**Supplementary Material**

**ASSESSMENT OF NUTRIENT MANAGEMENT TECHNOLOGIES FOR EGGPLANT PRODUCTION UNDER SUBTROPICAL CONDITIONS: A COMPREHENSIVE APPROACH**

*By* K. BATABYAL†, B. MANDAL, D. SARKAR *and* S. MURMU

*Bidhan Chandra Krishi Viswavidyalaya, Kalyani,*

*Nadia, West Bengal, 741 235, India*

Short title

Nutrient management for eggplant

† Corresponding author. Email: [kbatabyal@rediffmail.com](mailto:kbatabyal@rediffmail.com)

Monthly variations in climatic variables such as temperature, rainfall, relative humidity and amount of sunshine during eggplant growing season (September to December) for the year 2009, 2010 and 2011 were presented in Table S1.

Nutrient content in organic manures (VC, FYM, MOC) used in the experiments were presented in Table S2.

Energy equivalents for different inputs and their unit costs and the costs of outputs generated in the experiment were given in Table S3. These basic data were used for calculating energy balance and economic analyses for eggplant production under different NM technologies.

Table S1. Monthly variation in temperature, rainfall, relative humidity and amount of sunshine during the cropping season (September to December) in each year.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Parameter | 2009 | | | | 2010 | | | | 2011 | | | |
| Sept. | Oct. | Nov. | Dec. | Sept. | Oct. | Nov. | Dec. | Sept. | Oct. | Nov. | Dec. |
| Max. temp (°C) | 32.1 | 32.8 | 30.1 | 25.4 | 32.7 | 32.5 | 30.9 | 25.3 | 31.4 | 33.0 | 30.0 | 25.3 |
| Min. temp (°C) | 25.4 | 24.0 | 18.9 | 12.6 | 25.9 | 24.3 | 19.9 | 12.1 | 25.8 | 24.2 | 18.1 | 13.4 |
| Rainfall (mm) | 284.0 | 85.4 | 0.2 | 5.0 | 280.5 | 89.2 | 0.7 | 19.5 | 278.3 | 50.9 | 8.0 | 20.0 |
| Relative humidity (%) | 84.7 | 77.3 | 71.2 | 72.6 | 86.4 | 81.8 | 73.7 | 73.8 | 92.1 | 86.2 | 82.7 | 79.4 |
| Sunshine hour (hr) | 4.3 | 8.2 | 7.4 | 6.1 | 5.9 | 6.5 | 7.3 | 6.8 | 4.2 | 6.7 | 7.0 | 6.5 |

Table S2. Chemical composition (on dry weight basis) of the organic amendments.

|  |  |  |  |
| --- | --- | --- | --- |
| Parameters | Vermicompost | Farmyard manure | Mustard oil cake |
| N (g kg-1) | 15.1 | 4.5 | 44.2 |
| P (g kg-1) | 3.6 | 0.9 | 5.7 |
| K (g kg-1) | 9.4 | 3.3 | 8.4 |
| Ca (g kg-1) | 36.0 | 23.2 | 22.8 |
| Mg (g kg-1) | 10.0 | 16.4 | 7.1 |
| Fe (mg kg-1) | 2534.5 | 1478.5 | 567.5 |
| Mn (mg kg-1) | 397 | 1120.8 | 52.0 |
| Cu (mg kg-1) | 10.3 | 17.1 | 5.1 |
| Zn(mg kg-1) | 75.7 | 105.4 | 51.9 |
| B (mg kg-1) | 24.3 | 18.1 | 12.4 |
| C (g kg-1) | 145 | 320 | 236 |
| C/N | 9.6 | 71.1 | 5.3 |
| Cellulose (g kg-1) | 138 | 253 | 65 |
| Lignin (mg kg-1) | 153 | 182 | 135 |
| Polyphenol (mg kg-1) | 1 | 12 | 8 |

Table S3. Energy equivalents and cost of inputs used and outputs received/generated in the experiment.

|  |  |  |
| --- | --- | --- |
| Input items | Energy coefficient\*  (MJ unit-1) | Unit cost  (US$ unit-1) |
| *Machinery (tractor) (h)* |  |  |
| Cultivator (organic plots) | 48.3 | 6.7 |
| Cultivator (other than organic plots) | 64.4 | 6.7 |
| Rotor (organic plots) | 80.6 | 11.3 |
| Rotor (other than organic plots) | 96.7 | 11.3 |
| *Irrigation (h)* |  |  |
| Tube-well | 2.7 | 0.8 |
| *Mineral fertilizer and pesticide (kg)* |  |  |
| N | 60.0 | 0.272 |
| P2O5, | 11.1 | 0.781 |
| K2O | 6.7 | 0.521 |
| Pesticide | 120.0 | 52.1 |
| *Organic fertilizer ((Mg dry mass)* |  |  |
| Vermicompost (30% moisture) | 15.4 | 66.7 |
| Farmyard manure (40% moisture) | 180.0 | 6.7 |
| Mustard oil cake (10% moisture) | 9000.0 | 244.4 |
| *Seed (kg)* |  |  |
| Eggplant | 850.0 | 256.0 |
| *Produce (Mg)* |  |  |
| Fruit (fresh mass) | 5900 | 355.6 (other than organic under marketable yield);  462.2 (organic under marketable yield);  244.4 (other than marketable yield) |

\*Adopted from Panesar and Bhatnagar (1987), but the unit costs for different inputs/outputs were calculated based on their present market price using 1US$=INR 66 conversion.

**References**

Panesar, B. S. and Bhatnagar, A. P. (1987). Energy norms for inputs and outputs of agricultural sector- ISAE Monograph Series No. 1: Energy in Production Agriculture and Food Processing: *Proceedings of the National Conference*, India, 30-31 October, pp. 8-26.