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Title: EFFECT OF WEED CONTROL METHODS ON WEED DYNAMICS AND PRODUCTIVITY OF ONION (*Allium cepa* L.)

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Abstract: Onion (*Allium cepa* L.) is an important vegetable crop all over the world. Among the vegetable crops listed by FAO (Brewster, 1973), Onion falls second only to tomatoes in term of tonnes per annum world production. Average yield of bulb onions ranges from around 30 t per hectare in North West Europe to less than 8 t/ha as an average in developing countries (Brewster, 1977). India ranks second after china in area and production, having 1,225 thousand hectare area of land under onion crop with production of 20,991 MT. (National Horticulture Board, 2016-2017). According to MOFPI (Ministry for food Processing Industries Government of India), Overall crop-wise vegetable production A field experiment entitled “Effect of weed control methods on weed dynamics and productivity of onion (*Allium cepa* L.)”, was carried out on sandy loam soil, acidic in reaction (pH 5.9), having low organic carbon (4.2 g kg⁻¹) and available nitrogen (243 kg ha⁻¹) with medium available phosphorus (19.15 kg ha⁻¹) and exchangeable potassium (188.16 kg ha⁻¹) during the experiment period at Birsa Agricultural University farm, Ranchi to study the efficacy of weed control methods on weed dynamics, productivity and profitability of onion production. The experiment was laid out in a randomized block design. The 9 treatments comprised of T1 (Plastic mulch), T2 (Available weed mulch), T3 (Paddy straw mulch), T4 (Coriander cover crops), T5 (Oxyflourfen), T6 (Pendimethalin), T7(Mechanical weeding at 20, 40 and 60 DAT) , T8 (Handweeding at 20, 40, and 60 DAT) and T9 weedy check respectively replicated thrice. Onion variety Nasik N-53 was grown as a test crop with spacing 10 x 20 cm. The experimental site was infested with all three categories of weeds broad leaved, grassy and sedge weeds respectively. In this experiment, observation recorded that highest plant height (19.39 cm, 34.02cm, and 42.32cm at 30,60 and 90 DAT), number of leaves (2.66, 4.00 and 7.20 at 30 , 60 and 90 DAT), neck thickness (1.96, 4.33 and 4.13 at 30, 60 and 90 DAT) was recorded in Plastic mulch at all the growth stages and lowest was recorded in weedy check. The maximum bulb diameter, bulb neck thickness, bulb weight, plant population per square meter was recorded in Plastic mulch which was at par with Pendimethalin and Oxyflourfen while the minimum was recorded in weedy check. The maximum weed control efficiency and minimum weed control index (10.48%) was shown by Plastic mulch. However, maximum net return (273617.00 ha⁻¹) and B:C ratio (3.2) was recorded in Plastic mulch. Hence, on the basis of one year data it can be concluded that application of Plastic mulch which reduce the irrigation problems and yield also followed by pendimethalin followed by Oxyflourfen may be practiced for better crop growth, higher productivity and profitability of Onion owing to better weed control efficiency.

Description: EFFECT OF WEED CONTROL METHODS ON WEED DYNAMICS AND PRODUCTIVITY OF ONION (*Allium cepa* L.)

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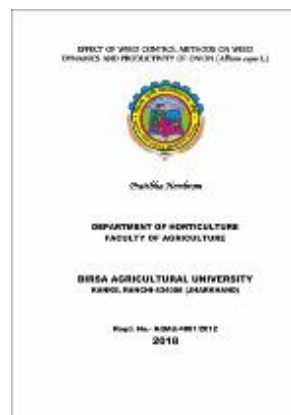
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