Farmers' Perception of Climate Change and Adaptation in Livelihood Strategy

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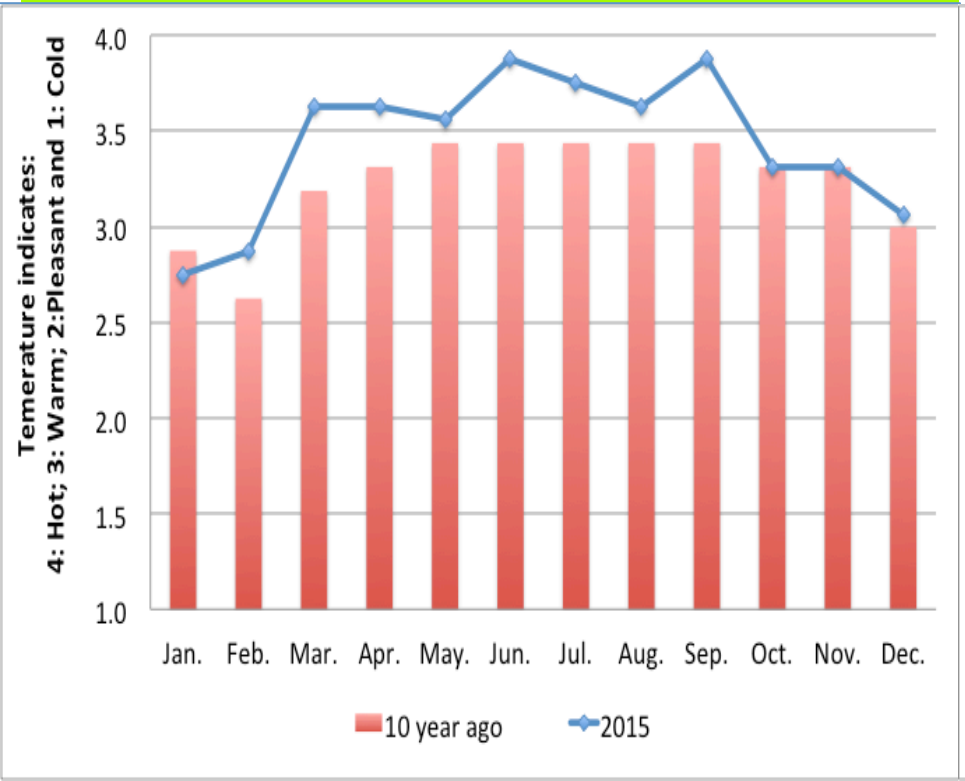
Perception on Climate Change

Temperature

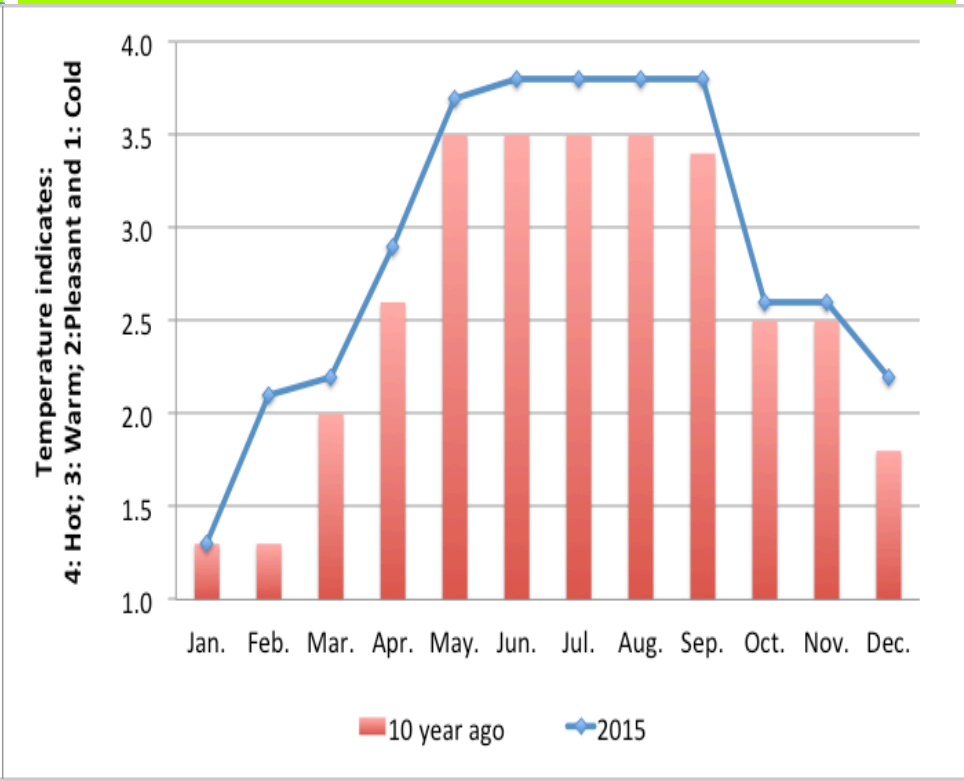
- **Experienced Change in Temperature**
- Rising temperature both in **summer** and **winter**
- Cold temperature has decreased
- Duration of cold days decreased
- Experienced very less fog and frost

Temperature Variation between 2015 and 10 years ago

Singeghat Irrigation System



Julphe Irrigation System



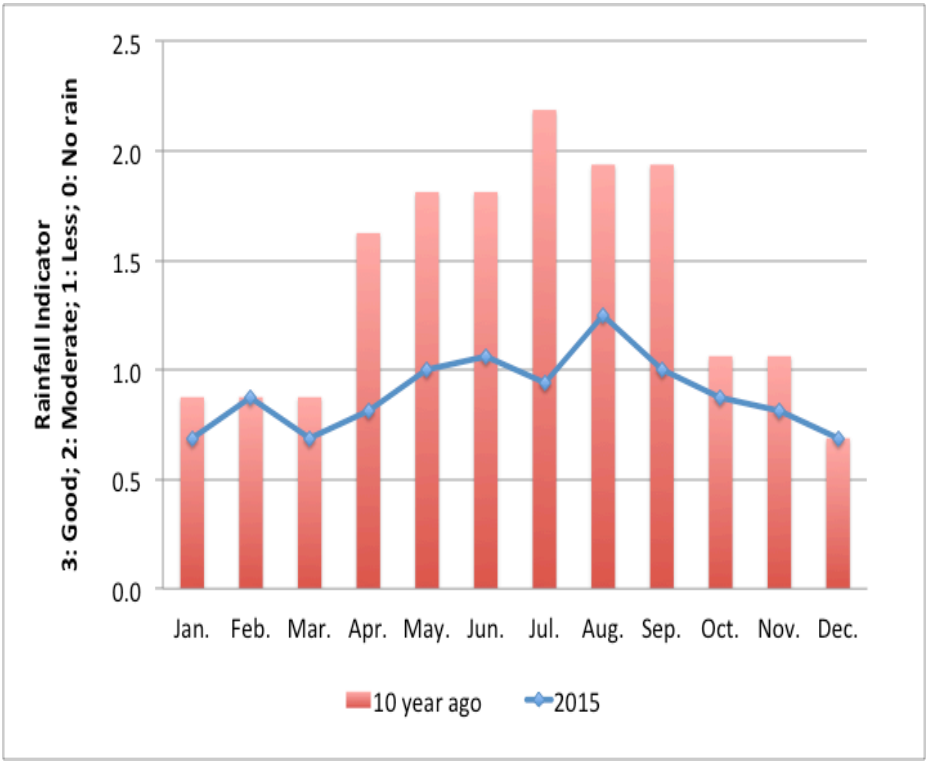
Perception in Climate Change

Rainfall

- **Felt Rainfall Pattern has Changed**
- Delayed monsoon and less rainfall during winter compared to 10 or 20 years ago
- Short duration heavy rainfall and long duration of dry spell events during monsoon
- Winter has less rainfall, last year (2015) long dry spell event in winter

Rainfall Variation between 2015 and 10 years ago

Singeghat Irrigation System



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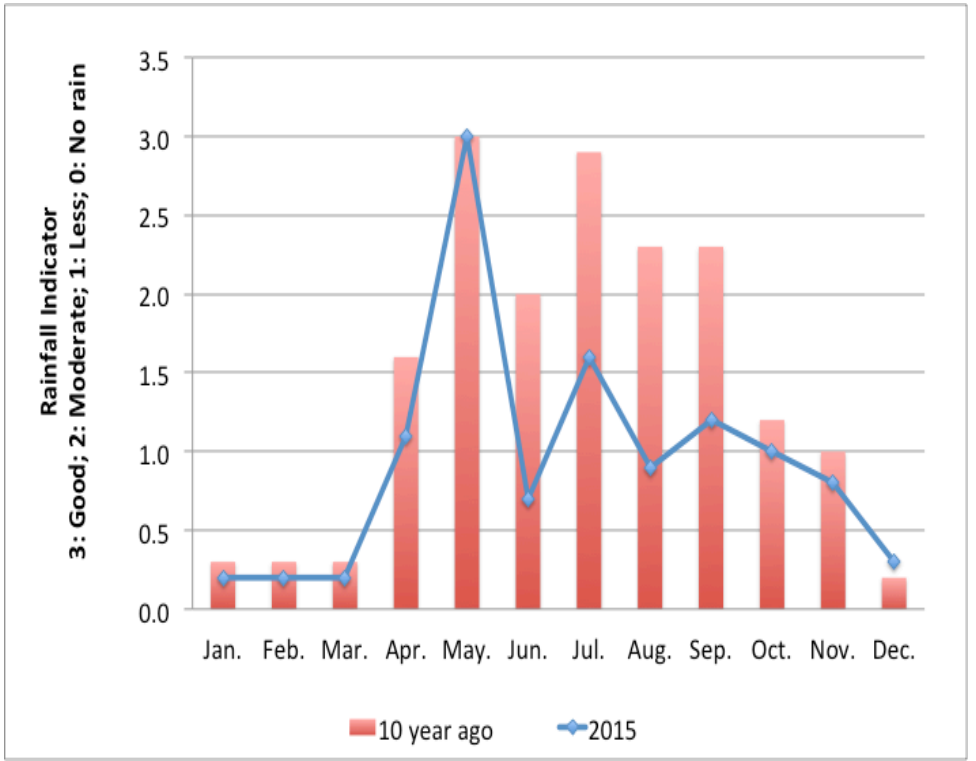


Flood

- Occurrence of flood once in 10 years cycle
- Siltation in the canal and damages of structures
- **Monsoon Flood in 2016 in GIRWARI RIVER** washed away intake of AKASE KULO, whereas the flood havoc was not felt in **SINGEGHAT** due to **permanent intake structures** and many permanent structures along the canal

Irrigation Water Management

- Irrigation system provides only supplementary irrigation water
- Proper water distribution among the distributaries and villages is a **big challenges**
- STW/DTW groups are formed; **STWs / DTWs** in command area have helped for agriculture activities
- During dry spell events in monsoon, STW/ DTW help for supplementary irrigation

Irrigation Water Management (Contd….)

- According to **water regime** in the system, water management will be followed by rotation system among the distributaries and among the villages
- Water management is more challenging task during the water deficit period
- Water control structures have helped allocation of water in **SINGEGHAT** whereas **JULPHE** has less control infrastructures

Agriculture Activities

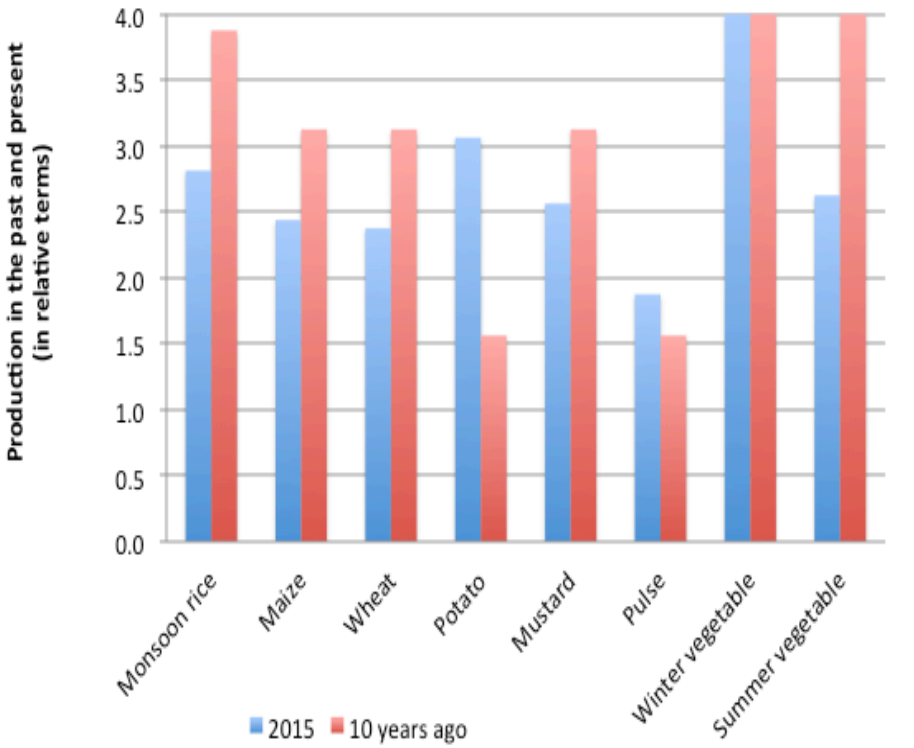
- **Paddy cultivation** is major crop, coverage of paddy has remain the same, (100% coverage), cultivation practices have changed, short gestation seeds are used
- With assured water supply by canal and other supplementary sources, paddy cultivation starts in **June**.
- Plantation is staggered based on water availability and rainfall
- Dependence on **rainfall** is greater at tail end, hence delayed paddy plantation

Winter and Spring Crops

- Winter and spring crops are dependent on temperature and rainfall
- Instead of wheat, opted for potato and mustard
- Winter crop also dependent on the land type like low land area is avoided for crop cultivation
- Matching with climate and water availability, black mustard or Chaite tori or rapeseed are grown
- Where water is available by the help of STW/ DTW, spring maize is also grown
- Winter has cropping intensity of only 50%

Agricultural Production Variation between 2015 and 10 years ago

Singeghat Irrigation System



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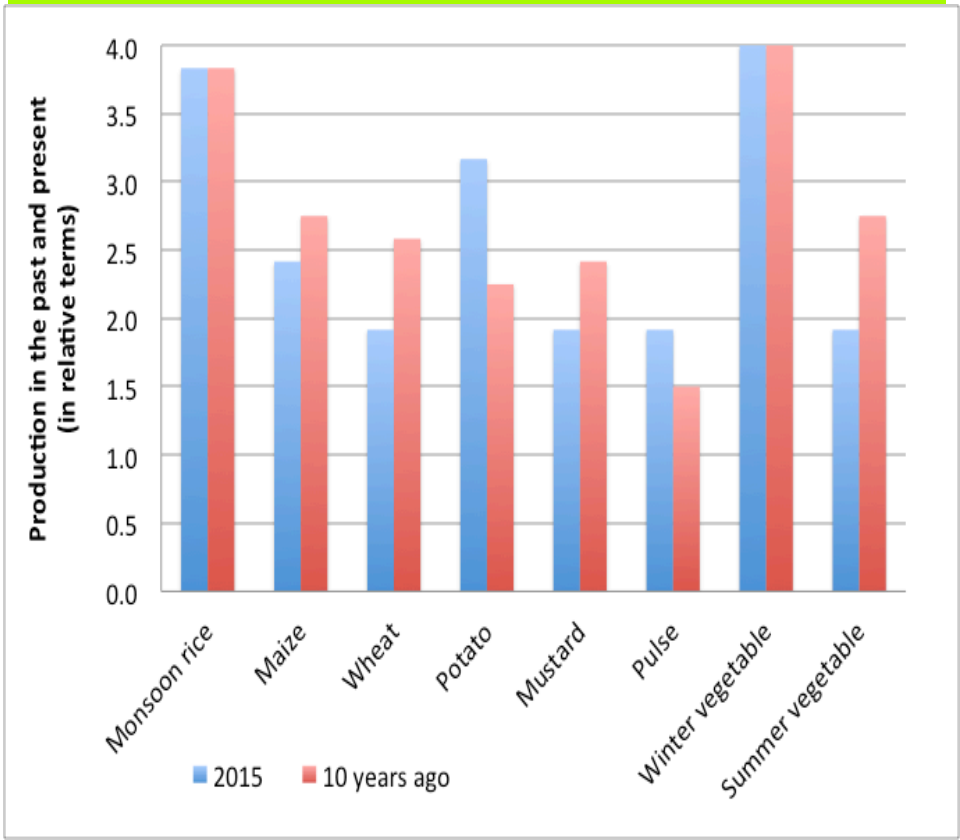

Factors Influencing Agriculture Practices

Three Factors have Influenced the Agriculture Practices

1. Unreliable water delivery
2. Uncertain climate effect
3. Uncertain price of agriculture products

Changes on Livelihood Strategy: Household Income then and Now

Now	Before 10 years
Livestock	
Only one improved livestock	Used to raise many buffalos
Milk collection facility	No milk sale culture
Professional livestock raising Few improved goats for sale	Buffalo for ploughing, Few small goats
Cash Economy	
Less people	People to take of animals
Wage laborer	Perma system
Tractor for ploughing	Bullock for ploughing
Tractor renting cost effective	Bullok keeping expensive
Migration, big phenomena	Less migration
High yielding variety of rice	Old variety of rice

Changes on Livelihood Strategy: Household Income then and Now

Non-agriculture activities	
Food security through remittance	No such security before
Local labor for house construction	Labor come from India
Permanent houses	Many temporary houses
People go to India	Laborers come from India
Investment in non-agriculture activities	
Agriculture not central activity	All activities from agriculture
Cash flow increased from other activities	Cash flow only after paddy harvest
Cash economy	Kind economy (livestock sale for cash)
Return in agriculture investment less	
Alternative investment opportunities	Less such opportunities
Small holders moved to other jobs	Not so before
Migration important part of HH income	Not so before

REASEARCH FINDING

Along with impact of CLIMATE CHANGE; there are MANY NON-CLIMATE FACTORS which have influenced the **livelihood of the agriculture people** in rural areas of Nepal