to higher LAI and increased LAD which in turn have influenced higher crop growth rate (Mansoor, 1985). Hence, agronomic manipulations like N fertilization and closer spacings should aim to achieve increased LAI and CGR and photosynthetically active leaf are duration which would reflect in higher biomass production. Between the two genotypes, AMV–1 (25.3 mg ha^{-1}) gave higher biomass yield than AMV–2 (21.2 mg ha^{-1}) The highest biomass yield of 41.1 mg ha^{-1} was obtained with the treatment combination of 100 kg N/ ha with 20 x 10 cm spacing. Thus, closer spacing coupled with N dressing is imminent to achieve high biomass production.

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Reaction Rate of Lime in Coastal Region Acid Soils of Uttara Kannada District, Karnataka State

The Coastal region acid soils of Uttara Kannada district of Karnataka State respond well to liming. The rate at which the added liming material reacts with the soil is not established for these soils. The investigation was undertaken to find out the rate of reaction of lime with coastal region acid soils of Uttara Kannada district.

The soils used for the study were base unsaturated laterite soils. The characteristics of the soils are given in Table 1. Lime requirement (LR) methods followed were; Puri's exchangeable calcium method (Puri, 1964), Improved Woodruff buffer (IWB) method (Brown and Cisco, 1984), SMP Single buffer (SMP–SB) method (McLean *et al*, 1977) and SMP double buffer (SMP–DB) method (McLean, 1978). Lime levels were tried at 0.5, 1.0, 1.5 and 2.0 times LR along with control I (no lime + no fertilizer) and control II (no lime + recommended dose of fertilizer for groundnut). Ground lime stone with 65% $CaCO_3$ and 2.4% $MgCO_3$ was used as a liming material. Lime was allowed to react with acid soil (10kg) in a pot at 60% of maximum water holding capacity for three weeks. soil samples were drawn every week

Table 1. Physico chemical properties of soils used for the study

Property	Ankola Soils	Kumta Soil
pH	5.2	5.0
EC (dS/m)	0.2	1.8
Organic matter per cent	2.9	3.2
$BaCl_2$ – TEA extractable acidity $Cmol^2 K^{-1}$	15.3	15.8
Cation exchange capacity (Cmol k^{-1})	21.4	24.50
Lime requirement t/ha		
a) Puri's exchangeable Calcium method	7.73	8.5
b) Improved Woodruff buffer method	18.0	20.2
c) SMP single buffer method	9.0	10.5
d) SMP double buffer method	6.0	6.7

and soil pH was estimated. The incubation study was laid out in randomised block design with factorial experiment.

In the sandy loam soil of Ankola and sandy clay loam soil of Kumta, consequent to the addition of lime, the soil pH increased from 5.2 to 6.3 and 5.1 to 6.2 respectively at 1/2 LR by the end of first week. Incremental lime levels did not result in the proportionate increase of soil pH. At 2.0 LR soil pH increased to 6.9 after first week of liming. This may be due to the high buffering capacity of soils. Maximum increase in the soil pH was recorded when limed as per IWB method at 2.0 LR level; pH 7.3 and 7.4 respectively in Ankola and Kumta soils at the end of third week. Due to higher clay and organic matter content in the soil, the amount of lime estimated to add was more in Kumta soil and the resulting soil pH was also more compared to that in Ankola soil. For bringing soil pH to neutrality liming at the rate of 1.0 LR as per IWB method and at 1.5 LR as per Puri's and SMP–SB method was found to be sufficient at the end of first week. The maximum increase in the pH at 2.0 LR as per SMP–DB was 6.9. The order of increase in soil pH due to liming by different lime requirement methods was IWB> SMP–SB> Puri > SMP–DB (Fig.1 & 2). This indicated that the increase in soil pH (neutralisation of soil acidity) was in direct proportion with the addition of lime as per different methods.

From the Fig. 1 and 2 it is clear that not much increase in soil pH was noticed after I week. This is because when higher doses of lime is added the change in the soil pH will be slow (Coleman and Thomas, 1967; Ananthanarayana and Perur, 1972) due the high buffering capacity of soils. It is well established that the potential acidity will maintain the equilibrium with the active acidity and no change in the soil reaction occurs until the reserve in H^+ if exchausted. Thus, it could be concluded from the study that lime applied to the acid soils will attain equilibrium within three weeks and the soil pH would be raised to neutral by applying lime at 1.0 to 1.5 LR level.

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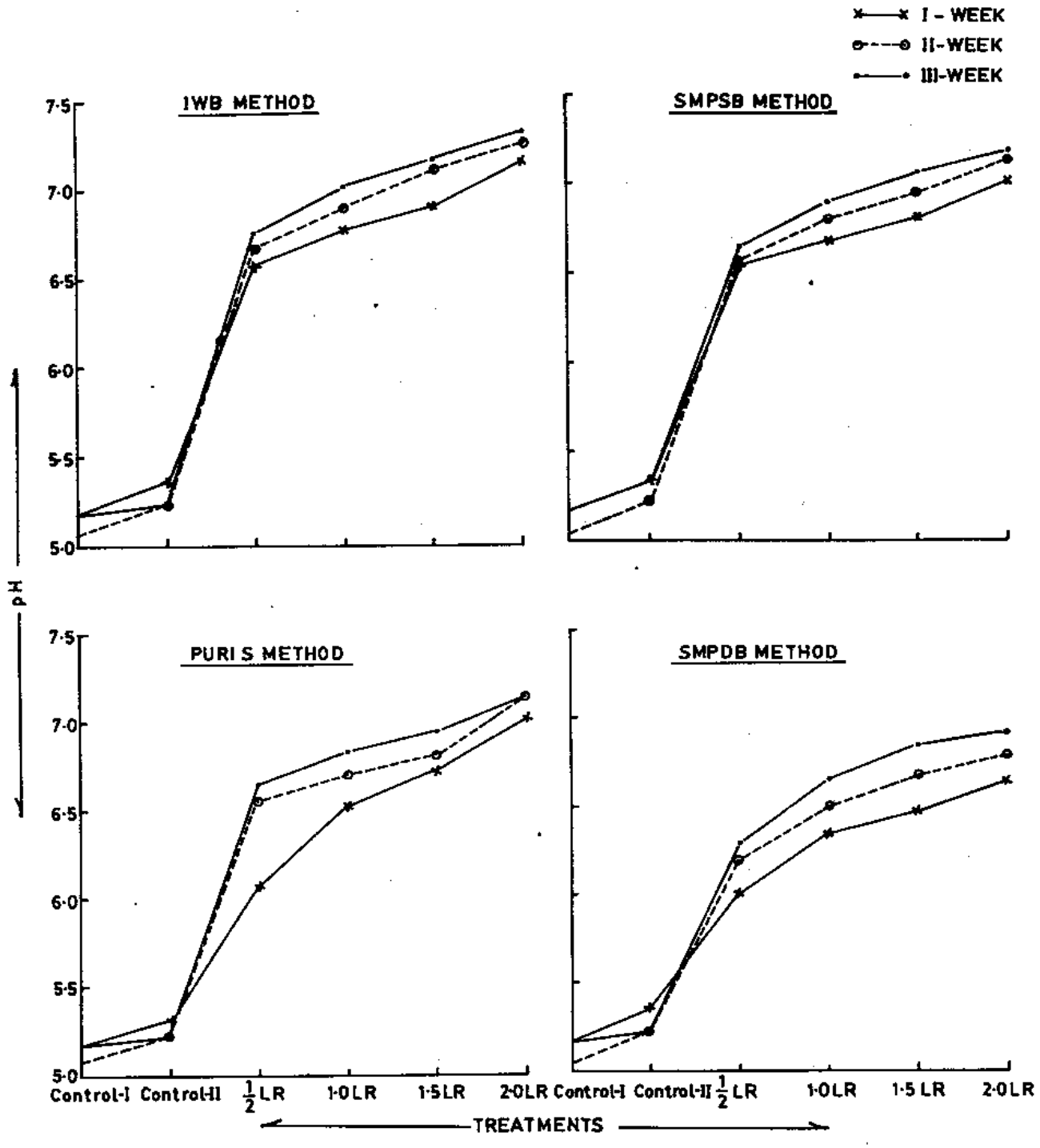

Fig. 1. EFFECT OF LIME LEVELS ON REACTION RATE DURING INCUBATION PERIOD IN ANKOLA SANDY LOAM SOIL

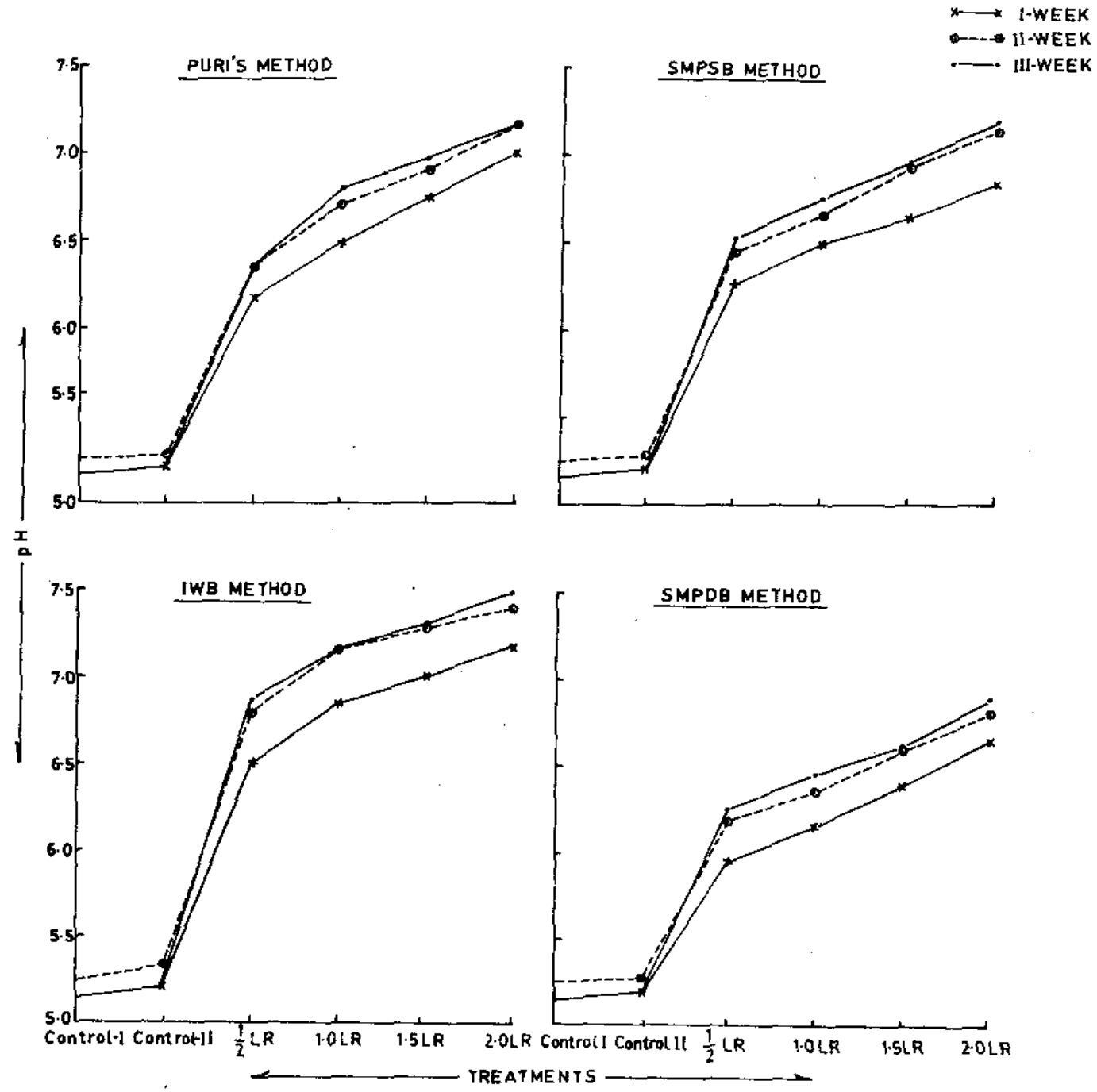

Fig. 2. EFFECT OF LIME LEVELS ON REACTION RATE DURING INCUBATION PERIOD IN KUMTA SANDY CLAY LOAM SOIL

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Nutrient Uptake by Crop and Weeds as Influenced by Crop Weed Competition under Maize Soybean Sole Cropping and Maize–Soybean Inter–cropping Systems

Weeds are efficient competitors with crops for nutrients. Furoc *et al* (1977) reported that when soybean was intercropped with maize weed growth reduced significantly. Nanjappa *et al.* (1987) observed that nutrient uptake by the crop decreases with delayed weeding. This study was carried out to know the effect of cropping systems and time of weeding on nutrient uptake by crops and weeds.

The experiment was conducted with sole crop of maize, soybean and maize–soybean intercropping at the University of Agricultural Sciences, Bangalore. Soil was red sandy loam with medium available P (12.56 kg/ha) and K (125.4 kg/ha) but low in nitrogen (225.25 kg/ha). The cropping systems were assigned to main plot and the time of weeding to sub plots. Main plot treatments were maize sole crop soybean sole crop, maize–soybean uniform row intercropping maize–soybean paired row intercropping. The six treatments in sub plots were weedfree from 20, 35, 50, 65 days after sowing., weedfree throughout and unweeded control. N, P, K were applied at the rate of 100:50:50 kg /ha for intercropping, 100:50:25 kg/ha, to maize sole crop, and 37.5:37.5:37.5 kg/ha for soybean sole crop. Plant spacing was 75x30 cm for maize soybean uniform row intercropping and 45 x 105 cm for maize soybean paired row intercropping. Total uptake of nutrients by crops and weeds was estimated by following standard procedures.

Weeds absorbed less nutrients in maize–soybean intercropping systems compared to sole crops (Table 1). Nutrient