



# **INDIGENOUS KNOWLEDGE ADAPTATION TO CLIMATE CHANGE OF ETHNIC MINORITIES IN THE NORTHERN MOUNTAINS**

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# Contents

- Context of research and model of development
- Research results and evaluation of the model of climate change adaptation using indigenous knowledge
- Conclusion and recommendations

# 1. Context

- In the world, there are many documented evidences (reports, magazines,...) on the role of indigenous knowledge of rural communities, especially local residents, in responding to climate change
- In Vietnam, the research on the role of indigenous knowledge in responding to climate change is still limited
- However, the communities “ that have been affected by natural disasters” through many generations have drawn valuable knowledge and experience

# In Vietnam

- The national strategy on climate change (2011) stated that “To boost the use of indigenous knowledge in coping with climate change, especially in designing new low-carbon means of subsistence.”- Article VII, page12)
- Therefore, the sectors and localities have to review solutions to respond to climate change using indigenous knowledge
- Many models and solutions using indigenous knowledge have been proved effective, which should be widely applied

# Research content and method

- Conducted a study on the role of indigenous knowledge in responding to climate change in the northern mountains (use of local seeds, experience in production and disaster forecast)
- Research methods: survey, interview, discussion, conference
- Targets: 5 ethnic minority groups (Tay, Dao, Hmong, Mường, Thai)
- Location: 03 provinces - Bac Kan, Yen Bai and Phu Tho

# Viewpoints on indigenous knowledge

- Indigenous knowledge, local knowledge or traditional knowledge is a system of knowledge that people in the community have accumulated and developed based on experiences which have been tested in reality and has constantly changed to adapt to the cultural and social environment.

## 2. Research results

- Ethnic minorities still use many kinds of plant seeds and animal breeds which can adapt very well to the local climate (drought, cold conditions)
- Proper use of indigenous knowledge in production and response to climate change that contributes to poverty reduction
- Indigenous knowledge has not been appreciated in terms of policies and programs of socio-economic development and response to climate change in local areas
- Some indigenous knowledge needs changing and adjusting accordingly with climate change

## 2.1. Using local seeds

- Agricultural plant seeds: rice, maize, bean, peanut
  - Fruit seeds: seedless persimmon, Quang Thuan mandarin
  - Animal breeds: Cow, pig, black chicken
- + **Adaptation Features:** good tolerance to drought, suitable to local customs and climate conditions





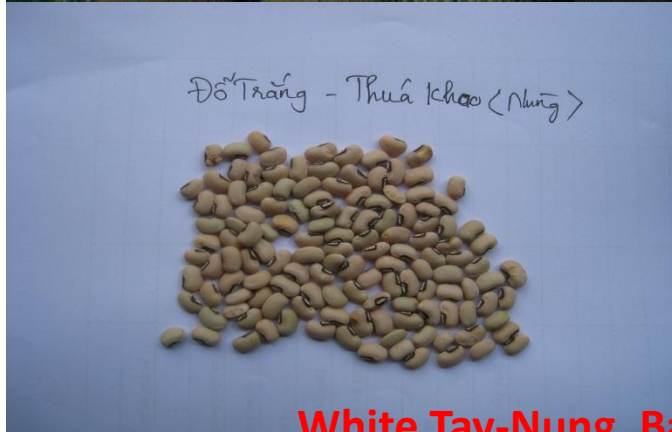
# SOME PLANT SEEDS AND ANIMAL BREEDS OF ETHNIC MINORITIES IN THE NORTHERN MOUNTAINS



Upland sticky maize (Tay- Bac Kan)



Local soybean - Tay, Nung



White Tay-Nung, Bac Kan)



# Rice varieties with good tolerance to drought

- Sticky and non-sticky rice
- **Upland sticky rice (Pbyau Pbut Pẹ-Dao)**
- Good tolerance to drought (after 20 days without rain, leaves turn into yellow)
- There are few insects, and chemical fertilizers and pesticides are not used



# Soybean

- **Soybean:** local name is Thua na (Nung), Thua nang (Tay)
- Thick shells, small grains, yellow color
- Harvested after 85-90 days
- Good tolerance to drought



# “western” banana

- Existed 60 years ago
- Suitable to different kinds of soil
- Good tolerance to drought, and has good ability to preserve water
- Diverse products



# BANANA-GINGER MODEL/MEDICAL PLANTS

- ✓ Using ginger and banana varieties which are available in local areas
- ✓ The top of banana trees (1/3 of the trunk) is chopped before planting in order to make it easier to move and minimize tree death rate
- ✓ People use microbial fertilizers for banana-ginger
- ✓ Growing banana trees after rainy days, or in rainy season (March-April-May)



# Model Effectiveness

- The land area (now used to grow banana) is used to plant maize, with two crops a year. The revenue is approximately 20 million dong/ha/year. The net income after deducting expenses is about 12 million dong/ha/year.
- However, the productivity and income will be much lower if there are droughts like those in 2009, 2010 and extreme cold like those in 2008, 2011.
- The revenue from banana model is approximately 30 million dong/ha/year, the net income is about 25 million/ha/year after deducting the expenses.

# Green bean

- ‘mốc’ and ‘tiêu’ green bean
- Local seeds of Tay people in Na Ri, Cho Moi, Bac Kan
- This plant has good tolerance to drought and has few diseases caused by insects
- Suitable **to** climate change context (increasing droughts)



# MODEL OF GREEN BEAN WITH GOOD TOLERANCE TO DROUGHT

- The model of growing green bean (with maize) on rice land with one crop a year brings better economic efficiency than growing rice
- The revenue from growing rice is 20 million/ha/year on average
- The revenue from growing green bean and maize is 40 million/ha/year on average





# MODEL OF POTATO PLANTS WHICH IS ADAPTED TO WINTER COLD

- Develop well in cold weather conditions in the mountainous region
- Revenue is 55-60 million/ha
- Net income gained is 25-30 million/ha
- Covering potatoes with chaff to preserve moisture



## 2.2. Experience in weather forecast

- Forecasting weather based on the change of leaves and flowers' color
- Based on animal behaviors
- Based on changes in the environment

# Response experience: Tay people (Na Ri, Cho Moi)

- If *clausena indica* (Mac Mat) crops grow well, it is a sign that it will rain a lot during the year
- When the fruit of *clausena indica* turns yellow, people should start planting the seasonal crops
- When all flowers of *Bombax ceiba* fall off, it means that it's time to sow seeds of Doan ket rice



# Response experience: Dao people (Na Hiu village, Na Ri)

- When the chinaberry blooms, it's time to sow green bean's seeds
- There will be drought in August during the year when canari crops grow well. Therefore, we should sow rice seeds immediately
- Stone crabs crawl from streams to roads and mountains, indicating that there will be flood



# Response experience : Thai people (Ban Ten village, Van Chan)

- In a year with a big harvest of *Mangifera foetida*, this is a sign that there will be big storms. When fruits are ripened, storm starts to fall (in May, June)



# Response experience: Muong people (Ta Tiu village, Van Chan)

- Bees (wasps) build nest in low places (tree foots, bushes) at the beginning of a year, it is a sign that there will be big storms during that year (this was true in 2013; 2005; 1968)
- In a year when there is a big harvest of *Mangifera foetida* Lour., this is a sign that there will be more strong storms
- There will be extreme cold weather within a year when palm trees produce well



## 2.3. Experience in production

- Ethnic minorities have much experiences in agricultural production adapting to local climate conditions
- Cultivation experience in drought conditions
- Experience in proper intercropping, land improvement and fertilizer and weed restriction
- Experience in choosing suitable land area for planting.

# Experience in growing banana trees in dry conditions

- The top of the banana sucker is chopped to reduce evaporation
- This experience has been applied for a long time
- Proved to be highly efficient





# Canna Edulis (Dong rieng) planting techniques



Growing based on experience:  
Planting Canna Edulis with maize, bean  
and making no beds



Growing under technical instructions:  
No intercropping and making high beds

# Cultivation Techniques of Ground Coverage

- Model of planting potato trees in adapting to the cold winter in Thanh Van commune, Cho Moi
- Covering of crops helps preserve moisture in winter when there is a shortage of water
- Bringing about high real efficiency: commune authorities suggest to apply widely



### 3. Conclusion and recommendations

- Ethnic minorities are among the most vulnerable group of people to climate change
- Indigenous knowledge of ethnic minorities has an important role in responding to climate change
- In climate change context, it's essential to combine scientific knowledge with indigenous knowledge
- Indigenous knowledge needs to be recognized in the implementation of programs and solutions in response to climate change, which contributes significantly to poverty reduction

**THANK YOU!**

