

Specification of Bio fertilizers

1. Rhizobium

SI no.	Characters	Requirement
(i)	Base	Carrier based* in form of moist/dry powder or granules, or liquid based
(ii)	Viable cell count	CFU minimum 5×10^7 cell/g of powder, granules or carrier material or 1×10^8 cell/ml of liquid.
(iii)	Contamination level	No contamination at 10^5 dilution
(iv)	pH	6.5-7.5
(v)	Particles size in case of carrier based material.	Following Sieve sizes should be selected Powder form - 0.15-0.212mm Solid form – 4mm
(vi)	Moisture percent by weight, maximum in case of carrier based.	30-40%
(vii)	Efficiency character	Should show effective nodulation on all the species listed on the packet.

*Type of carrier: The carrier materials such as peat, lignite, peat soil, humus, wood charcoal or similar material favouring growth of organism.

2. Azotobacter

SI no.	Characters	Requirement
(i)	Base	Carrier based* in form of moist/dry powder or granules, or liquid based
(ii)	Viable cell count	CFU minimum 5×10^7 cell/g of powder, granules or carrier material or 1×10^8 cell/ml of liquid.
(iii)	Contamination level	No contamination at 10^5 dilution
(iv)	pH	6.5-7.5
(v)	Particles size in case of carrier based material.	Following Sieve sizes should be selected Powder form - 0.15-0.212mm Solid form – 4mm
(vi)	Moisture percent by weight, maximum in case of carrier based.	30-40%
(vii)	Efficiency character	The strain should be capable of fixing at least 10 mg of nitrogen per g of sucrose consumed.

*Type of carrier: - The carrier material such as peat, lignite, peat soil, humus, wood charcoal or similar material favouring growth of the organism.

3. Azospirillum

SI no.	Characters	Requirement
(i)	Base	Carrier based* in form of moist/dry powder or granules, or liquid based
(ii)	Viable cell count	CFU minimum 5×10^7 cell/g of powder, granules or carrier material or 1×10^8 cell/ml of liquid.
(iii)	Contamination level	No contamination at 10^5 dilution
(iv)	pH	6.5-7.5
(v)	Particles size in case of carrier based material.	Following Sieve sizes should be selected Powder form - 0.15-0.212mm Solid form – 4mm
(vi)	Moisture percent by weight, maximum in case of carrier based.	30-40%
(vii)	Efficiency character	Formation of white pellicle in semisolid Nitrogen free bromothymol blue media.

***Type of carrier:**-The carrier material such as peat, lignite, peat soil, humus, wood Charcoal or similar material favouring growth of the organism.

4. Phosphate solubilising Bacteria

SI no.	Characters	Requirement
(i)	Base	Carrier based* in form of moist/dry powder or granules, or liquid based
(ii)	Viable cell count	CFU minimum 5×10^7 cell/g of powder, granules or carrier material or 1×10^8 cell/ml of liquid.
(iii)	Contamination level	No contamination at 10^5 dilution
(iv)	pH	6.5-7.5 for moist/dry powder, granulated carrier based and 5.0 – 7.5 for liquid based
(v)	Particles size in case of carrier based material.	Following Sieve sizes should be selected Powder form - 0.15-0.212mm Solid form – 4mm
(vi)	Moisture percent by weight, maximum in case of carrier based.	30-40%
(vii)	Efficiency character	The strain should have phosphate solubilising capacity in the range of minimum 30%, when tested spectrophotometrically. In terms of zone formation, minimum 5mm solubilisation zone in prescribed media having at least 3mm thickness.

***Types of Carrier:**-The carrier material such as peat, lignite, peat soil, humus, wood Charcoal or **similar** material favouring growth of the organism.

5. Mycorrhizal Bio fertilizers

SI no.	Characters	Requirement
i.	Form/base	Fine Powder/ tablets/ granules/ root biomass mixed with growing substrate
ii.	Particle size for carrier based powder formulations	90% should pass through 250 micron IS sieve (60 BSS)
iii.	Moisture content percent maximum	8 -12
iv.	pH	6.0 to 7.5
v.	Total viable propagates/ gm of product, minimum	100/gm of finished product
V.	Infectivity potential	80 infection points in test roots/gm of mycorrhizal inoculum used

Part-B

Tolerance limit of Bio fertilizers

- a. In case of Rhizobium, Azotobacter, Azospirillum and Phosphate solubilizing bacteria, the total viable counts shall not be less than 1×10^7 CFU/g of carrier material in the form of powder or granules or 5×10^7 CFU/ml in case of liquid formulations during the entire period of shelf life. In case of multi-species consortia bio fertilizers, minimum viable cell count should be 1×10^5 cell/ml of liquid during the entire period of shelf life.
- b. In case of Mycorrhizal Bio fertilizers, the viable propagules shall not be less than 100/g of carrier material
- c. In case of any other form of bio fertilizer not mention in the above categories, the product should have a 1×10^7 cells/g of powder, granules, OR 1×10^8 cells/ml of liquid.
- d. Shelf life of 6 months when stored at temperatures $25^{\circ}\text{C} - 30^{\circ}\text{C}$.