

EFFECTS OF VARIETY AND PLANTING TIME ON THE GROWTH AND
YIELD OF MAIZE (ZEA MAYS L.) AND YARD-LONG BEAN
(VIGNA UNGUICULATA L. SUB. SPP. SESQUIPEDALIS)
INTERCROPPING SYSTEM

By

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Thesis

Submitted in partial fulfilment of the requirements

for the degree of

MASTER OF PHILOSOPHY

in the

POSTGRADUATE INSTITUTE OF AGRICULTURE

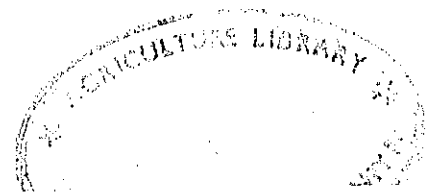
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February, 1999

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ABSTRACT

Intercropping maize (*Zea mays L.*) with yard long bean (*Vigna unguiculata L.* sub spp. *sesquipedalis*) is a common practice in the dry and intermediate zones of Sri Lanka during the maha season. Due to lack of systematic research data, studies were conducted to determine the effects of Yard Long Bean (YLB) varieties (i.e Hawari ma and Polon ma) and planting times (i.e simultaneous and staggered) on intercrop productivity.

The first experiment had four intercrop and five sole crop treatments. In intercrops, YLB was planted (10 cm) away from each maize plant and the vine was trained onto the maize crop. Land Equivalent Ratio (LER) was determined for different combinations of harvestable products of the two crops. LER was greater in intercrops than in the sole crops. Maize/simultaneously planted Hawari ma treatment showed significantly greater LER for all combinations of harvesting stages. Late-planted maize/YLB intercrops showed lower LER than simultaneously planted maize/YLB intercrops. Intercrop yields of both crops were lower than when grown as sole, indicating mutual competition for resources. However, yield reduction was higher when YLB was late planted.

When maize was harvested at green cob stage, competition from simultaneously planted YLB on maize was greater than from late-planted YLB. However, the opposite was observed when maize was harvested as dry cobs. Therefore, planting times of component crops can be arranged in a way which would minimize the inter-crop competition.

A second experiment was done with the objective of explaining the yield reductions which were observed in YLB when intercropped with maize. Since competition for light by maize was hypothesized to be one of the reasons for yield variation in intercrops, the second experiment was done to test the effects of different levels of shade on YLB grown as monocrops. Three shade levels (i.e, 0%, 40% and 60%) and two YLB varieties were used.

Both varieties responded to shade by increasing their leaf area and decreasing plant dry weight. The yield was greater in the open treatment than in the two shaded treatments. The greatest yield reduction was observed under 60% shade.

It is concluded that intercropping maize and YLB produce a yield advantage as compared to growing sole crops. Competition for light by the maize canopy was identified as one of the factors causing the observed yield reduction of YLB in the intercrops.

