Cow Urine to Stimulate Rooting on Lemon Tea (Citrus limon Burn.) Cuttings

Kartini M. Deroes[1], Edwin Wijaya[1] and Junita Gunadi[2]
Indonesia

Introduction: According to Leopold (1963) and Suprijadi (1985), urine of cow contain auxin-a, auxin-b and Indole Acetic Acid. As an herbivore cow eats plant tissues which contain auxin. Auxin is undigestable and will be excreted in urine. Research and Plantation Department Jember has proved quick dipping (10-15 second) of Coffea arabica cuttings in urine of cow at 5% and 10% concentrations were able to stimulate rooting. The effect was equal to 3000 ppm and 4000 ppm IBA (Suprijadi, 1985). Chairani (1987) dipped Costus spiciosus cuttings in urine of cow at 15% concentration for 15 seconds was able to root 96% of the cuttings. The research was conducted to find out the effect of cow urine on the rooting of Lemon tea cuttings.

Materials and Method: The cuttings materials were collected from Lemon tea trees belong to grower at Talang Kelapa and fresh cow urine was obtained from CV Lembu Jaya Ranch in Sumbawa. Cow urine was left over night before used. The cuttings were treated with 0.0% (control), 2.5%, 5.0%, 7.5%, 10,0% and 12.5% cow urine as a quick dip (15 seconds). Cuttings dip in 4000 ppm IBA were employed as a treatment comparison. Then the cuttings were planted in media. The media were a mixture of soil: sand: cow manure 1:1:1 (v/v). The experimental design was a Randomized Complete Block Design with 4 replications of 10 plants per replication. Data were statistically analyzed using analysis of variance. Difference among treatment means was tested using orthogonal contrast and orthogonal polynomial. The cuttings were harvested and root length were measured and root per cutting were counted after 8 weeks in the media.

Results and Discussion: Cow urine treatments significantly influence root length and root numbers of the cuttings (Table 1).

Table 1. Root length and root numbers of the lemon tea cutting as affected by cow urine.

Source	root length (cm)	root numbers
Block	ns	ns
Treatment	**	*
Orthogonal contrast		
Control VS Cow urine test	**	**

** = highly significant at 1%
* = significant at 5% ns = non significant

Best rooted cuttings, the longest roots (5 longest roots) and the largest numbers of roots (roots more than 0.5 cm) were obtained from the cuttings treated with 7.5% cow urine (Fig 1).

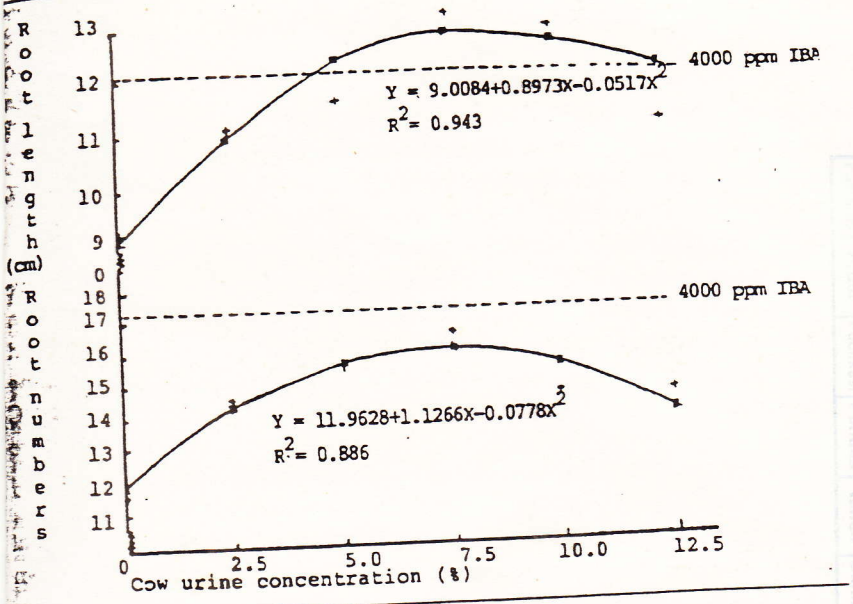

Fig 1. The effect of cow urine on root length and root numbers of lemon tea cuttings.

Root length of lemon tea cuttings treated with IBA 4000 ppm equal to 4.7% cow urine treated cuttings. Whereas, the cuttings treated with IBA 4000 ppm have more root numbers than cow urine treated cuttings. It is concluded that cow urine (7.5%) can be used as substituted of auxin (IBA) in stimulating the rooting of lemon tea cuttings and there always possibility for rooting other plant species.

Literature Cited

1. Leopold A.C, 1963. Auxin and Plant Growth, University of California Press, Barkeley and Los Angeles. 354 p.

2. Suprijadi, G. 1985. Pengaruh Beberapa Macam Hormon Tumbuh terhadap Perakaran Setek Coffea arabica. Menara Perkebunan 13 (3): 77-80.

3. Chairani, F. 1987. Efektivitas Air Kemih Sapi pada Setek Batang Pacing. Pemberitaan Lembaga Penelitian Tanaman Industri Indonesia 12 (3-4): 53-57.

1 Lecturer, Dept of Agronomy. Faculty of Agriculture, Sriwijaya University.

2 Student of Dept of Agronomy. Faculty of Agriculture, Sriwijaya University.