt that if some of the other resource concerns were addressed, challenges with domestic animals would also be addressed.

The Local Work Group also developed four new ranking questions to be used for local resource concerns. They are: Will the project address Kona's top three resource concerns of water quantity, soil condition and water quality? Will contracted practices improve or address water quantity concerns by increasing the amount of available water, improve irrigation efficiencies of the existing water supply or improve soil water retention? Will contracted practices improve available feed and forage quality and quantity? Does the contracted property include forest land which will be improved by contracted conservation practices?

It is not known at this time exactly how the Local Work Groups efforts will impact the program but they are a necessary part of the process to keep NRCS informed as to the local farming community's greatest challenges.

Little Fire Ant Reminder

To test for the Little Fire Ant, smear a thin coating of peanut butter on a popsicle stick and place it in the pot of new plants or along side mulch or soil you have brought onto your property. Please remember, only you can prevent Little Fire Ants from getting onto your property, they do not travel very far on their own but they can travel great distances with our help. If you have any questions give the District office a call at 322-2484 ext 100.

Got Soft Bodied Insects?

In the last edition of our newsletter we provided a recipe for dealing with ants. For this edition we offer a recipe for handling soft bodied insects such a aphids, mealybugs, white-flies, scales, and citrus black flies.

Home Remedies For Control Of Soft-Bodied Insects And Powdery Mildew Disease

1. **For soft-bodied Insect Control (i.e. aphids, mealybugs, whiteflies, scales, citrus black flies:**

Prepare a stock solution of "Soap-Oil Concentrate" (This is a small quantity recipe. For larger quantity recipe see part ***b*** below)

1 tablespoon dishwashing liquid

1 cup of vegetable oil (peanut, safflower, corn, soybean, or sunflower oil)

How To Use the "Soap-Oil Concentrate"

a. Shake the stock solution of "Soap-Oil Concentrate" well before using it, then dilute with water as follows. When ready to use, mix 1-2 teaspoons of "Soap-Oil Concentrate" stock solution into *1 cup of tap water.* Spray plants as needed thoroughly in the morning or late afternoon, especially the underside of leaves. Usually, a spray once per week for 2-3 weeks will eliminate the problem.

b. For a *larger* volume of stock solution and spray, use the following recipe:

4 ounces of dishwashing liquid

64 ounces (1/2 gallon) vegetable oil (peanut, safflower, corn, soybean, or sunflower)

Shake well. When ready to use, mix 11 ounces of the "Soap-Oil Concentrate" in 4 gallons of tap water. Spray plants as needed thoroughly in the morning or late afternoon, especially the undersides of leaves. Usually, a spray once per week for 2-3 weeks will eliminate the problem.

2. For Powdery Mildew Fungus Control:

1 Tablespoon baking soda

2 ½ tablespoons vegetable oil

1 gallon of water

Mix well. Spray plants thoroughly in the morning or late afternoon every

7 days, especially underside of leaves, for 3 weeks.

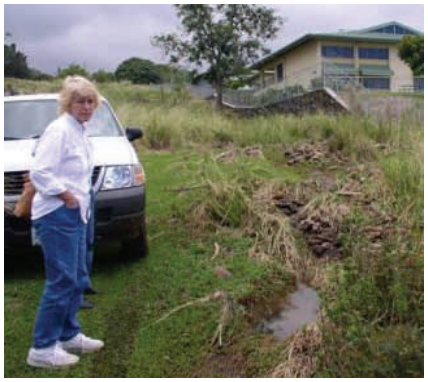
A Hui Hou Denise and Virginia

In our last edition we bid a fond farewell to Jeff Knowles and Patra Gherich. In this edition we send off Denise Light of the USDA's Natural Resource Conservation Service (NRCS) and Virginia Easton-Smith of UH's College of Tropic Agriculture and Human Resources (CTAHR) Extension Service.

Denise is retiring after working many years for NRCS. Some of her career was spent working out of the Hilo Office, some time was spent on Molokai and for the past ten years she worked out of the Kealakekua Office. Denise has a vast knowledge of agriculture, the Hawaiian landscape and culture. She grew up in Hawaii and obtained an agricultural degree from UH.

The District is also sad to see Virginia Easton-Smith moving on to accept new challenges. Virginia has accepted a position at the land grant College in Texas, Texas A&M, with their Extension Services Department. She will be working primarily with Master Gardeners in Rockport, TX and learning many new things we are sure. Virginia has been in the Kona area for more than 15 years helping the agricultural community overcome its challenges and celebrating its victories. She's been instrumental in the Coffee Talk series and has worked hard assisting with local festivals like the Coffee Festival.

Denise and Virginia will be sorely missed for their warmth and patience with novice farmers, some of whom bite off more than they can chew and others who don't know their own potential, and with their ability to help experienced farmers overcome new challenges. You were both here to help us all. We are happy for Denise and Virginia and wish them well on the latest adventure in their lives and say a hui hou, may the sun always be on your back, the wind in your face and the rain fall gently in the evening.



Upper left: Denise surveys flood damage to a local farm.

Lower left Denise enjoys a Cooperator of the Year picnic in 2008. Two of her clients earned the award that year thanks to the assistance and advise Denise gave them to improve their farms.

Upper right is Virginia working at a Coffee Talk presentation. Coffee Talk was a program she ran from the Extension Services office in Kainaliu to educate coffee producers to help improve their farms. Coffee Talk subjects were varied and included subjects like using perennial peanut for conservation cover and pesticide application.

Lower right Virginia is reviewing some information with a local coffee producer.

Soils of the Kona District *By Michael Kolman, Soil Scientist, USDA-NRCS*

Editor's Note: "The Soils of the Kona District" is a reoccurring column which will highlight the many different soil types within North and South Kona. In this first column our resident Soil Scientist discusses the Kona Series and it use and management.

The Kona soil series consists of thin, organic soils with minor amounts of volcanic ash over pahoehoe lava (see photo 1). These soils are on pahoehoe lava flows, from Hualalai and Mauna Loa volcanoes, that are about 500 to 3,500 years old. The land that these soils occur on is gently sloping to moderately steep and range in elevations from 1,000 to about 4,000 ft. the average annual rainfall for the soils range from 50 to 80 inches with most of the rainfall occurring during the months of April to October. The average annual air temperature ranges from 63 to 68 degrees Fahrenheit.

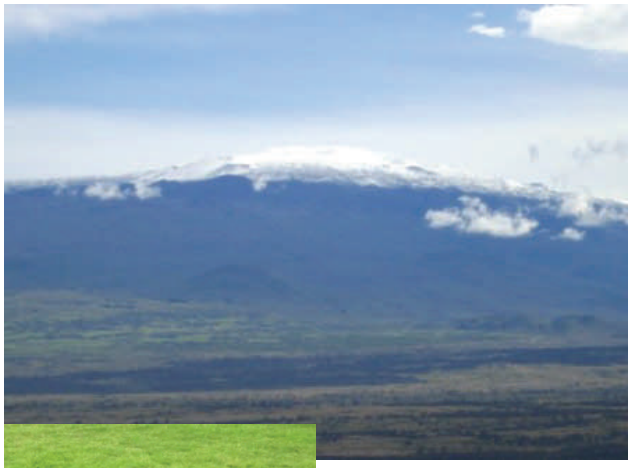
Photo 1, above. The Kona soil series: the surface layer is very dark brown highly decomposed organic matter about 5 inches thick over pahoehoe. Lava outcrops are common in this soil type.

Photo 2 above. Kona soil series used for macadamia nut and papaya orchard. Note the drip irrigation line in foreground.

The Kona soils are used mostly for wildlife habitat and pasture. Some developed areas are used for orchard crops such as coffee and macadamia nut (see photo 2). Success of newly planted orchard crops is limited due to available water within the soil, so it is recommended to plant the crops early in the rainy season if no irrigation is available. Phosphorous (P) retention in the Kona soils is very high, so available P levels are likely to be low. This can be overcome with frequent light applications of phosphorous fertilizer. It is recommended that a soil test be performed to evaluate nutrient levels of the soil in orchards. For more information on soils tests, visit the University of Hawaii, Cooperative Extension Service in Kainaliu. In developed areas, land clearing can cause the loss of organic material. The soils may dry and become hydrophobic which reduces the infiltration of water into the soil. This can also increase soil erosion and runoff. In orchards, it is recommended to apply conservation mulching practices that will increase the organic matter content and improve the water holding capacity of the soils. For more information on conservation mulching practices, or to learn more about (cont. on page 8)

Pu`u Wa`awa`a 4x4 Tour Planned

The Kona Soil and Water Conservation District will be hosting a 4x4 tour of the Pu`u Wa`awa`a cone and surrounding forest land on January 9th. The tour starts with a drive to the top of the cone where we stop and learn the history of the area and what is currently being done by the Division of Forest and Wildlife with their efforts to increase the number and variety of native plant species. We will drive through the forest and you will see how fencing prevents pigs and cattle from not only damaging native species but also prevents the expansion of invasive species. We will make a stop for lunch along the way and be provided additional lectures on the work being done to improve the numbers of native species.. This is an all day event and costs $100 per person. Lunch and snacks are provided for everyone. Space is limited so contact us today to make a reservation, 322-2484 ext 100.



Top left, a view of Pu`u Wa`awa`a Cone at the beginning of the day. Middle left, a view of snow covered Mauna Kea from the summit of Pu`u Wa`awa`a cone. Bottom left, nene in an area that has been fenced off for their protection. Top right, a view from the cone summit, you can see Haleakala in the background. Bottom right. a view of the cone on our way back home.

81-948 Waena'Oihana Loop
Kealakekua, HI 96750
322-2484 ext. 100
Fax: 322-3735

Board of Directors:
Chairman: Rick Robinson
Vice Chairman: Greg Hendrickson
Secretary: Virginia Isbell
Director: William "Skip" Cowell
Director: David "Kawika" Marquez

Staff: Mary Robblee, Conservation Assistant
Monthly meetings are held on the 2nd Tuesday of the month from 7am-9am at the USDA Kealakekua Service Center below the post office. All are welcome and the facility is ADA accessible.

Organization: The Kona Soil and Water Conservation District (KSWCD) is a government subdivision of the State of Hawaii organized under Hawaii State Law, HRS Chapter 180

Function: To utilize available technical, financial and educational resources to focus or coordinate them so that they meet the needs of the local land users with regards to conservation of soil, water, and natural resources.

Service: The District serves the communities and land users within North and South Kona

Why: The District is committed to the promotion of wise land use and resource stewardship.

Were on the web at
www.kswcd.org

Soils of the Kona District *(cont from pg 6.)*

your soil type contact or visit the USDA-NRCS Service Center in Kealakekua. You can also check out the web soil survey at http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm

A Holiday Gift For Your Neighborhood

Here is an idea on how to show appreciation for your neighborhood. Clean out the part of a watercourse that goes through your land. The law does require it but not only that, it can keep heavy rains from becoming devastating floods.

This may not be our rainy season but it is Kona Storm season where we can see major storms cross over the islands. These heavy rains can cause water to run in watercourses you may have thought would never run again. Any debris placed in there by nature, you or your neighbors can cause blockages and water to back-up then spill over the banks of these intermittent streams and serious flooding can be the result.

So please, do not use watercourses as a debris site for farm or household waste, no matter how long it has been since you've seen water flow through it. You wouldn't want someone to do it upstream from you, please don't do it to those that are downstream from you.

Wishing You All A Safe And Happy Holidays

The Kona Soil and Water Conservation District Board of Directors and staff wishes all of our local producers a joyous holiday season and a prosperous 2010. We hope you all get the sun and rain you need to prosper as agricultural producers. You are our hope for a sustainable Hawaii.