

Response of hybrid rice (*Oryza sativa* L.) to green leaf manure, FYM and chemical fertilizers

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ABSTRACT

A two year field experiment was undertaken during wet season of 1998 and 1999 to study the effect of chemical fertilizers and green leaf manuring or FYM in combination with chemical fertilizers on growth, yield attributes and yield of hybrid rice, uptake of nutrients and content of nutrients in soil after cropping. Different treatments consisting of combined application of green manuring or FYM with chemical fertilizers significantly influenced the yield attributes and yield compared with suboptimal recommended dose of fertilizers and control. Application of organic manures or green leaf manures in conjunction with chemical fertilizers significantly influence the N, P and K uptake in grain and straw of rice compared to control. Available N, P and K contents were also significantly affected by combined application of organic manures, green manures with chemical fertilizers compared to control.

Key words : Green leaf manure, Hybrid rice, Chemical fertilizer, Organic manure

INTRODUCTION

The rising cost of fertilizers and need to conserve plant nutrients by recycling them focuses attention on organic materials as sources of fertilizer elements. The organic manures presently provide on an average only 23 kg nutrients per ha in India. This can be increased considerably by proper utilization of available organic material. The continuous unbalanced use of fertilizers in cropping system often leads to disproportionate nutrient availability and adverse effect on physico-chemical properties of soil which finally results in to decline crop yields. The integrated use of organic manures, green manures and chemical fertilizers can help to maintain optimum crop yields and required soil nutrient pool on a sustained basis. Thus, there is a vast scope for increasing nutrient supply through use of green manures, organic manures and use of improved varieties. However, there

is no scope for reducing the consumption of chemical fertilizers since the level of crop productivity is not only to be maintained but it is to be increased in the coming years which is presently not possible without the use of chemical fertilizers. The fertilizer use should be promoted till a full proof low input technology for higher productivity is available. Therefore, study has been formulated to find out response of hybrid rice to green leaf manuring, FYM and integrated nutrient supply system.

MATERIALS AND METHODS

The experiments were conducted at Agronomy Farm, Konkan Krishi Vidyapeeth, Dapoli for two consecutive seasons, 1998-99 and 1999-2000. The soil of the experimental plot was clay loam in texture, medium in available nitrogen (295.22 Kg/ha), low in available phosphorus (12.96 Kg/ha) and potassium (105.03 Kg/ha).

Table 1: Details of treatments and symbols used

Symbol	Treatments	
	<i>Kharif</i> (rice)	<i>Rabi</i> (groundnut)
T ₁	No organic manures, No chemical fertilizers	No organic manures, No chemical fertilizers
T ₂	50% recommended NPK through fertilizers	75% recommended NPK through fertilizers
T ₃	50% recommended NPK through fertilizers	100% recommended NPK through fertilizers
T ₄	75% recommended NPK through fertilizers	75% recommended NPK through fertilizers
T ₅	100% recommended NPK through fertilizers	100% recommended NPK through fertilizers
T ₆	100% recommended NPK through fertilizers	75% recommended NPK through fertilizers
T ₇	75% recommended NPK through fertilizers	100% recommended NPK through fertilizers
T ₈	50% recommended NPK through fertilizers + 50% N through FYM	75% recommended NPK through fertilizers
T ₉	75% recommended NPK through fertilizers + 25% N through FYM	100% recommended NPK through fertilizers
T ₁₀	50% recommended NPK through fertilizers + 50% N through Glyricidia	75% recommended NPK through fertilizers
T ₁₁	75% recommended NPK through fertilizers + 25% N through Glyricidia	100% recommended NPK through fertilizers