

Comparative performance of different cropping systems based on pigeonpea (*Cajanus cajan*)

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Received: 8 July 1993

ABSTRACT

An experiment was conducted during 1985-86 and 1987-88 under upland condition to study the comparative performance of pigeonpea [*Cajanus cajan* (L.) Millsp.] based cropping systems. Pigeonpea-wheat [*Triticum aestivum* (L.) emend Fiori & Paol.] gave the highest total biological yield (11.70 tonnes/ha) and grain yield in pigeonpea-yield equivalent (2.84 tonnes/ha), which was significantly higher than that obtained in pigeonpea-ratoon (cutting) and pigeonpea-ratoon (picking) systems. Pigeonpea-wheat cropping system proved more economical, with a net profit of Rs 10 814/ha than pigeonpea-ratoon (cutting) and pigeonpea-ratoon (picking). However, benefit : cost ratio was highest (1.89) in pigeonpea-ratoon (cutting), followed by pigeonpea-ratoon (picking), and the lowest (1.17) in pigeonpea-wheat system.

With the introduction of short-duration, early-maturing varieties of pigeonpea [*Cajanus cajan* (L.) Millsp.], double cropping can be done without loss in production of the succeeding crop. In irrigated areas cultivation of short-duration varieties of pigeonpea under double or multiple cropping system has opened a new avenue for increasing pulse production. Perennial nature of pigeonpea and ratooning enable 2 harvests a year from 1 sowing (Pandey 1983). The present experiment was conducted to study the comparative performance of pigeonpea-based cropping systems, and of 2 crops of pigeonpea grown in a year.

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MATERIALS AND METHODS

The experiment was conducted during 1985-86 and 1987-88 on silty clay-loam soil with 3 short-duration varieties of pigeonpea ('T 21', 'UPAS 120' and 'Pusa 78') in 3 pigeonpea-based cropping systems at Faizabad. The cropping systems were: S₁, pigeonpea 'Sonalika' wheat (*Triticum aestivum* L. emend. Fiori & Paol.); S₂, pigeonpea ratoon (by cutting); and S₃, pigeonpea ratoon (by picking). All the treatments were tested in randomized block design with 3 replications in plots of 6 m x 4 m each. The pigeonpea was sown during the rainy season (*kharif*); in July and the first crop was harvested during November-December. In S₁ cropping system 'Sonalika' wheat was sown soon after pigeonpea harvest. In ratooned crop, pigeonpea plants were cut at 30 cm height above the ground-level in S₂ and mature pods were pick-