Vetiver applications: farmer network, land and rural development in Thailand

*Pitayakon Limtong, Apichat Jongskul and Chivat Sitibuth*

*Land Development Department, Ministry of Agriculture and Cooperatives, Bangkok, Thailand*
Vetiver applications for soil and water conservation in Thailand was the first established in 1991, which His Majesty King Bhumibol Adulyadej of Thailand advised to the government agencies who directly response in this matter to research and field trial on utilization and efficient of vetiver grass on soil conservation and restoration of soil resources.
Vetiver applications

In the initial stage of implementation, Land Development Department (LDD) was one of several agencies who carried out and emphasized in research and development of beneficial and potential of vetiver applications in agricultural area, and had directly in charge to prevent soil erosion in upland area.
In 1992, LDD emphasized the collection of vetiver ecotypes throughout the country, which 2 species were classified as *Vetiveria zizanioides* (4 ecotypes) and *Vetiveria nemoralis* (6 ecotypes) where it has been used in vetiver application projects since 1993.
Vetiver applications

In 2003, LDD survey and collected information on dominant vetiver ecotypes, which famous utilized in each part of the country and use Geographic Information System to manage digital position data in sites of vetiver plantation throughout of the country.

In that research found that *Vetiveria zizanioides* is very popular to utilize in lowland and highland, and the brief result are as follow;

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Soil Erosion Map of Thailand

Northern Part - lower

Kamphaengphet
India
Nakhonsawan
Soil Erosion Map of Thailand

Northeastern Part - Upper

Songkhla
Roi et
Prachuab khirikhan
Central and Eastern Part

Songkhla, Srilanka, Suratthani, Ratchaburi

Soil Erosion Map of Thailand
Soil Erosion Map of Thailand

Southern Part

Suratthani, Songkhla
In 2004, LDD collected all ecotypes of vetiver, which they distributed in the country. And it is totally 43 ecotypes were found in Thailand. Moreover, they had 26 ecotypes, where they have habitat in country but the rest were import from aboard.

LDD established Vetiver Operation Center in 2005 and carried out to collected all ecotypes in form of pot culture, tissue culture and DNA stock.
Vetiver applications

vetiver applications in agricultural area had many purposes such as soil and water conservation, soil fertility restoration, soil moisture and organic matter content improvement, which it improved soil properties, increased crop yield and also increased farmer incomes.
Vetiver applications: soil and water conservation

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Farmer network

LDD established farmer network in 1994 as soil doctor volunteer (SDV) who they are the leader core in the village to extend and campaign farmer to plant vetiver grass in their area. All of SDV were selected by LDD.
In 2002, SDVs had potential to assist LDD officers in rural areas for extend technology and knowledge transfer, especially in vetiver utilization and application. At present, SDV in province level are 76 persons, and total numbers of SDV in Thailand are approximately 61,511 persons.

Province level  76 persons
District level   853 persons
Sub-district level 6,536 persons
Village level   61,511 persons

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Farmer network: SDVs

the SDV network is very importance to drive the process of contribution in technology transfer, including extend and campaign on vetiver applications and more information on soil and land development.

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Farmer network: SDVs

in 2004 on study cases of the SDV network for comprehensive and integrated community development in highland and lowland reported that vetiver play the importance role for soil and water conservation measure, where some area it integrated with the new theory system of His Majesty the King in high efficiency to prevent soil erosion, increase yield and incomes.
Soil resources in Thailand was continuous used in agricultural production for long time, which somewhere community used high rate of chemical substances and fertilizers in competitive markets, somewhere utilized soil without suitable measures or soil improvements. On this matter, fertility of such soil resources has been deteriorated, and soil restoration is the importance measure to drive the agricultural sector in sustainable watershed management.
Recently, government sectors change the implementation process of adoption and transfer of vetiver technology and networks contribution to more participation of farmers with emphasis in poverty amelioration and social development by setting alternative vetiver applications for farmer to consider and select the measure.
Holistic management

Appropriate technologies

Farmer participation

Applicable approaches

Subsidies and incentive

Integration management

Community development

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Cornsarn village, Chaiphum province
Soil Survey and Classification

Soil Analysis

Land Use Planning

Soil Improvement and Restoration

Soil and Water Conservation

Application and transfer appropriated technology to targeted areas

Community leaders and farmer networks

- Training course
- Technology transfers
- Alternative technology
- Watershed management

- Network strengthening
- Community participation
- Rural development
Land and rural development

1. Soil and water conservation:
   - vetiver applications
   - conservation crop management
   - alley cropping
2. Improvement of problem soils:
   - sandy soil
   - saline soil
   - acid soil
   - low fertility
3. Organic agriculture development:
   - organic fertilizer utilization

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Land and rural development

1. Vetiver hedgerow in slop land:
   - vetiver applications
   - integrated with conservation measure
2. Utilization of organic fertilizer:
   - green manuring in paddy field
   - compost production and utilization
3. Cropping pattern for casava and corn:
   - soil improvement by organic fertilizer
   - straw and crop residue management

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Land and rural development

1. Development of appropriated measures of soil and water conservation
2. Development of farm pond
3. Seed Production for green manure crops and conservation crops
4. Development of New Theory approach for economic sufficiency

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Rural Development: study case 1

Mr. Somchai ninanan (53 years)  
SDV at Kanganadit, Surattani province in southern part of Thailand.

He setup his land (2.4 hectare) into 4 parts as in the concept of New Theory of agriculture, which His Majesty the King advised in 1998 to implement their own land in the way of economic sufficiency.

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The first part is farm pond with capacity 10,939 m³ and cover 0.32 hectare (14%).

The second part is paddy filed, which has rice yield 500 kg/year and cover 0.96 hectare (40%).

The third part is vegetable and fruit tree, which has product all year by management kind of tree and vegetable and cover 0.96 hectare (40%).

The forth part is resident area, which cover 0.66 hectare (6%).
The image depicts a field with a signpost indicating information in a language that is not English. The scene appears to be agricultural, possibly for crop cultivation or research, given the structured layout and the presence of signs.
Rural Development: study case 2

Mr. Piboon Srimalai (52 years) 
SDV at Kraburi, Ranong province in the west coast of southern part of Thailand.

He has 6.4 hectares for pararubber tree plantation but in 1996 he faced the problem on monsoon as natural disaster, where it damaged all pararubber tree in his land. He changed to Durian tree and in the first stage Durain yield is not satisfy because of soil erosion and low fertility.

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Rural Development: study case 2

He adopted LDD technology in vetiver plantation in slopping area.
He conducted soil and water conservation measures as contour bund mixed with vetiver hedgerow, and also utilization of organic fertilizer and green manure.

Therefore, yield of Durian gradually increased to 15,000Kg/year and his income from this product was approximately 225,000-300,000 baht/year.
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