

Bioorganic for control of Softrot of Ginger

Head : Diagnostics, Vaccines and Biotechnological Products

Technology Profile for Bioorganic for control of Softrot of Ginger

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| 1 | Name of the Institution | ICAR Research Complex for NEH Region |
| 2 | Address | Umroi Road, Umiam – 793103, Meghalaya |
| 3 | Name of P.I & Co.P.I | Dr. RAJESH KUMAR |
| 4 | Description of technology | Herbal formulation for controlling softrot of Ginger |
| 5 | Flow chart of technology / process | |
| 6 | Area of application : | |
| 7 | Patent number & Date of filing | N/A |
| 8 | If patent is not filed, mentioned in which year the technology was developed ? | 2007 |
| 9 | Did any entrepreneur has shown interest on this technology ? If yes, please provide the name, address of the entrepreneur | Enclosed |
| 10 | Equipment required | Autoclave, Boiler, Grinder, Chopper, Bottle sealing machine |
| 11 | Space requirement | 3000 Sq.feet |
| 12 | Plant set up cost | Rs. 50 lakhs |
| 13 | Raw material and production cost | Rs 100 / liter of formulation |
| 14 | Risks / opportunities involved in adopting the technology | The technology is suitable for both organic and conventional agriculture, potential to generate employment for local farmer. |
| 15 | Cost of available alternate technologies to similar products | None |
| 16 | Expected cost of technology | Rs 150 – 200 / liter |
| 17 | Details of benefits of the technology / process developed | |
| 18 | Any suggestion from Project leader for commercialization this technology | Kindly refer to Point No. 14 |

Procedures

- Mix the formulation at a rate 20 ml per liter of water.
- Treats mother rhizomes for 10-12 hrs. in solution before sowing. The same solution can be used for 2nd and 3rd lots of ginger rhizomes. Discard the leftout solution after 30-36 hrs. Normally for one liter of solution one kg of planting material can be treated.
- If the rhizome is not treated at the time of planting, still the formulation can be used by way of soil drenching by applying around the plant base. 60-70 ml of ready solution should be applied to individual plant.
- Avoid rainy days as for effective results 10-12 hrs of dry spell is needed.
- The formulation is currently recommended for ginger crop only. Therefore it should not be applied to any other crops.

Precautions

- Once the bottle uncorked, use whole content.
- The product is natural & safe for human skin, however, avoid prolong contact.
- The formulation is made with plant extracts without adding any chemicals. Therefore it can be used for organic ginger cultivation.

Performance

Early sprouting: Treated rhizome responded very well and under field condition juvenile sprouts emerged 10-12 days ahead as compare to non-treated (control) rhizome



Non-treated ginger rhizome

GF₁ treated ginger rhizome

More pseudostems: GF₁ treated ginger had significantly higher number of pseudostems. Normally 30-40% more number of pseudostems appears in treated crop field



Comparison in local ginger



Untreated ginger field



GF₁ treated ginger field

Higher biomass: After 70 days of sowing GF₁ treated ginger accumulate more than 30 % biomass as compare to without treated crop



Untreated crop



GF₁ treated ginger

Higher root growth: GF₁ treated ginger generate much higher root growth. Normally treated rhizomes have 55-60% more root growth. Length of the root increased by 20-25% in bioorganic treated ginger



Root in GF₁ treated ginger



Root in untreated ginger

Soft rot disease scoring: Rhizome treated (10-12 hrs) before sowing performed far superior than untreated crop. 90 % of GF₁ crop had no symptom of soft rot and the plant were having lustrous green leaves. Whereas, in untreated crop 28-45% of plants were affected by the disease. In soil drenching with GF₁ also performed better and only 15% of plants affected by the disease.



GF₁ treated ginger



Untreated crop

Yield advantage: GF₁ treated ginger had significantly higher yield (30-35%) over untreated crop. The rhizomes harvested out are better and having shining scales as compare to non-treated crop. Overall ginger growers could be greatly benefited by the formulation



Formulations ready for distribution



Scientist interacting with farmers

Ginger cultivation with bioorganic (GF₁) formulation

Productivity in farmers' fields

Average yield: 10-12 t ha⁻¹

Average selling price: Rs 10 /kg

Average cost of production: Rs 27,000

Average net income: 73,000-95,000

Productivity of ginger with help of bioorganic (GF₁) treatment

Average yield: 13-15 t ha⁻¹

Average selling price: Rs 10 /kg

Average cost of production: Rs 28,500

Average net income: 1,0,1500-1,2,1500

Cost of bioorganic: Rs. 150 / liter

Bioorganic/ha : 10 liters