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Research Paper :

Estimation of energy requirement for groundnut cultivation in Karnataka

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ABSTRACT

The energy analysis made in the dry track of Karnataka indicated that cultivation of irrigated groundnut required significantly higher energy than cultivation of rain fed groundnut. Seedbed preparation, weeding, irrigation and harvesting were found to be most energy intensive operations. The rain fed groundnut required two times more renewable energy than irrigated crop. On the other hand the irrigated groundnut required three times more non-renewable energy than rain fed crop. Cultivation of rain fed groundnut was found to be more economical in terms of energy input than that of cultivating irrigated groundnut.

Key words : Groundnut, Output energy, Input energy

Indian agriculture has been experiencing a remarkable change during the last three decades with the introduction of high yielding varieties and new crop production practices. In this process, production agriculture has emerged as one of the major consumers of commercial non-renewable energy in the form of diesel, electricity, chemicals fertilizers, machineries, etc. On the other hand the relative impotence of the use of non-commercial energy sources like draught animals and organic manure is decreasing. The escalating prices of oils and other fuels, and limitations on the supply of commercial energy sources coupled with rising demands have created the need for better analysis of the energy costs and returns of various crop production systems. The quantification of energy flows in agriculture is necessary for the development of better energy management measures. This involves a methodical examination and review of the various energy inputs and outputs of the system. Rao and Singh (1981) analyzed the energy economics of cereal crops based on inputs of material and time. Singh *et al*. (1981) studied energy inputs for cultivation of paddy, cotton, maize and wheat in Punjab and found that a mechanical source was the major energy input. Devasenapathy *et al*. (1989) studied energy required for sorghum crop and observed that irrigation consumed about 60 per cent of the total energy input. The impact of implements on the energy use pattern of dry land farms was studied in Tamil Nadu and found that the use of improved implements reduced the bullock energy and increased the speed of operation (Rajeswaran *et al*., 1990). Farming systems with high energy intensity showed higher yields over low energy intensity (Dash and Das, 2000).

The agro-climatic conditions of Karnataka State permit to grow all types of crops under rain fed and irrigated conditions. Although there are many crops grown in the eastern dry track of Karnataka with an annual rainfall less than 900 mm, groundnut is accounted for a large cultivated area both under rain fed and irrigation. The small and marginal farmers cultivate nearly 60 per cent of the total cultivable land. Draught animals are the major power source available on the farm followed by women labour for rising crops. The available energy input is about 0.34 kW/ha compared to the all India average of 0.50 kW/ha. The groundnut cultivation in Karnataka is depended on rain fall and time bound operation and most of the farmers are still following traditional methods of crop cultivation using limited energy inputs.

METHODOLOGY

The study was carried out at Hariyabbe village in Hiriyur taluk of Chitradurga District in Karnataka, to study the energy requirement for the production of groundnut. The magnitude of production of *Kharif* crops was used as the main criterion in the selected village for the study. A list of farm holdings of the entire village was prepared and classified into four categories; marginal farmers (MF), small farmers (SF), medium size farmers (MSF), and large farmers (LF) having land holdings <1, 1- 2, 2-4 and 4 ha and above, respectively. The farming operations were carried out mainly by human and animal power using indigenous implements and hand tools. The families were selected on a random basis in each category of farmers. The information on use of direct energy (human, animal, diesel, electricity, etc.) and indirect energy (seed, farm