SOME ASPECTS OF FLOWERING AND ABSCISSION IN WINGED BEAN PSOPHOCARPUS TETRAGONOLOBUS (L) DC

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ABSTRACT

The experiments were carried out at Peradeniya, (elevation 470m amsl) Sri Lanka during May to October of 1978 and 1979 to study the effect of two support systems (single stake and trellis) and pruning on flower production, pod set, abscission of reproductive organs and yield of two varieties of winged beans, namely UPS 61 and UPS 122 (Chimbu). The experimental design was a factorial with 2 x 2 x 2 structure. Bud appearance occured between 5 - 6 weeks after emergence in both varieties, during both years. The first node of the main stem that initiated flower buds in UPS 61 and UPS 122 was the 10th and 7th node respectively. The approximate duration from bud initiation to anthesis was 3 - 4 weeks. Varietal differences were observed in inflorescence structure and total reproductive load. Both varieties exhibited similarities in general pattern of reproduction. Peak production period was evident in buds only. Fluctuation of bud number with time during growing season of 1979 seemed to be related to the rainfall pattern during that period. Peak bud production of pruned and unpruned vines of UPS 61 occured at 18 and 16 weeks respectively. In UPS 122, peak bud production occured at 16 weeks irrespective of pruning treatment. Abscission rate was very rapid between 16-20 weeks in both varieties. In spite of the distinct difference of the reproductive load of the two varieties, the proportion of pods

to the total reproductive load in relation to the main treatments were remarkably low and uniform with only a narrow variation ranging from 7.12-8.75 %. UPS 61 produced a significantly higher average pod number (56) than UPS 122 (29) at final harvest of both years. Total abscission percentages of UPS 61 and UPS 122 were 75.88 and 87.68 respectively. The proportion of bud abscission to total abscission was smaller in UPS 122 than UPS 61 which averaged 12.5 percent and 22.5 percent respectively for the two varieties. The treatment effects were highly significant in characters studied namely cumulative bud number, flower number, pod number, total abscission and seed yields. Pruning caused a marked reduction in reproductive load. Trellis support gave better results than single stake support in both varieties. Variety UPS 61 produced a significantly higher load than that of UPS 122 in all treatments. Variety x Pruning, and Variety x Support interactions were significant and consistently present. This suggests that these characters may be interrelated. The magnitude of response to pruning and support varied in both varieties of which UPS 61 gave a more marked effect. The performance of crop in same growing season of 1978 and 1979 which had different climatic conditions show that the environmental conditions such as rainfall, air temperature and sunshine hours have an influence on flower production, pod set and seed yields of winged bean. Differences observed in response to cultural practices and environments confirm the possibility of identifying selections with desirable traits for breeding.