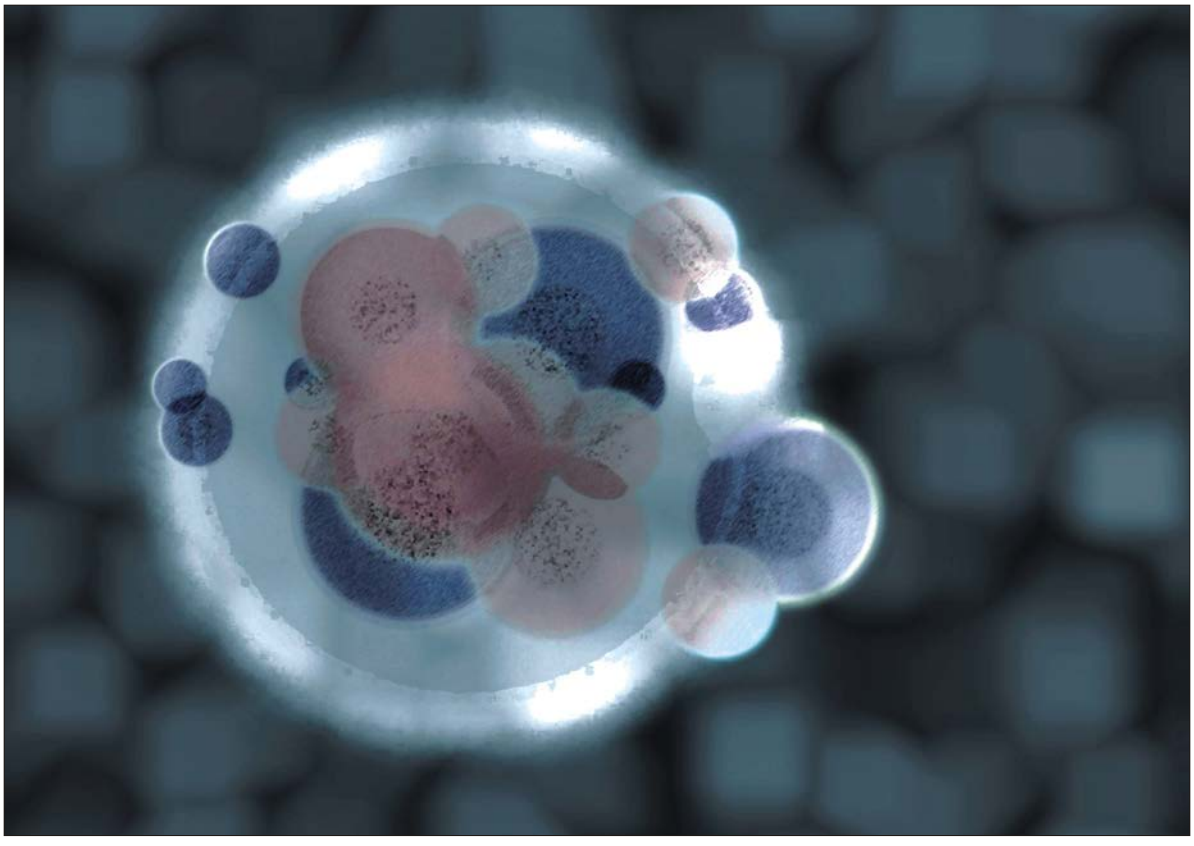

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Feasibility of Intercropping Mungbean (*Vigna radiata*) in Guara (*Syamopsis psoraliodes*)

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Abstract: Guara sown at 45 cm spaced double-row strips with two rows of intercropped Mungbean produced significantly more No. of pods, heavier grains and maximum grain yield. Mungbean sown between 45, 60 and 75 cm spaced double, triple and four row strips of Guara respectively, did not significantly effect No. of pods, thousand grain weight and grain yield per plant.

Key words: Intercropping, guara, mungbean

Introduction

The practice of intercropping has been prevalent since long to cover the risk of failure of based crop. It is a unique practice in tropical and subtropical areas and particularly popular among small farmers. Gangwar (1986) concluded that sorghum intercropped with black gram or cowpeas gave lower grain yields than in pure stands, but the intercrop gave additional yields and increased the total productivity and net return (Khan *et al*., 1988). However, Gupta and Sing (1988) obtained higher sorghum yield when intercropped with pigeonpea in 60 cm wide rowes. A technology of planting tall plants in double-row, triple-row and four-row strips by decreasing the space between the rows has been developed which has exhibited good yield potentials and promise of growing conveniently and successfully with a little intercrop competition (Nazir, 1994). Consequently the present study was designed with a view to test the planting technology of tall growing Guara in association with short statured Mungbean intercropping system.

Materials and Methods

The field experiment was conducted to ascertain the feasibility of intercropping Mungbean and Guara. R.C.B.D with four replications, keeping a net plot size of 3.6×5 m was used. The experiment was conducted at Agronomic Research Area, Department of Agronomy, Faculty of Agriculture, Gomal University, D.I. Khan.

The Guara (base crop) and Mungbean (Intercrop) were planted in different planting patterns as below.

1. 30 cm spaced single rows of Guara (with single rows of Mungbean)
2. 45 cm spaced double-row strips of Guara (with two rows of Mungbean)
3. 60 cm space triple-row strips of Guara (with three rows of Mungbean)
4. 75 cm spaced four-row strips of Guara (with four rows of Mungbean)

Both the crops were planted in summer on clay loam soil using standared seed rate of 20 Kg ha^{-1}. Starter Nitrogen at the rate of 20 Kg and Phosphorus at the rate of 50 Kg ha^{-1} was applied to all plots at the time of seed bed preparations. All other cultural practices were kept constant and normal.

The following parameters were recorded during the course of study.

1. pods/plant of Guara and Mungbean (No)
2. grains/pod of Guara and mungbean (No)
3. 1000-Grain weight of Guara and Mungbean (g)
4. Grain yield per plant of Guara and Mungbean (g)

The data were analysed statistically by using analysis of variance techniques (Steel and Torrie, 1980).

Results and Discussion

Pods per plant of Guara and Mungbean: The data presented in Table 1 revealed that 45 cm spaced double-row strips of Guara significantly produced more number of pods (64.67) per plant than 60 cm Spaced triple-row strips and 75 cm spaced four-row strips of Guara. The data pertaining to the number of pods per plant of Mungbean indicated that various planting pattern did not significantly affect the number of pods per plant. However, it is evident from the means table that 45 cm spaced double row strips of Guara with two rows of intercrop Mungbean seems to be the best planting pattern for successful intercropping system. Similar results were reported by Khan (1985) who stated that various yield components of Maize, Mungbean and Mashbean intercroped with each other were not significantly affected by different intercroping systems.

Table 1: Number of pods per plant of Guara and Mungbean as affected by intercropping patterns

Treatments	Means	
	Guara*	Mungbean^{NS}
Comparison of Individual Means		
30 cm spaced single rows of Guara. (with single rows of Mungbean)	59.67 AB	10.22
45 cm spaced double-row strips of Guara (with two rows of Mungbean)	64.67 A	11.17
60 cm spaced triple-row strips of Guara (with three rows of Mungbean)	57.17 B	10.58
75 cm spaced four-row strips of Guara (with four rows of Mungbean).	59.25 B	9.83
L.S.D. Value at 0.05 P	5.25	1.42

Means not sharing a letter in common differ significantly.
NS = Non significant

Grains per pod of Guara and Mungbean: The data related to the number of grains per pod of Guara and Mungbean as

affected by intercropping and planting pattern are given in Table 2. It is evident from the mean table that differnt intercropping pattern did not significantly affect the number of grains per pod of Guara and Mungbean. However, their Mean values shows that 45 cm spaced double-row strips of Guara intercropped with two rows of Mungbean produced more number of grains per pod as compared to the rest of treatments. Paired planting at suitable distance seems to be the best planting pattern for Guara-Mungbean intercropping system. Similar findings were reported by Khan (1984), who stated that the number of grains per spike of wheat and Maize were not significantly effected by intercropping Mungbean and Lin seed in Wheat and Maize respectively.

Table 2: Number of grains per pod of Guara and Mungbean as affected by intercropping patterns

Treatments	Means	
	Guara^{NS}	Mungbean^{NS}
Comparison of Individual Means		
30 cm spaced single rows of Guara. (with single rows of Mungbean)	7.98	10.15
45 cm spaced double-row strips of Guara (with two rows of Mungbean)	8.42	10.41
60 cm spaced triple-row strips of Guara (with three rows of Mungbean)	7.73	10.08
75 cm spaced four-row strips of Guara (with four rows of Mungbean).	7.95	10.25
L.S.D. Value at 0.05 P	0.76	01.14

NS = Non significant

1000-grain Weight of Guara and Mungbean: Grain weight is the major yield component which affect the grain yield of the crop. The heavier the grains,the more will be the economic yield. The data presented in Table 3 revealed that different intercropping pattern significantly affect the weight of grains of Guara. Heaviest grains (25.53 g) was recorded from Guara plants when planted at 45 cm spaced double-row strips and intercropped with two rows of Mungbean. Though grain weight of intercropped Mungbean was not affected significantly but it is evident from the mean table that two rows of Mungbean planted in 45 cm spaced paired rows of Guara produced non significantly the heaviest grain as compared to the other planting geometries. It is evident from the mean table that by increasing the rows of the base crop, the grain weight of the short statured component crop is decreased which might be due to more mutual shading effect.

Table 3: 1000-grain weight (g) of Guara and Mongbean as affected by intercropping patterns

Treatments	Means	
	Guara*	Mungbean^{NS}
Comparison of Individual Means		
30 cm spaced single rows of Guara. (with single rows of Mungbean)	25.08 AB	28.70
45 cm spaced double-row strips of Guara (with two rows of Mungbean)	25.53 A	29.63
60 cm spaced triple-row strips of Guara (with three rows of Mungbean)	25.43 AB	29.01
75 cm spaced four-row strips of Guara (with four rows of Mungbean).	24.30 B	28.53
L.S.D. Value at 0.05 p	01.17	02.20

Means not sharing a letter in common differ significantly
NS = Non significant

Grain Yield per Plant of Guara and Mungbean: The data showing the grain yield per plant of Guara and Mungbean as affected by intercropping and planting pattern are presented in Table 4. Significantly the highiest grain yield per plant (13.57 g) was obtained from Guara when planted at 45 cm spaced double-row strips with two rows of intercrop Mungbean. However, the grain yield per plant of Mungbean was not affected significantly by various planting geometries. The table further reveals that close spacing with paired rows of both the intercrops produced more grain weight per plant as comparred to the rest of treatments. Decrease in plant yield in three and four rows strips may be due to shade effect where by maximum solar radiation energy is not intercepted by the component crop. Similar result was obtained by Dalal (1978) who observed the poor performance of Soybean when intercropped in Maize which was attributed to shadding by the tiller of base crop.

Table 4: Grain yield per plant (g) of Guara and Mungbean as affected by intercropping patterns

Treatments	Means	
	Guara	Mungbean
Comparison of Individual Means		
30 cm spaced single rows of Guara (with single rows of Mungbean)	11.73B	03.00
45 cm spaced double-row strips of Guara (with two rows of Mungbean)	13.57A	03.27
60 cm spaced triple-row strips of Guara (with three rows of Mungbean)	10.77B	03.03
75 cm spaced four-row strips of Guara (with four rows of Mungbean).	10.98B	02.88
L.S.D. Value at 0.05 P	01.62	0.66

Means not sharing a letter in common differ significantly
NS = Non significant

The findings of this research mostly confirmed the results of other research workers. But due to climatic variations, physio-chemical environment of the soil, varietal performance and introduction of new planting patterns, it was imperative to study the significance of this project under the agro-climatic conditions of D.I. Khan. The result led to the conclusion with recommendations that for the best yield and economic benefit, Guara-Mung bean intercropping should be practiced in the geometrical pattern of 45 cm spaced double-row strips of Guara with two rows of Mungbean.

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