

## **Production potential of soybean-pegeonpea intercropping**

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### **ABSTRACT**

The field experiment was conducted at Agriculture College, Latur during the *kharif* season (2006) to find out suitable genotype of soybean in intercropping with pigeonpea and suitable planting pattern for getting higher productivity in soybean + pigeonpea intercropping system. The result indicated that the gross monetary return and net monetary return both were found highest in intercropping system soybean (JS-335) + pigeonpea (BSMR-736). Among the intercropping systems Soybean (JS-335) + Pigeonpea (BSMR-736) was more remunerative in respect of cost: benefit ratio. Planting pattern 4:2 (soybean: pigeonpea) recorded highest values of gross monetary return, net monetary return and cost: benefit ratio. The experiment showed that the soybean (JS-335) + pigeonpea (BSMR-736) intercropping system with 4:2 planting pattern can give higher production.

**Key words :** Intercropping, Remunerative, Net monetary return, Gross monetary return, Cost : Benefit ratio.

**T**he most universally applicable mechanism of intercropping is that if one crop fails or grow poorly the other can compensate. Such compensation clearly can not occur when crops are grown separately. In intercropping two or more crops are grown in different row proportions so that highest yield and net profit may be obtained under various environmental conditions. When crops with different growth habits are grown together, it may be possible to exploit better plant nutrients and moisture from different soil layers and interception of light, energy can be utilized more efficiently. Further risk due to disease and pest may be reduced. Besides this the weed can be controlled more efficiently. Intercropping has opened up new avenues to boosting up production per unit time. Agro-climatic conditions of Marathwada are favourable for growing soybean and pigeonpea crops. Soybean is Miracle golden bean. It is used as edible oil, manufacturing chocolates, ghee etc. The soybean oil is used in manufacturing soaps, paints, rubber, lubricants, antibiotics etc. Area under soybean cultivation has been increased rapidly due to short duration, good market price, high economic value, nutritional value, easy cultivation practices and high production potential. Pigeonpea has high market price. It is hardy plant that can intercropped with a cereal and ensure a measure of income stability. It is a main source of protein for vegetarian population of the country. Pigeonpea has high market value. The seeds of both the crops contain high protein *i.e.* 40% and 22.3%, respectively. The intercropping of these two crops can stabilize the crop productivity in dry land areas and increase it in rainfed areas under existing inadequate land and rainfall situation.

College Farm, Latur during 2006-2007 on clayey soils. A Factorial Randomized Block design with three planting patterns and five intercropping system treatments, replicated three times was used. Three planting patterns *viz.* 6:3, 3:3 and 4:2 with five intercropping systems sole soybean (JS-335), sole pigeonpea (BSMR-736), soybean (MAUS-71) + pigeonpea (BSMR-736), soybean (MAUS-81) + pigeonpea (BSMR-736), soybean (JS-335) + pigeonpea (BSMR-736) were included in the investigation. The gross plot size was 6.0 x 5.4 m<sup>2</sup> and net plot sizes were varied according to planting patterns. The recommended fertilizer doses 30:60:30 kg NPK ha<sup>-1</sup> for soybean and 25:50:00 kg NPK ha<sup>-1</sup> for pigeonpea were applied to all plots. The crops were sown by dibbling method. Soybean was sown at 45x5 cm<sup>2</sup> and pigeonpea 45x20 cm<sup>2</sup> spacing. The data on the grain and straw yield of soybean and pigeonpea were recorded from the five plant samples selected randomly from each plot and economic analysis *viz.*, gross monetary return and net monetary return were carried out based on cost of cultivation, soybean and pigeonpea yield.

### **RESULTS AND DISCUSSION**

#### **Grain yield:**

The planting pattern 4:2 produced maximum grain yield of soybean and pigeonpea which was significantly superior over planting patterns 3:3 and 6:3. The growth characters *viz.*, number of functional leaves, leaf area, means dry matter accumulation and yield contributing characters *i.e.* weight of pods, number of pods, weight of grains and test were highest in planting pattern 4:2 which contributed for more grain yield per unit area. Similarly, corresponding growth and yield contributing characters of soybean and pigeonpea were also higher in

### **MATERIALS AND METHODS**

The experiment was carried out at Agriculture