Success Story: Impact of Subsoiling on Mixed Cropping of Tur and Soybean

Priyanka Khole
Subject Matter Specialist, SSM's Krishi Vigyan Kendra, Sagroli, Nanded
*Corresponding Author: ae@kvksagroli.co.in

Mr. Dattu MarutiRao Mungade from Shimpala village in Nanded district faced significant challenges in his farming due to soil and water management issues. His soil was hard and compacted, which hindered root growth and water infiltration, leading to poor drainage and water stagnation. These conditions caused a decline in crop yield and health despite his best management practices. The presence of hardpan layers further restricted root penetration and nutrient absorption, while soil erosion indicated poor soil structure and stability. Inefficient water usage was evident as runoff and poor water retention exacerbated the problem. Frequent tillage over time had compacted the soil even more, resulting in nutrient deficiencies in crops. Symptoms of crop stress, such as stunted growth and poor root development, were apparent, and the introduction of new deep-rooted crops required improved soil conditions for optimal growth.

To address these problems, interventions of subsoiling were introduced to his field. KVK Sagroli provided guidance and assistance in implementing subsoiling and compared the results with traditional ploughing methods. The same number of seeds, insect and pest control, and other inputs were provided to both plots.

Fig 1 Tur Crop in subsoiled Land

Tur Crop in without-subsoiled (ploughed) Land

KVK Interventions in the Farmer's Field

1. Subsoiling by tractor-operated subsoiler (cost for subsoiling operations Rs 1500/acre).

2. Ploughing by tractor-operated plough (cost for ploughing operations Rs 2000/acre).

The experiment aimed to compare the traditional farming method with an innovative subsoiling technique guided by KVK Sagroli.

Experimental Setup: Land Division: The two-acre field was divided into two equal parts.

- One Acre: Subsoiling technique was applied
- One Acre: Traditional farming method (ploughing) was used as the control

What is Subsoiling?

Subsoiling refers to the process of breaking up compacted layers formed beneath the surface of the soil. When the upper layers of the soil become compacted due to various factors, the soil structure deteriorates, and the soil becomes less porous. Subsoiling involves breaking through these compacted layers to improve soil aeration and drainage. The depth of subsoiling typically ranges from 2 to 2.5 feet, depending on the type of soil.

Fig 2 Interaction with the farmer in the field

Results

Subsoiled Land:

- Subsoiling Depth: 60 cm
- Plant Growth: Excellent
- Soybean production: 12 quintals (Rs. 5000/q)
- Tur production: 3 quintals (Rs. 9000/q)

Control (ploughed) Land:

- Ploughing Depth, : 15 cm
- Plant Growth: Normal
- Soybean production: 10 quintals (Rs. 5000/q)
- Tur production: 1.5 quintals (Rs. 9000/q)

Dr. Priyanka Khole, Scientist, SSM's KVK Sagroli visited to the Subsoiled field of farmer Mr. Dattu MarutiRao Mungade

Conclusion

The experiment demonstrated that the subsoiling operation significantly improved crop yields compared to traditional methods. Specifically, the subsoiled land yielded 2 quintals more soybeans

and 1.5 quintals more tur than the control land. Additionally, subsoiling helped conserve soil and water, enhancing the sustainability of the farming practice. The expenses for doing subsoiling and ploughing operations are Rs 1500/acre and Rs 2000/acre, respectively.

This success story highlights the benefits of adopting innovative agricultural techniques, such as subsoiling, to save the initial cost, to improve productivity and resource conservation.

Table 1 Observations of the experiment

Sr. No.	**Particular**	**Subsoiled Plot**	**Without Subsoiled plot**
	Crop	Soyabean+ Tur	Soyabean+ Tur
1	Subsoiling Depth, cm	60	15
2	Fuel Consumption, l/h	5	4.5
3.	Subsoiling spacing, cm	120	30
4.	Field capacity, ha/h	0.3	0.15
5.	Soil moisture content	18	14
6.	Root growth, cm	22	15
7.	Plant Growth	excellent	Normal
8.	Soyabean Yield, q/acre	12	10
9.	Tur Yield, q/acre	3	1.5
10	Income (Soyabean @5000/q and Tur @9000/q)	87000	63505
11.	(Subsoiling and without subsoiling cost/ acre)	1500	2000

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