

Best practices from rural livelihood projects  
supported by Axis Bank Foundation

# How to increase income through cultivation of high value crops (*sugarcane & maize*)



This playbook is designed using the expertise of Trust Community Livelihood (TCL), which works on augmenting incomes among socio-economically disadvantaged communities and landless/marginal farmers in the Barabanki and Bahraich districts of Uttar Pradesh

## What need does the playbook address?

- A majority of Indian farmers have small landholdings, which makes agriculture a particularly perilous occupation.
- Incomes from these small parcels of land are low, forcing families to migrate elsewhere for work.
- By maximizing the number of crops that can be grown in small fields, incomes for small and marginal farmers can increase.

Inter-cropping utilizes the space between crops of sugarcane and maize to grow a second crop. The crop is selected such that it complements the growth of sugarcane or maize.

## This solution can be adopted if:

- Your average landholding size is 0.2 acres (1 bigha) or lesser
- You have access to groundwater or irrigation channels throughout the year
- You have clay loam or loamy soil

**Who can use this Playbook: Community Resource Persons (CRPs), Trainers and Progressive Farmers**

# What are the benefits to farmers through intercropping?



— Growing two crops is a form of climate smart agriculture where risks from extreme events or from pest and disease attacks are mitigated. Even if one crop fails, income from the other crop can sustain the farm household



Increase in incomes, due to additional earnings from two crops especially in small land-holdings. Ideal for farm sizes of just 1 bigha or lesser.



**Better utilisation of resources** to grow an additional crop



Multi-cropping can mitigate risks from market fluctuations that affect one crop



**Better soil health**, with one crop fixing nutrients in the soil that the other crop can use



# Inter-cropping for Sugarcane

## Choices of Crops for Intercropping

### ZAID (SUMMER CROP)



Summer growing period:  
May-June

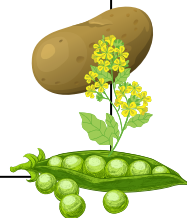
- 01 **Pulses** (Urad Dal or Masoor Dal)
- 02 **Groundnut**



### RABI (WINTER CROP)

November-April

1. **Potato**
2. **Masoor dal, Chana dal**
3. **Peas**
4. **Mustard**



## Preparation of the field

01

**Groundnut can be planted in the space between sugarcane crop** (no modification needed from the usual growth of sugarcane, which is 75cm to 90cm spacing)

02

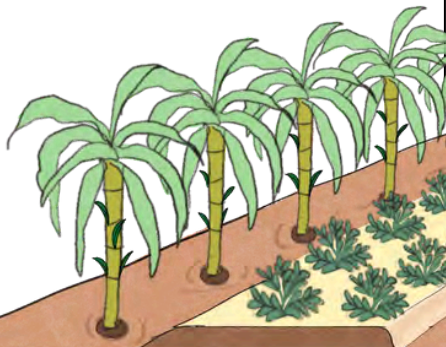
**Raise the bed in between sugarcane crops** (Sugarcane needs more water and hence should be on a lower level).

03

**Two rows of groundnut** are planted on this slightly raised bed.

04

There is no need for separate land preparation. Only Sowing cost is additional (and is negligible if growing Masoor, which can be done by the farmer through broadcasting seeds).



## Additional Benefits

### PULSE

- Pulses and Groundnut encourage the growth of **Rhizobium in their roots**. Rhizobium is a bacteria which absorbs nitrogen from the air and generates ammonia - a natural fertiliser for the soil. Sugarcane requires a high quantity of fertiliser which can now be obtained naturally. Pulses leaves, upon falling on the soil, enriches carbon in the soil and helps the growth of sugarcane.
- Pulses require less water, on average **500 liters per kilogramme** of pulses, compared to say, wheat that requires 1,200-1,500 liters per kilogramme of grain.
- Pulses are more **climate resilient**, and can help mitigate losses in sugarcane cultivation.

### GROUNDNUT

- Sugarcane needs periodic **removal and tilling of soil**. Harvesting of groundnut requires uprooting of the plant, which naturally tills the soil. This ensures efficient utilisation of labour.
- Groundnut's nutritional requirement is different from that of sugarcane, and can help in **better utilisation of resources** available in the ground.



75 cm- 90cm



# Inter-cropping for Maize

## Choices of crops for Intercropping

### ZAID (SUMMER CROP)

Urad Dal, Groundnut and Moong Dal.

### KHARIF (RAINY CROP)

- 01 Groundnut
- 02 Urad dal



### RABI (WINTER CROP)

- 01 Potato,
- 02 Kidney Beans (Rajma),
- 03 Peas (Matar- short duration crop. not more than 70-80 days.)



## Spacing

01

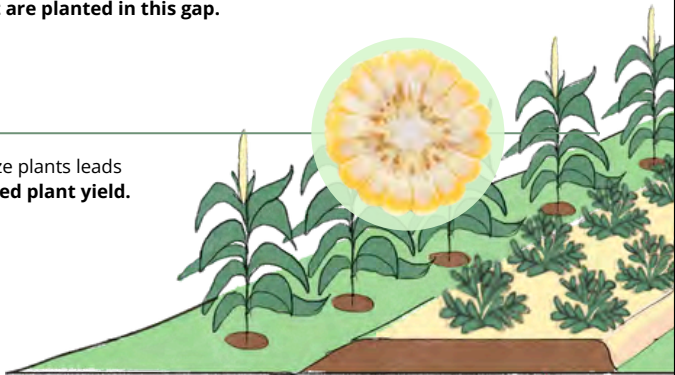
Spacing between maize needs to be increased to **90 cm** (as compared to monoculture cultivation where it is 60 cm).

02

Two rows of groundnut are planted in this gap.

## Additional Benefits

The increase in space between maize plants leads to **bigger ears of corn and increased plant yield.**



## Economics of Intercropping with Maize

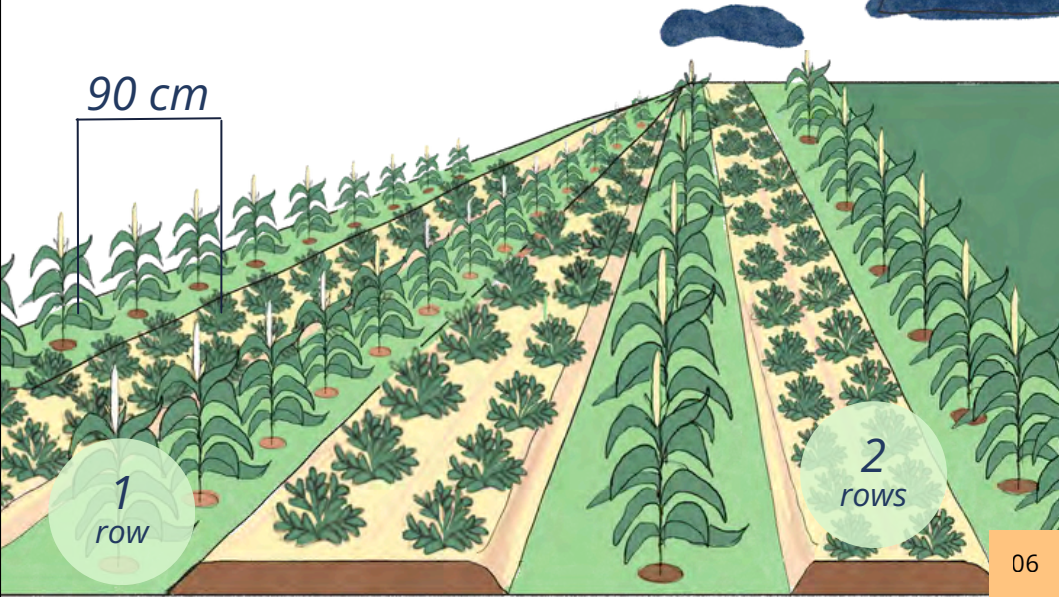
Approximately

- *0.5 quintal maize per bhiga*
- + *Sale of groundnut*

Income increase **2X to 5X**

Net loss in Maize yields (*because spacing has increased between plants*) is around 0.5 quintal per bhiga (0.2 acre). This is offset by the sale of groundnut.

Kharif production of groundnut is only **80-100 quintals** for 0.2 acres. But this can increase overall income during this period by **2-5 times**.



# Cost benefit analysis

## Sugarcane



Since there is no change in sowing of sugarcane patterns, the second crop planted contributes to additional income in the season.

Roughly,  
per 0.2 acre  
of groundnut

*Rs. 1 Invested*  
*Rs. 5 Return*

Production of groundnut in summer can be as high as 1,500 quintal for 0.2 acres. Assuming an average of Rs. 60 per kilogramme as revenue, and Rs. 10,000 as additional cost to the farmer, the profit can be as high as Rs. 80,000.

## Maize



Roughly, farmers can expect to earn an additional Rs. 5,000-10,000 due to groundnut cultivation per 0.2 acres.

Roughly,  
per 0.2 acre

*Rs. 5000- 10,000*  
additional income

# RESOURCE PERSONS

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### Documentation Partner



### Knowledge Partner



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