

## Short Communications

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### Evaluation of different cropping systems under irrigated upland conditions

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A field experiment was conducted during rainy and winter seasons of 1990–91 and 1991–92 at Modipuram, to evaluate productivity and profitability of different cropping systems under irrigated upland conditions of western Uttar Pradesh.

The soil of experimental field was sandy loam having organic carbon 0.47%, available  $P_2O_5$  19 kg/ha and available  $K_2O$  238 kg/ha with slightly alkaline reaction. Six cropping systems involving 'Saket 4' rice (*Oryza sativa* L.) and 'Ganga Safed 2' maize (*Zea mays* L.) in rainy season and 'HD 2329' wheat (*Triticum aestivum* L.

emend. Fiori & Paol.), 'Pant G 114' gram (*Cicer arietinum* L.) and 'Varuna' Indian mustard [*Brassica juncea* (L.) Czernj. & Cosson] in the winter were tested in randomized block design with 3 replications. Respective recommended package of practices were followed in each crop.

Yield of rainy-season and winter-season crops and total productivity of different cropping systems in terms of wheat equivalent showed a perceptible variation (Table 1) and recorded significantly higher total productivity (117.7 q/ha) in rice–wheat

**Table 1.** Productivity and net return of different cropping systems under irrigated upland conditions (mean data of 2 year)

| Cropping system      | Grain yield (q/ha) |               | Total productivity of cropping system in terms of wheat equivalent | Net return (Rs/ha) |
|----------------------|--------------------|---------------|--------------------------------------------------------------------|--------------------|
|                      | Rainy season       | Winter season |                                                                    |                    |
| Rice–wheat           | 65.35              | 55.35         | 117.71                                                             | 15,918             |
| Rice–gram            | 67.86              | 18.23         | 101.56                                                             | 15,666             |
| Rice–Indian mustard  | 61.79              | 18.31         | 105.25                                                             | 15,677             |
| Maize–wheat          | 25.78              | 58.16         | 78.73                                                              | 8,227              |
| Maize–gram           | 27.34              | 20.83         | 67.19                                                              | 8,430              |
| Maize–Indian mustard | 26.04              | 17.27         | 66.93                                                              | 7,552              |
| CD ( $P = 0.05$ )    |                    |               | 4.39                                                               | 2,563              |

Rice Rs 2.40/kg, maize Rs 2.10/kg, wheat Rs 2.60/kg, gram Rs 5.40/kg, Indian mustard Rs 6.50/kg

cropping system as wheat equivalent, followed by rice—Indian mustard (105.2 q/ha). However, lowest total productivity of cropping system as wheat equivalent was recorded in maize—Indian mustard (66.90 q/ha) cropping system. The results are in accordance with the findings of Reddy and Willey (1982) and Niranjana and Gangwar (1990).

The highest net return was found with rice—wheat cropping system, followed by rice—gram. The higher net return in rice—wheat cropping system was due to higher total production of the system, while higher net return in rice—Indian mustard and rice—gram cropping systems was owing

to high prices of Indian mustard and gram. Thus rice—wheat cropping system followed by rice—Indian mustard appeared the most remunerative cropping system compared with the other cropping systems tested under irrigated upland conditions of north-western Uttar Pradesh.

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### Effect of row ratio, nitrogen and irrigation in wheat (*Triticum aestivum*) and chickpea (*Cicer arietinum*) intercropping system

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The nitrogen requirement of wheat (*Triticum aestivum* L. emend. Fiori & Paol.) crop is much higher than of chickpea (*Cicer arietinum* L.). But when wheat is to be grown along with chickpea some of the fixed nitrogen by the chickpea is likely to be available for wheat at later stage of growth. Though nitrogen application in 3 splits is recommended, the later split of N can be saved, if the crop is grown along with chickpea. Therefore an experiment was

conducted at Raipur, during the winter season 1988–89 using split-plot design.

There were combinations of 3 schedules of irrigation based on pan evaporation (0.5, 0.7 and 0.9 IW : ratio) in main plot and 8 different intercropping systems in subplots, viz. S<sub>1</sub>, sole wheat; S<sub>2</sub>, sole chickpea; S<sub>3</sub> and S<sub>4</sub>, wheat : chickpea (2 : 1 ratio) with 100% and 75% of recommended level of nitrogen respectively; S<sub>5</sub> and S<sub>6</sub>, wheat : chickpea (2 : 2 ratio) with 100% and 75% of nitrogen;