Applying the TEEB agrifood framework to wheat in North India
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Average Yield of Paddy in Punjab

AVERAGE WHEAT YIELD

Percentage contribution of wheat and rice to central pool from Punjab
Consumption of pesticides in Technical Grade (M.T)

Consumption of fertilisers over time in Punjab

- Nitrogen N
- Phosphorus P
Growth in electricity consumption in Punjab
Area, production and yield of various crops in Punjab
Land use classification Punjab

Area Sown More Than Once
total fallow land
forests
Land not available for cultivation
other uncultivated land excluding fallow
net area sown
cropped area

1. AMRITSAR
2. BARNAL
3. BATHINDA
4. FARIKOT
5. FATEHGARIH SAHIB
6. FABILK
7. FEROZEPUR
8. GURDASPUR
9. HOSHIARPUR
10. JALANDHAR
11. KAPURTHALA
12. LUDHIANA
13. MANGA
14. MOGA
15. MUKTSAR
16. NAVANSHAR
17. PATHANKOT
18. PATIALA
19. PATNA
20. S.A.S NAGAR
21. SANGRUR
22. TARN Taran
State Total
The context and the objectives

• Test two applications of the TEEBAgriFood Evaluation Framework:

  • (a) typology comparison (Rice-wheat farming system with combined harvester resulting in residue burning) and Rice-wheat farming system with Happy seeder (no residue burning)

  • (b) alternative policy scenario evaluation (organic vs conventional production of wheat)
Land preparation from rice

Seeds (107.6 kg) 2169 Rs
Fertiliser (244.73 kg of Nutrient) 5384 Rs
Manure (0.47 qtl) 1829 Rs
(Insecticides)
Family labour (67.37 hrs) 3021
Attached labour (14.7 hrs) 649 Rs
Casual Labour (40.7 hrs) 2116
Animal labour (0.4 hrs) 47 Rs
Irrigation charges 545
Hired machine 6121 Rs

Value of main product (70961 Rs)
Value of by product (9243)

Fixed costs (32153)
Rental value of owned land (23001)
Rent paid for leased land (4499)
Land revenue, taxes and cess (0)
Depreciation on implements and farm holding (413)
Interest on fixed capital (4239)

Externalities
Asthma, bronchial attacks. Potential carcinogens
A 10% increase in asthma cases during the rice straw burning season
60% of the smog days, school closure, flight and train disruptions, poor
visibility and accidents
Alternative to residue burning

• Happy seeder technology incorporating stubble into the soil
• Additional fertiliser required can be avoided (average 47 kg/acre)
• Costs = 1.7 Lakhs per machine
Organic wheat production

Value of main product (94,378 Rs)

Value of by product (4,622)

Externalities

Land preparation from rice

Seeds (107.6 kg)

Fertiliser

Manure (plant based Insecticides)

Human labour

Animal labour

Irrigation charges

Hired Machinery

Own machine

Fixed costs (32,153)

Rental value of owned land (23,001)

Rent paid for leased land (4,499)

Land revenue, taxes and cess (0)

Depreciation on implements and farm holding (413)

Interest on fixed capital (4,239)
Comparison between organic and inorganic wheat production
Processing, manufacturing and household

- 90% used for consumption
- 10% used in Bakery, Bread and Milling operations
- (work Is in progress)
- Human capital and social capital separately needs to be estimated for wheat
- Health impacts in monetary terms need to be estimated
Thank you