



The potential of roots and tubers as climate-resilient crops in Asian Mega-Deltas

Potato zero tillage using rice straw mulch

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- Potato zero tillage using rice straw mulch offers a sustainable solution to the environmental challenges of current agricultural practices by increasing resource-use efficiencies of major inputs and recycling straw as mulch.
- It also promotes economic gains, women's empowerment, and improved livelihoods in rural areas, demonstrating its comprehensive impact on both environmental and social sustainability.

Challenges of the rice-based cropping system in south-western part of Bangladesh

In Bangladesh, more than 30% of the cultivable land is in the coastal area. In Kharif season, local Aman rice varieties and some highbred varieties are grown. After harvesting Aman rice, most of land remains fallow. Rice straws remain in the field and burned, resulting in carbon emission issues.

Reasons why the fields remain fallow in the winter season:

- Late harvest of local Aman rice
- Wetness of the soil during crop/potato plantation
- Difficult to tillage
- Short winter
- Soil salinity (2-25 ds/m)
- Lack of fresh irrigation water
- Poor drainage condition

Sowing potato immediately after rice harvesting in the moist soil through zero tillage with straw mulch helps overcome few of these obstacles. In coastal areas, saline tolerant potato varieties can be used.

The technology: Potato zero tillage using rice straw mulch

This method has triple advantages:

- Soil health
- Environment (water and carbon emission)
- Reduced labor and input cost

As compared to a conventional method, potato can be planted immediately after harvesting rice without ploughing. Therefore, it does not disturb the soil structure resulting in:

- Increase soil fertility
- Higher carbon stocks or less carbon emission
- Less soil erosion and less input run-off
- Reduced labor





Layout preparation



Planting



Mulching



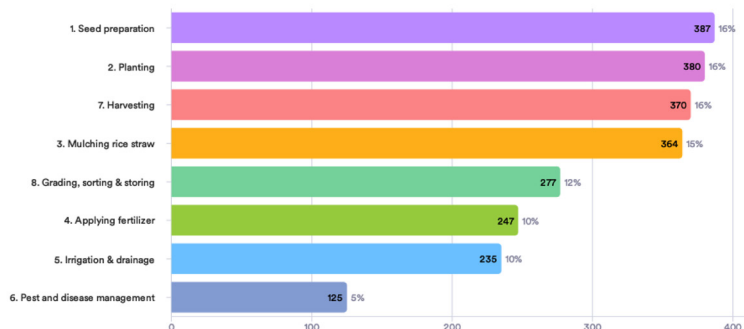
Fertilization

It also reduces weed effect and conserve soil moisture as well as minimize environmental damage. Lastly, zero tillage reduces labor and the cost of cultivation.

Gender implications

This method also has some gender implications. Less labour intensive means more opportunities for women to be involved in, and thereby increased notions of ownership and control of harvested products.

The graph shows women's involvement. As you see, women are involved in most of activities from seed preparation, intercultural management, harvesting to storage. It also helps households with shortage of male labor due to migration.



Women's involvement in potato production in Dacope and Batiaghata upazila of Khulna district Khruna



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