



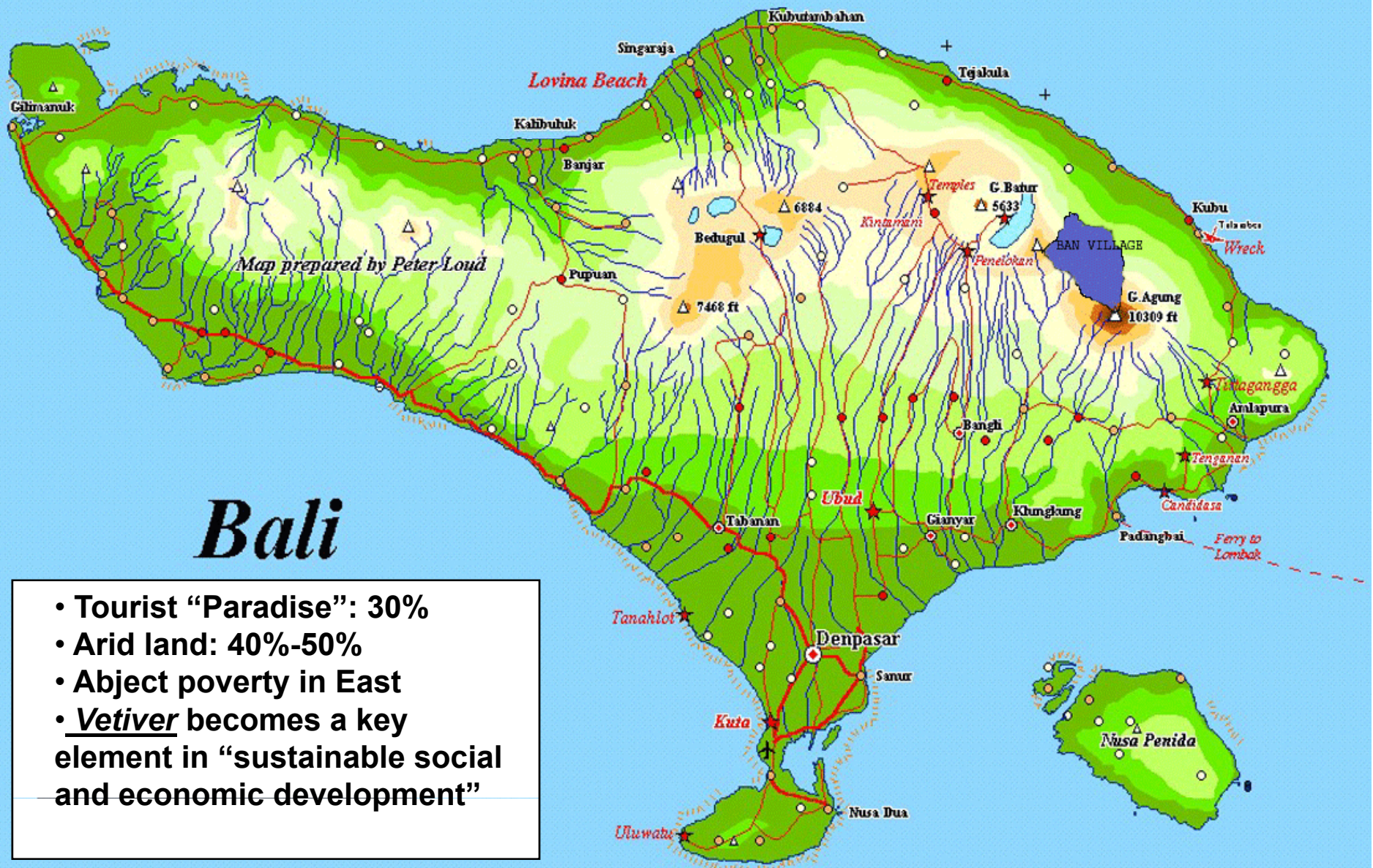
# VETIVER SYSTEMS FOR COMMUNITY DEVELOPMENT AND POVERTY ALLEVIATION IN INDONESIA

By

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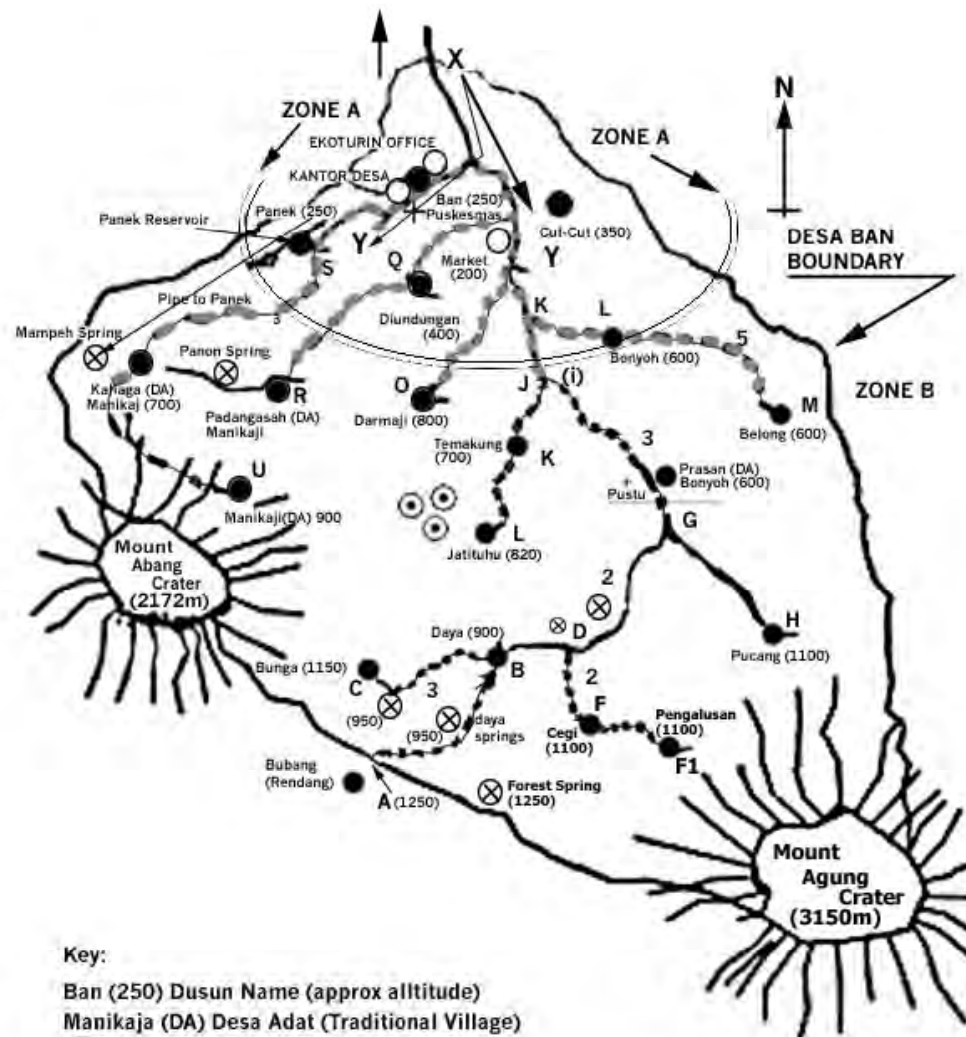
# The barren east Bali mountain slopes



Cegi and Pengalusan hamlets at elevation of 1,100m on Mount Agung slopes

# Map of Ban village

**BAN VILLAGE: INFRASTRUCTURE AND COMMUNITIES**  
 55 K to Singaraja (30km to Tejakula)      45km to Amlapura (20km to Tulamben)



Key:

Ban (250) Dusun Name (approx altitude)

Manikaja (DA) Desa Adat (Traditional Village)

⊗ ⊙ Well / Spring (fresh water source)

(i) Limit for 4 wheel Drive Vehicle. All other Dusuns reached by narrow dirt track.

— X Y : Limit of asphaltroad -then dirt road } ZONE A (cars,pick-ups,&trucks)

— — — — — Dry weather dirt road } ZONE B (motor cycle/horse only)

— — — — — Access by river bed } ZONE B

| 3 | Distance between Dusuns (km)

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# First Vetiver Planting: March 2000



# The First Use of Vetiver Grass in March 2000 to stabilize new dirt road verges



**Cegi kids learn Vetiver road erosion control**



**Vetiver protects new road for 2,500 families to leave village for first time**



**Watching Vetiver grows in bamboo pot in front of Cegi school as example for children & community**



**2,5m Vetiver root after one year planted**

# Children explain Vetiver Systems to foreign donors and supporters



## Vetiver Introduction, Dissemination and Extension to Rural Farming Communities and Schools in Bali from 2000 to 2006

Year	Stages of Vetiver Systems Introduction for Poverty Alleviation	Pilot Vetiver Dissemination to Impoverished dry-land Subsistence Farming Communities to Empower by seeing Vetiver's Benefits and Sustainable Development Potential	Development of Vetiver Dissemination and Training for farming communities and schools - "Learning by Doing"
2000	<b>Bio-engineering solution:</b> Stabilize steep road verges, giving first-time access for thousands of people to health centres, markets and potential economic dev't	(i) Establish mutual trust between EBPP & community; (ii) clarify differences between vetiver & known grasses; (iii) use culturally sensitive benefits-based approach in awareness and education programmes in group discussions (iv) capacity building and empowerment to use vetiver for sustainable development and environmental improvement	1) Dissemination to <b>illiterate farmers</b> by sensitive " <b>for the people by the people</b> " vetiver field training 2) Vetiver training refreshed annually
2000 - 2001	<b>Seeing Vetiver grow:</b> Vetiver incorporated into school curriculum	(i) Children plant vetiver slip in tall sand-filled pot outside school to see root growth and slip development, (ii) Children plant first village vetiver hedges for school organic vegetable gardens on steep and arid volcanic land	1) EBPP trains and gives vetiver stock to Indonesian <b>Permaculture Foundation (IDEP)</b> to establish pilot permaculture Projects 2) EBPP trains <b>South Bali school</b>
2001 - 2006	<b>Preventing farm soil erosion:</b> Vetiver hedges support horizontal terraces for school organic vegetable gardens	(i) Parents " <b>see by example</b> " children's school gardens and are keen to learn and replicate on their land; (ii) children educate/train parents and establish family and community Vetiver nurseries; (iii) EBPP gives vetiver slips & training to Village Head	1) EBPP staff & children give Vetiver slips and training to 85 poor <b>North Bali School</b> on the school's steep and arid land; 2) Vetiver training & stock to poor <b>North Bali Coast village</b>
2002 - 2006	<b>Food security, led by children:</b> organic vegetable farming on steep and sandy land to replace cassava and corn as staple	(i) Participatory community discussions using conceptual "before, during and after" sketches initiated <i>new</i> farmers' groups to learn organic farming by " <b>learning by doing</b> ", (ii) local youths from all hamlets join EBPP's Vetiver Team as key trainers for farmers co-ops	1) EBPP gives vetiver to Bali's organic worm castings expert to include in her training for <b>W &amp; N Bali</b> farmers' groups; 2) 2005: <b>EBPP's Vetiver training video</b> produced, supplementing vetiver training
2004 - 2006	<b>Preventing destruction of mountain spring safe water supplies for 1,300 families</b>	Local community trained to plant vetiver to stabilize new soil fill after mountain spring water supply almost destroyed by torrential rains and also plant vetiver hedges to divert future flash floods.	1) 2006: " <b>Vetiver Grass – A Hedge Against Erosion</b> " 1 <sup>st</sup> Indonesian version 2) 2006: <b>IDVN's 1<sup>st</sup> Vetiver Training workshop for Indonesian Government Forestry Rehabilitation specialists</b>



No	Main Community Problems in 1998 Preventing Advancement or Change	Sustainable changes by December 2007, with Vetiver as the direct or indirect key
1	<b>No vehicular access in or out</b> from the south of this 7,200Ha village only steep, narrow and highly erosive mountain tracks.	<b>Year round road access for 15,000 people:</b> Over 27km of vetiver-protected dirt roads
2	<b>Illiteracy:</b> virtually all parents and almost 2,000 children illiterate due to no accessible schools or money to pay school costs.	<b>More than 800 children have been educated in EBPP's schools since 1999</b>
3	<b>Year round erosion and little arable or productive farmland:</b> Arid, rain fed volcanic ash, with average slopes of 40°.	<b>Thousands of metres of vetiver hedges planted</b> preventing hundreds of tons of soil erosion
4	<b>Diet not adequate:</b> The staple for most is cassava, sometimes mixed with corn and/or a little rice.	<b>Nutritious vegetables are now available daily</b> from vetiver-enabled school, community and individual kitchen gardens
5	<b>Malnutrition &amp; micronutrient deficiency:</b> Up to 50% of infants malnourished; many children and adults had stunted growth.	<b>Malnourishment of children virtually eliminated</b> through (a) nutritious school meals, (b) iodine and vitamin A supplements and (c) nutritional supplements for 1,400 infants
6	<b>Child mortality:</b> 25% before one year old (EBPP survey 2000-2001);	<b>Child mortality down to less than 1%</b> due to better access, knowledge, nutrition and safe water consumption.
7	<b>Iodine Deficiency Disorders (IDD): Palpable goitre in children aged 6-12: 84.5%</b>	<b>Only 20% of children had palpable goitre in August 2005</b> in Government Health Department survey
8	<b>Safe Water Availability: NONE.</b> Either a 2-3 hour walk to get water from the few remote wells or springs	<b>As a result of vetiver stabilised mountain springs and access roads,</b> over 1,400 families now have safe water supply
9	<b>No Local Health facilities:</b> average walking time to <i>Puskesmas</i> (community health centre) is 5-6 hours	<b>Thanks to improved access roads facilitated by vetiver, EBPP established 27 Posyandu</b> in the 19 hamlets since 2003
10	<b>Very basic village market - no iodised salt, fish or nutritious vegetables sold, a root cause of malnutrition</b>	<b>All of the 3,000+ families now use the vetiver stabilised all-weather tracks</b>
11	<b>Cow Fodder scarce locally – requires 4-6km mountain trek:</b>	<b>Year round cow fodder now available at home from vetiver nurseries and vetiver hedges</b>
12	<b>3,000+ hectares of land denuded by 1963 Mount Agung eruption - extensive erosion, soil loss &amp; ecosystem depletion.</b>	<b>Reforestation and carbon sequestration:</b> started in 2007 with bamboo, Neem & Moringa, facilitated by vetiver hedges
13	<b>Children have no future:</b> destined to become cassava and corn farmers, as their parents and ancestors	<b>Hundreds of EBPP educated children empowered</b> with many skills to develop livelihoods & cooperatives

# ERODED 2km DIRT ROAD TO BUNGA HAMLET IN 1999



**2007**  
**VETIVER PROTECT ROAD**  
**TO BUNGA HAMLET**



# Vetiver protects many community access roads



# Vetiver prevents destruction of essential mountain springs

**February 2004: erosion on mountain spring before protected by vetiver**



# Vetiver prevents destruction of essential mountain springs

October 2004: Vetiver firmly established – permanent spring protection



## Vetiver stabilizes volcanic sand fill for school construction (1)



# Vetiver stabilizes volcanic sand fill for Bunga school building





## Vetiver stabilizes more schools on complete fill embankments



Vetiver protect the Jatituhu school building



Vetiver planting at Darmaji school foundation, January 2008

# Happy children develop 1<sup>st</sup> Vetiver nursery



Kids sort Vetiver in December 2000



Daya nursery starts on barren slopes



6 months later Vetiver excites the kids



2002: Typical Vetiver clump

# Cegi children's school garden 2002+



March 2002: terraces cuts in barren hills



Dec. 2002: Vetiver facilities first harvest



Children learn in their organic garden



Kids' garden seen from afar: e.g. for all

# Organic vegetables flourish in school gardens



Vetiver hedged path leading to Pengalusan school garden at 1,200m elevation

# Organic Community Gardens: Parents keen to learn are taught by their children in EBPP Schools



# Mature community organic vegetable gardens



# First potato harvest in barren Bunga hills



Bunga trainee farmers sign agreement



Organic learning garden before Vetiver



Potatoes growing in stable terraces



First potato crop thanks to Vetiver terraces

# COMMUNITY LEARNING GARDENS





# ORGANIC VEGETABLE & HERB KITCHEN GARDENS



# ORGANIC VEGETABLE & HERB KITCHEN GARDENS



# EBPP's Ardika training farmers groups and school children in other disadvantaged rural villages how to benefit from Vetiver



Vetiver posters are a very powerful visual aid



Explaining simple hand measure for slip & root length



North Bali junior high school children listen.....



and practice what they learnt on barren school land

## Vetiver & Sustainable Agriculture Training for PT Perum Perhutani and local farmers groups at EBPP Centre



# Community Vetiver nurseries



# New Jatituhu Vetiver nurseries for business & economic development



Clearing step land for new Jatituhu community Vetiver nursery, Feb 2008



Establishing new Vetiver nursery as community business in Jatituhu



Preparing the Vetiver



Planting Vetiver slips in new Jatituhu nursery

# Vetiver in children's art & "The Art of Learning by Doing", the book of their lives



Painting - Adhika

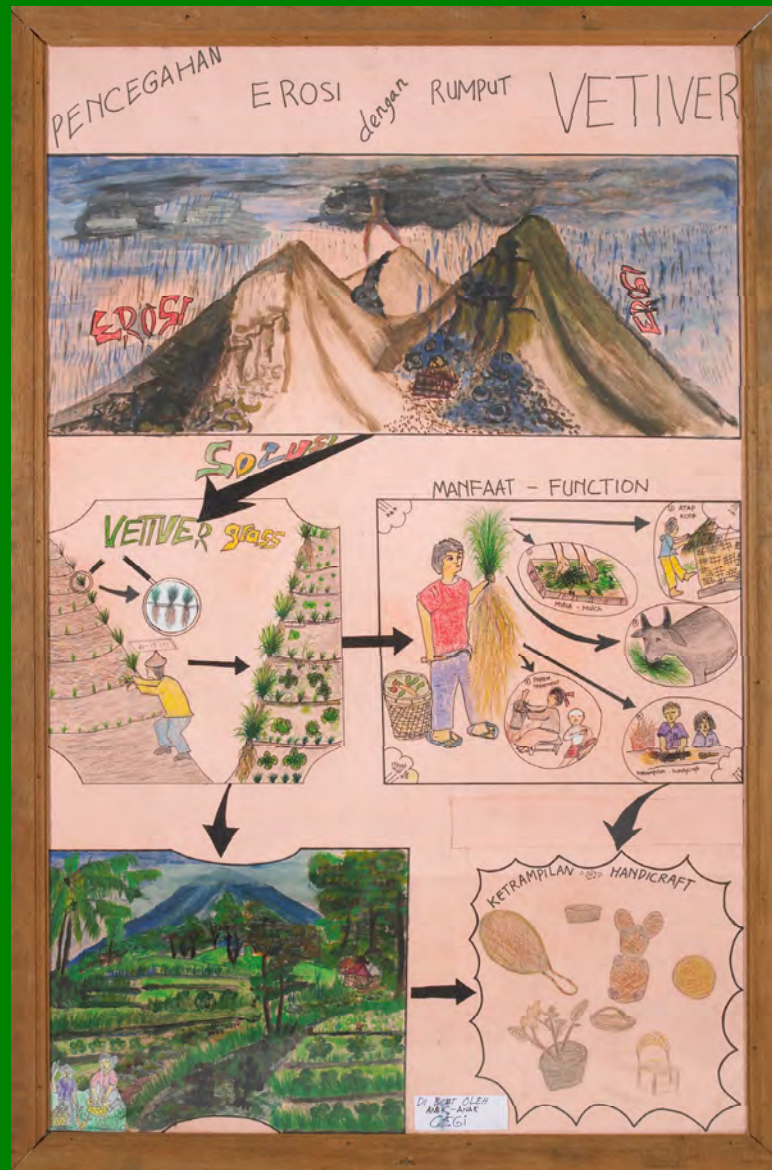


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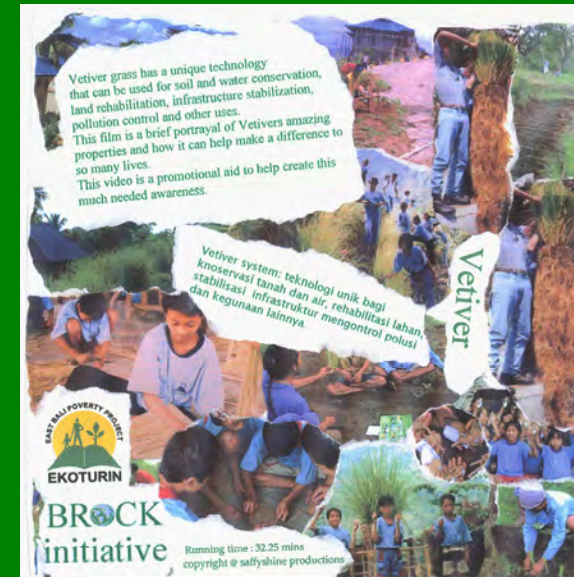


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# Vetiver Poster Created by EBPP Children



# Vetiver Training video



Video shooting to create the Vetiver Training video



A photograph of a lush green hillside. In the foreground, a man in a light-colored shirt and white pants is bent over, working in a field of tall, vibrant green grass. In the background, another person in a dark shirt is visible, also working in the field. The hillside is covered in dense vegetation, including various trees and shrubs. The overall scene is bright and verdant, suggesting a rural or agricultural setting.

THANK YOU FOR  
LISTENING