

# CONTOUR FARMING WITH FODDER CROPS

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## TECHNOLOGY DESCRIPTION

Contour farming with fodder crops is a variant of contour farming technology that involves planting fodder crops on the ridges. The technology involves construction of *Fanya chini* terraces (banks below ditches) along the upper field edge to capture water entering the field, and *Fanya juu* terraces (banks above ditches) to capture runoff within the field. The banks and ditches intercept and slow runoff water, thereby conserving water and reducing soil erosion. Food crops grown in the alleys between contours benefit from improved land productivity. Besides stabilizing the banks, fodder crops (e.g., Elephant grass and *Gliricidia sepium*), produce additional crops to improve livelihoods. Contour farming with fodder crops has therefore shown high potential to control erosion, improve and diversify production and income options to build resilience of both farming systems and small-scale farmers.

## SIAF-BASED BENEFITS

- Reduced soil loss by 94% and runoff by 78% in semiarid areas
- Improved soil fertility and soil organic carbon contents after six years
- Increased maize grain (120%) and biomass yields (249%) – **Table 1**
- Higher gross margin (431%) after accounting for multiple products (Food, Fodder and Fuel) produced by contour reinforcing crops.
- Diversified crop production options and income sources enhance the adaptive capacity of farmers and mitigate risks of total crop failure during years of adverse weather, when food crop productivity may fall.

## EXTENT OF GENDERED CAPACITY BUILDING AND SCALING

- A total of 99 farmers (40% Female) validated this technology (**Table 2**).
- Champion farmers and partners have scaled this technology to over 6,040 farmers and Institutions in and outside Dodoma
- Community and individual tree nurseries established to support scaling
- Two champion farmers supply over 30,000 tree seedlings per year to scaling projects including ICRISAT-led project (**Fig. 1**), FMNR by LEAD foundation, Farm Africa project on CSA and SAT 's Women project

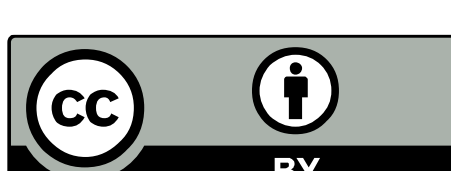
## LESSONS LEARNED, CHALLENGES AND GAPS

- Integrating agroforestry and SWC approaches helped to address land degradation challenges while providing livelihood benefits
- Collective action is necessary to archive impacts at scale and mitigate potential resource use conflicts.
- Potential for conflicts with downstream farmers need to be assessed.
- Analysis of trade-offs and risks is key to inform wider scaling

## DELIVERABLES

- [Kizito et al. 2022](#). Soil and water conservation for climate-resilient agriculture
- [Temu et al. 2022](#). Farmers lead adoption of agroforestry practices. **Blog**
- [Hafner et al. 2021](#). Allometric equations for estimating on-farm fuel production
- [Odhong J. 2015](#). Barking up the right tree: Multipurpose trees help Tanzania smallholders build a resilient farming system. **Blog**

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**Table 1: Benefits of contour farming at Mlali Village**

| Parameter                | Control | Contour | Change (%) |
|--------------------------|---------|---------|------------|
| Soil pH (water)          | 4.39    | 5.40    | 23         |
| Total nitrogen (%)       | 0.04    | 0.07    | 75         |
| Phosphorus (mg/kg soil)  | 13.09   | 24.50   | 81         |
| Organic carbon (%)       | 0.53    | 0.68    | 28         |
| Sulphate (mg/kg soil)    | 13.71   | 19.93   | 45         |
| Maize grain yield (t/ha) | 3.11    | 6.82    | 120        |
| Biomass yield (t/ha)     | 9.44    | 32.91   | 249        |
| Gross margin (USD/ha)    | 649     | 3,445   | 431        |
| Calories (kcal/ha)       | 11,243  | 24,701  | 120        |

**Table 2: Farmers validated contour farming**

| Village | Female | Male | Total |
|---------|--------|------|-------|
| Iloilo  | 2      | 1    | 3     |
| Laikala | 5      | 12   | 17    |
| Mlali   | 14     | 16   | 30    |
| Molet   | 6      | 5    | 11    |
| Ng'umbi | 13     | 25   | 38    |
| Total   | 40     | 59   | 99    |



**Figure 1. Demonstration of contour farming with fodder crops by the ICRISAT led project at Mlali Village, Kongwa.**