

## APPENDIX

### FORMULAS FOR CALCULATION OF COSTS, BENEFITS, AND COST-EFFECTIVENESS OF PRICE-SUBSIDY POLICY INSTRUMENTS

1. Change in Labor Quantity
$$= (\text{Base-line Labor Use or Labor Use in Pre-Subsidy Period})$$
$$\times (\% \text{ Change in Labor Use by Effect of Alternative Policy})$$
2. Change in Labor Expenditure
$$= (\text{Change in Labor Quantity})$$
$$\times (90\% \text{ of Base-line Labor Price})$$
3. Change in Fertilizer Quantity
$$= (\text{Base-line Fertilizer Use})$$
$$\times (\% \text{ Change in Labor Use by Effect of Alternative Policy})$$
4. Change in Fertilizer Expenditure
$$= (\text{Change in Fertilizer Quantity})$$
$$\times (90\% \text{ of Base-line Fertilizer Price})$$
5. Change in Total Cost ( $\Delta C$ )
$$= (\text{Change in Labor Expenditure})$$
$$+ (\text{Change in Fertilizer Expenditure})$$
6. Change in Output
$$= (\text{Base-line Output})$$
$$\times (\% \text{ Change in Output Supply by Effect of Alternative Policy})$$
7. Change in Revenue ( $\Delta R$ )
$$= (\text{Change in Output})$$
$$\times (\text{Post-Subsidy Output Price})$$

8. Saving on Pre-Subsidy Input (A)

= (Base-line Input Use)

\* (10% of Base-line Input Price)

For Each Price-Subsidy Instruments:

(1) For Labor

= (Base-line Labor Use)

\* (10% of Base-line Labor Price)

(2) For fertilizer

= (Base-line Fertilizer Use)

\* (10% of Base-line Fertilizer Price)

(3) Non Available

(4) = (1) + (2)

(5) = (1) + (3)

(6) = (2) + (3)

(7) = (1) + (2) + (3)

9. Gains on Pre-Subsidy Output (B)

= (Base-line Output)

\* (10% of Base-line Output Price)

10. Total Benefit (TB)

=  $\Delta R$  + A + B

11. Net Benefit to Farmers (NB)

= TB -  $\Delta C$

12. Government Subsidy:

- (1) For 10% of Labor Price  
= (Base-line Labor Use + Change in Labor Quantity)  
\* (10% of Labor Price)
- (2) For 10% of Fertilizer Price  
= (Base-line Fertilizer Use + Change in Fertilizer Quantity)  
\* (10% of Fertilizer Price)
- (3) For 10% of Output Price  
= (Base-line Output Supply + Change in Output)  
\* (10% of Output Price)
- (4) = (1) + (2)
- (5) = (1) + (3)
- (6) = (2) + (3)
- (7) = (1) + (2) + (3)

13. Net Impact of Policy or Net Benefit to the Country

$$= (\text{Net Benefit to Farmers}) - (\text{Government Subsidy})$$

14. Cost-Effectiveness (%)

$$= (\text{Net Impact of Policy} / \text{Government Subsidy}) * 100$$

## CURRICULUM VITAE

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