

## Mix Cropping System for Zingiberaceae for Upland Site and Dry Agroecological Zone of East Java

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### ABSTRACT

*Zingiberaceae*, such as java curcuma, turmeric, east india galangal, and galanga, were known as shading plants. Based on their characteristic, *zingiberaceae* could be intercropped with other crops such as horticulture, estate tree, forestry tree, or food crops to improve farmer income and land use efficiency. The aim of this research is to find out ideal mix cropping system for upland and on dry agroecological zone of East Java. The treatment consisted of several mix cropping system between *Zingiberaceae* and food crops (rice and peanut), and the shading conditions site of four-year teak plantation. The experiment was located in Ringinrejo, East Java Province, used randomize block design, with 4 replications. The treatments were (1) java curcuma, (2), turmeric, (3) *kencur* (*Kaempferia galangal*), (4) *lengkuas*/galanga (*Alpine galanga*), (5) java curcuma + paddy, (6) turmeric + paddy, (7) *kencur* + paddy, (8) *lengkuas* + paddy, (9) java curcuma + peanut, (10) turmeric + peanut, (11) *kencur* + peanut, (12) *lengkuas* + peanut. Fertilizer applications per hectare were 14 tons of compost (bokashi), 250 kg urea, 300 kg SP-36, and 300 kg KCl. Planting distance were 50 cm 50 cm for turmeric and java curcuma, 20 cm 20 cm for east india galangal, 40 cm 60 cm for galangal, 20 cm 20 cm for peanut, 15 cm 20 cm for paddy. The results showed that under shading conditions, the plant production of *Zingiberaceae* such as java curcuma, turmeric, east indian galangal, and galanga were 14.5, 16.7, 3.8, and 23.8 ton/ha only. In mix cropping with peanut, *Zingiberaceae* increased the production. For java curcuma, turmeric, east indian galangal, and galanga, the productions were 20.5, 17.0, 6.5, and 38.0 ton/ha, respectively. However, mix cropping with paddy gogo showed that the production was lower, i.e. java curcuma, turmeric, east Indian galanga and galanga were 18.5, 14.0, 2.3, and 28.5 ton/ha, respectively. The quality of products based on dissolve rate of water and dissolve of alcohol could fulfill standard of IMM.

*Key words* : *Zingiberaceae*, food crop, mix cropping, upland, dry agroecological