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Encapsulation of beneficial microorganisms as agricultural inoculants

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The increasing demand for green and environment friendly agricultural practices is driving the use of fertilizers based on beneficial microorganisms. Inoculation of these microorganisms to soil not only enhances the specific nutrient availability and its uptake by plant but may also exert positive effect on plant growth due to their multifunctional traits. The choice of technology for developing microbial inoculants is the key to their successful application and subsequent effect on crop growth. The direct exposure of microbial strain to harsh soil environment during early stages of their establishment affect the performance of carrier based and liquid microbial formulations under field application and necessitate the need to find an alternative technology. The encapsulation of microorganisms, though currently experimental in the field of agriculture has been suggested as one of the alternate that can overcome the limitations of above cited microbial formulations. Encapsulation in a polymeric matrix protects the microbes from native flora competition and releases the cells gradually. Liberation of entrapped microbes from the encapsulated beads happens when the polymer is slowly degraded by the native soil microorganisms and has a direct relation with the soil biological activity. However, selection of microbial strain and suitable bio-encapsulation method need due attention.

Biography

Sunita Gaind has completed her PhD in Microbiology from Indian Agricultural Research Institute, New Delhi and she is currently working as a Senior Scientist at Division of Microbiology, IARI. She has published about 50 scientific papers in peer reviewed journals, 15 book chapters and 30 popular/technical articles. She is also associated with the Editorial Board of some peer reviewed journals.

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