Article Abstract

Title:	Efficacy of fly-ash based bio-fertilizers vs perfected chemical fertilizers in wheat (*Triticum aestivum*)
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Abstract:	Fly-ash was evaluated for possible use as carrier for *Azotobacter and Azospirillum* formulation. *Azotobacter and Azospirillum* strains were isolated from healthy wheat rhizosphere soil and bio-formulated in fly-ash (300 meshes). Fly-ash based *Azotobacter* and *Azospirillum* formulation alone and in combination with chemical fertilizer was evaluated for bio-efficacy on wheat. Population of *Azotobacter* and *Azospirillum* was also evaluated in treated soil. The results of the studies showed that, seed treatment with *Azotobacter* and *Azospirillum* and soil treated with chemical fertilizer alone and in combination significantly enhanced the seed germination, plant height, plant biomass and crop yield compared to control. Chemical fertilizer treated wheat plant observed more effective bio-efficacy than bio-fertilizers treated wheat but reduced (destroyed) the microbial population in soil. Whereas *Azotobacter* and *Azospirillum* treated soil observed significantly enhanced the microbial population with slightly lesser plant growth as compared to chemical fertilizer. In the present study it was showed that utilization of fly-ash as carrier in bio-fertilizer formulations emerged as safe and effective alternatives. Use of fly-ash as carrier in these formulations is an effective way of utilization of problematic fly-ash waste in a useful manner.
Keywords:	*Azotobacter*, *Azospirillum*, bio-efficacy, fly-ash, wheat