Journal of Agricultural Resource Management, 4 (Suppl.) June 2005 : 105-107

15

CEREAL-CLOVER BICROPPING : A NEW APPROACH FOR SUSTAINING FODDER AND CROP PRODUCTIVITY

Inder Dev, Bimal Misri, Sudesh Radotra and Sindhu Sareen

Regional Research Centre, Indian Grassland and Research Institute
CSK HPKV Campus, Palampur (H.P) 176 062 India

Email : inderdev@lycos.com, inderdev@india.com

Extended Summary

meet the demand of ever-increasing human and livestock population the efficient management of available ural resources is critical for sustaining productivity in hills. About 57% (188 m ha) of the geographical area is ected by various land degradation problems (Sharda, 2004). Because of small land holdings farmers are unable re even a small piece opf land for fodder cultivation. Therefore integration of fodder cultivation with the extant ming systems which can conserve resources, produce fodder and improve productivity of grain crops is of ime importance. Growing crops in mixed stands are regarded as more productive than growing them as sole ops (Andrrew and Kassam, 1976; Willey, 1979). White clover, a perennial forage legume, provides excellent dder and because of its morphological features, is a compatible companion crop for bi-cropping. If grown along ith ceral crops, their productivity is enhanced and the farmers obtain fodder as well cereals from the same unit rea. Therefore the present study entitled, " Cereal-clover bicropping. A new approach in sustaining fodder and rop producitivity" was designed to integrate white clover in the hill farming system to obtain systainable herbage nd grain production.

Objectives :

1. To evolve technology for introducing a pasture legume (white clover) into the existing cropping system of hills
2. To harvest sustained fodder as well as food grains from same unit of land.

In an established sward of white clover during 2002 wheat was sown in the sward during *Rabi* season followed by maize. The seeds of the crops were drilled (minimum tillage) into the sward. The trial was laid out at IGFRI Regional Centre, Palampur Farm. Eleven treatments laid out in Randomized Block Design (RBD) with three replications. Treatments were ; T-1 (wheat - maize (Recommended dose); T2 - (white clover + wheat - maize (without N fertilizer); T3 - (white clover + wheat (50%N) - maize (50%N) - maize(100%N); T6 - (white

clover + wheat (75%N) - maize (50%N); T7 - (white clover + wheat (75%N) - maize(75%N); T8 - (white clover + wheat (75%N) -maize (100%N); T9 - white clover + wheat (100%N) - maize (50%N); T10 - (white clover + wheat (100%N) - maize (75%N); T11 - (whtie clover + wheat (100%N) - maize (100%N). Fertilizer application was done as per treatment details.

The grain yield of wheat sown in white clover sward was obtained 25 q/ha when 75% fertilizer was applied against 27.5 q/ha from the standard check (Table 1). Similarly the maize yield from the same sward was 23 q/ha against 26 q/ha from the control. The results indicated that 75% N application (T6,T7 and T8) and 100% N application (T9, T10 and T100) to wheat crop produced statistically at par wheat seed yield, however in treatments T3, T4 and T5, where 50% of N (T3, T4 and T5) was applied to wheat crop, produced statistically lower yields as compared to 75, 100% N applications and standard check of wheat and maize. (T1). Similar trend was observed in case of maize grain production. The results indicated that 25% N requirement in wheat and maize was compensated by while clover due to biologically fixed N. From two cuts of white clover on an average the green herbage produced varied from 17 t/ha to 26 t/ha. The herbage produciton did not show any significant difference

Table 1. Average maize, wheat grain and white clover herbage production from different treatments

Treatments	Grain yield (q/ha)		Herbage production (t/ha)
	Maize	Wheat	White clover
T1 - Wheat - Maize (Standard check)	25.88	27.50	-
T2 - White clover + Wheat - Maize (No fertilizer)	10.32	14.17	21.17
T3- White clover + Wheat (50% N) - Maize (50% N)	14.57	17.22	23.67
T4 - White clover + Wheat (50% N) - Maize (75% N)	23.01	19.17	27.17
T5- White clover + Wheat (50% N) - Maize (100% N)	25.07	18.70	18.33
T6 - White clover + Wheat (75%N) - Maize (50% N)	15.72	23.80	24.50
T7 - White clover + Wheat (75%N) - Maize (75%N)	21.98	24.90	17.33
T8 - White clover + Wheat (75%N) - Maize (100%N)	23.15	25.12	22.50
T9 - White clover + Wheat (100%N) - Maize (50%N)	16.33	27.20	23.17
T10 - White clover + Wheat (100%N) - Maize (75%N)	22.54	27.01	23.00
T11 - White clover + Wheat (100%N) - Maize (100%N)			

It can be concluded for getting a sustained fodder as well as cereal crops in order to feed ever increasing livestock as well as ever increasing human population it is important to integrate of fodder legume (white clover) with main crops of maize and wheat. The nitrogen fixed by the white clover in the system could save up to 25% N application of the main crops.

ences

. D.J. and Kassam, A.H. 1976. In Multiple Cropping (R.I. Papendick,P.A. Sanchez and G.B. Triplett, eds.). pp 1-10 Pub. No.27 Am. Soc. of Agron., Madison, Wisconsin.

V.N 2004. Principles, concepts and need for conservation of natural resources, In :eds (A.S. Misra and V.N. Sharda). Summer school on Participatory Integrated Watershed Management (1st July to 21st July, 2004). pp 1-16.

R.W. (1979). *Field Crops Abstracts. 32* : 1-10. 73-85.