

Study of input and output parameters on energy requirement in cotton crop production

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■ **ABSTRACT** : The present research work has been carried out in Akola district, the aim of this research was to determine the energy input and output involved in cotton production. The operations considered were land preparation, sowing, intercultural, harvesting and crop residue management etc. The inputs like human power; bullock powers for traditional operation were studied in entire work of the research. The non significant relationship of this variable with output energy indicates that this variable did not affect output energy of farm. The other variables were found to be highly and positively significant with the output energy. Variables namely area under cultivation, power sources, irrigation, hoeing and input energy showed highly significant with yield and output energy and contributed 82 per cent variation in production and 92 per cent contribution in variation with output energy.

■ **KEY WORDS** : Input output parameters, Energy requirement, Cotton crop

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Effective use of energy is one of the conditions for sustainable agricultural production. Energy budgets for agricultural can be used as building blocks for life cycle assessments that includes agricultural crop production and serve as a first step towards identifying crop production processes that benefit most from increasing efficiency. Enhanced input of energy and improvement in its quality play an important role in the development of all technologies including those associated with agricultural production. Investigation on the use of energy per unit area for different crops are very important particularly at times when the country is facing energy crisis undertaking investigation, which will forecast requisite data on the issues, will certainly be most welcoming and acceptable. It becomes necessary to study energy use pattern and also to study the possibility of optimizing the returns by re-allocation of energy input resources.

Economy of Vidarbha farmers mainly depend upon production of cotton. There are two categories of cotton crop namely, *Gossipum hirsutum* (American) and *Gossipum arborium* (Deshi) sown in Vidarbha. For these, American and local cotton there are various high yielding hybrid varieties adopted by farmers. Energy forms one of the most crucial inputs in agriculture. The patterns of energy use in agriculture are crucially linked with the level of technology adopted. It

also depends upon the cropping pattern which differs from region to region. Study on the use of energy in agriculture has received a great deal of emphasis in recent years with the increasing modernization of traditional agriculture, energy in agriculture varies according to the type of farming area, the size of farm and level of technology. With the introduction of high yielding varieties, there has been an increased productivity per hectare. Such desired result, however, could be achieved only through adoption of package of improved practices and timely completion of various farm operations.

Sufficient energy is needed in right form and the right time for adequate crop production. Energy is regarded as a factor for crop production. The findings of the study also indicate the energy use pattern in cotton crop, factor of production, and its restricted availability affects the economy adversely. The study was focused on the energy use pattern on farms (small, medium, large) and their impact on crop yield for various energy inputs in total cost of production. The new production technologies require a large quantity of inputs, such as fertilizers, irrigation, plant protection chemicals, and electricity. The application of these inputs demand for increasingly higher use of energy from human, animal and machinery. Detailed energy censuses and resources availability surveys have been conducted in Akola district.