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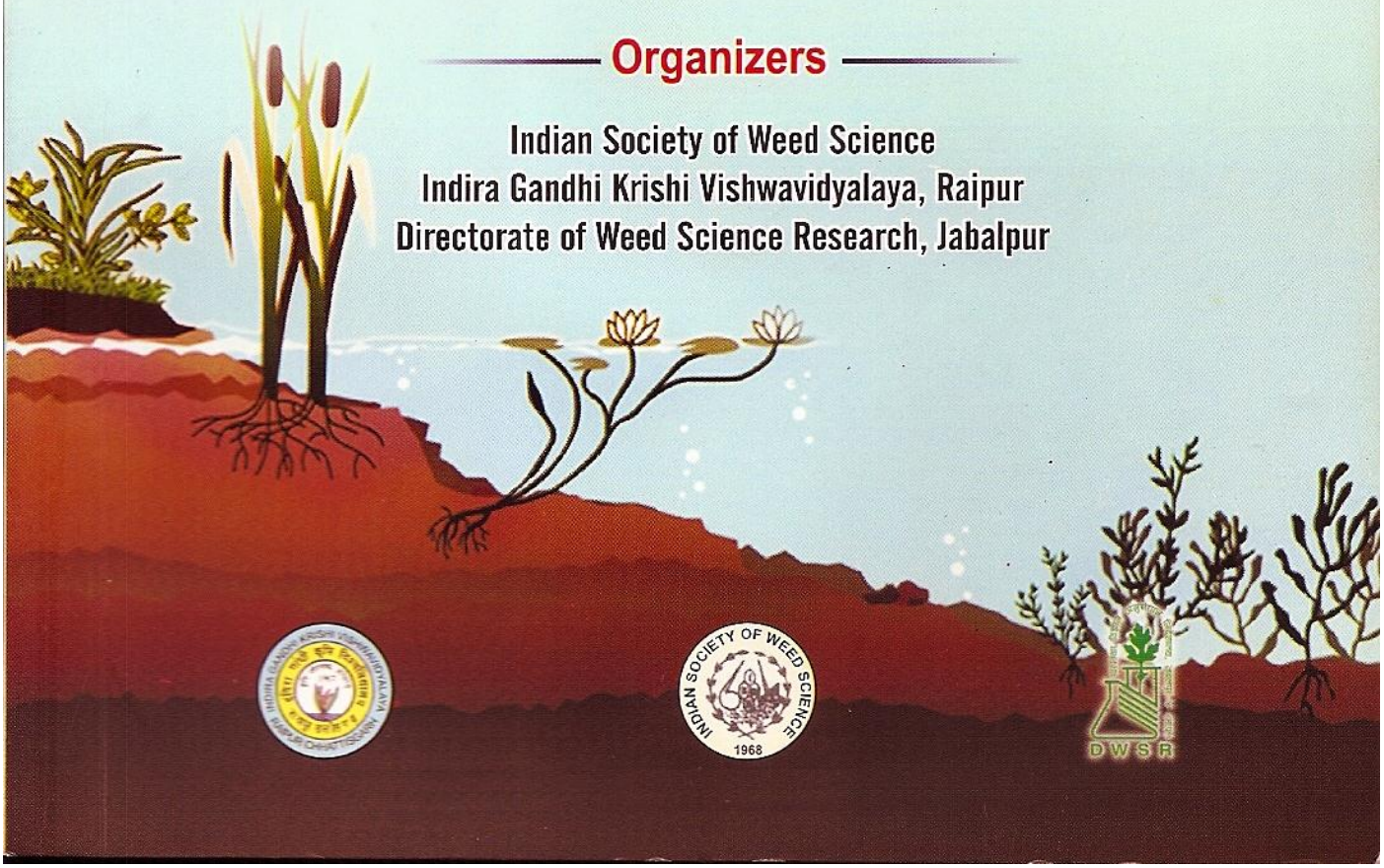
Extended Summaries / Abstracts



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Effect of different weed management methods on weed control and growth of sisal in primary nursery

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A field experiment was conducted at Sisal Research Station (23.05° N, 84.23° E, and 256.03 m MSL), Bamra, Dist: Sambalpur, in 2009 to study the effects of different weed management methods on the weeds of Sisal (*Agave sisalana* Perrine ex Engelm., Family: Agavaceae) and their effect on the growth of sisal plants in primary nursery . Preemergence herbicide, Trifluralin (0.75 kg/ha) was applied in the soil as pre-plant soil incorporation 3 days before planting (DBP) of sisal bulbils; whereas, other pre-emergence herbicides namely metolachlor (0.50 kg/ha) and Pretilachlor (0.05 kg/ha) were applied 1 DBP. Quizalofop ethyl (0.050 kg/ha) was applied two times at 3 and 5 WAP. The 1st and the 2nd hand weeding were done at 3 and 5 weeks after planting (WAP). At 2 WAP, the highest weed control efficiency (WCE) was recorded with metolachlor (90.12%), followed by Pretilachlor (62.5%) and Trifluralin (46.25%). At 5 WAP, the lowest weed dry weight was recorded with hand weeding (5.35 to 8.43 g/m^2), followed by S-Metolachlor (9.86 g/m2). The WCE was also followed the same trend and the highest WCE was 89-93% in case of hand weeding followed by S-Metolachlor (87.13%). However, at 7 WAP, only two hand weeding proved effective which produced the lowest weed dry weight (7.43 g/m2), followed by one hand weeding (62.01 g/m2) and metolachlor (64.59 g/m2). Likewise, the WCE was the highest (92.34%) in two hand weeding treatment. Quizalofop ethyl controlled the grasses (98%) which in turn encouraged the growth of sedge weeds (2.33 times). Sisal leaf waste could not control the weeds, whereas, it supported weed growth (as well as growth of sisal bulbils) might be due to its benefit as mulching material conserving soil moisture. The effect of different weed management methods on sisal plants were compared based on the number of leaves and the dry weight of sisal plants. It was observed that after 6 months after planting, hand weeding twice produced the highest number of leaves (7.56/plant) followed by the number of leaves produced in Trifluralin (7.44/plant) and Pretilachlor (7.22/plant) treated plots; whereas, no weeding produced lowest number of leaves (5.33/plant). The biomass productions by sisal bulbils under different weed management methods are also different significantly. Hand weeding twice produced the most robust type of sisal plants (13.90 g/plant) followed by the plant dry weight obtained with sisal waste (13.27g/plant). All the tested herbicides reduced the biomass production by sisal plants as compared to hand weeding in the order of trifluralin (14.67%) > pretilachlor (22.06%) > metolachlor (35.91%) > quizalofop ethyl (39.18%). From the one year experiment it was clear that only hand weeding twice (3 and 5

WAP) was effective in controlling weeds in the primary nursery of sisal (92.34%) beyond 7 WAP. However, among the herbicides tested, S-Metolachlor was effective up to 5 WAP (87.13% WCE) after which it requires one hand weeding for managing the weeds in sisal nursery.