



IS 9138: 2020 Azotobacter Spp. Inoculants — Specification

Azotobacter spp. inoculants are beneficial microbial formulations used to enhance soil fertility by fixing atmospheric nitrogen. These free-living bacteria improve plant growth, promote root development, and increase crop yields naturally. In India, Azotobacter inoculants are widely used in organic farming and by farmers cultivating crops like cereals, pulses, oilseeds, and vegetables, reducing reliance on chemical fertilizers. Their application not only optimizes soil health but also supports sustainable, eco-friendly farming practices across the country.

IS 9138: 2020 defines the specifications for Azotobacter spp. inoculants (AI) used to enhance the growth of non-leguminous crops, such as cereals, oilseeds, and vegetables. These inoculants contain high populations of Azotobacter bacteria that biologically fix nitrogen, improve plant health, and protect against certain diseases.

The standard mandates that Azotobacter spp. inoculants must be carrier-based with a minimum of 5×10^7 CFU (colony-forming units) per gram of viable Azotobacter throughout the shelf life. The inoculants should have a pH between 6.5 and 7.5 and be free from contamination by other microorganisms. Additionally, the product must fix at least 10 mg of nitrogen per gram of sucrose and have a moisture content of 30-40%. The carrier material, such as peat or lignite, should be sterilized and neutralized with calcium carbonate.

Azotobacter spp. inoculants must be packed in low-density polyethylene or polypropylene bags with a thickness of at least 75-100 microns. Labels should include the product name, intended crops, batch number, manufacturer details, expiry date, storage instructions, and directions for use.

The inoculants must be stored in a cool, dry place, ideally between 15°C and 30°C, away from direct sunlight and heat. Manufacturers are required to instruct retailers and users on proper storage to maintain product quality.

IS 9138: 2020 ensures that Azotobacter spp. inoculants meet stringent quality standards, promoting effective nitrogen fixation and healthy crop growth while ensuring proper storage and handling practices.