



## Low External Inputs in Sustainable Agriculture (Leisa)

**Himanshu Tiwari<sup>1\*</sup>,  
R.K. Naresh<sup>1</sup>,  
Suneel Kumar<sup>2</sup>,  
Raisen Pal<sup>2</sup>**

<sup>1</sup>Department of Agronomy;

<sup>2</sup>Department of Soil Science &  
Agricultural Chemistry  
Sardar Vallabhbhai Patel  
University of Agriculture &  
Technology, Meerut, (UP), India



Open Access

\*Corresponding Author

**Himanshu Tiwari\***

### Article History

Received: 10.05.2022

Revised: 17.05.2022

Accepted: 22.05.2022

This article is published under the terms of the [Creative Commons Attribution License 4.0](https://creativecommons.org/licenses/by/4.0/).

### INTRODUCTION

Low external-input sustainable agriculture (LEISA) is a term that refers to farming practices that are conducted with three key goals; environmental conservation, economic profitability and social equality. It can simply be described terms referred to as responsible farming. It entails farming with the goal of obtaining better yields while also making sure that the environment is well protected to support farming even in several years to come. LEISA is based on the principle is that poor farmers, lacking capital and access to credit, need techniques with which they can improve yields and income without using expensive inputs or without degrading the resource base on which they depend. As a result, sustainable agriculture is beneficial because, it helps in the preservation of the natural ecosystem, thus healthy produce.

### WHAT IS LEISA?

Low-External-Input and Sustainable Agriculture (LEISA) is agriculture which makes optimal use of locally available natural and human resources (such as soil, water, local plants and animals, vegetation, human labour, skill and knowledge) and which is economically feasible, culturally adapted, ecologically sound and socially justice. (Reijntjes, Haverkort and Waters-Bayer, Farming for the Future, 1992).

### BASIC CONCEPTS OF LEISA:

- LEISA aims for long-term stability and adequate production level.
- LEISA practices must be developed within each ecological and socio-economic systems.
- LEISA incorporates that best component of indigenous farmers knowledge and practices, ecologically -sound agricultural practices.
- Optimize the best possible use of locally available resources.

**NEEDS OF LEISA:**

Low external input sustainable agriculture systems are designed to use existing soil nutrient and water cycles, naturally occurring energy flows for food production. As well as such systems aim to produce nutritious and quality food. Such systems have tended to avoid the use of synthetically compounded fertilizers, pesticides, livestock feed additives, growth regulators, instead relying upon crop rotations, animal manures, crop residues, legumes, off-farm organic wastes, green manures, appropriate mechanical cultivation, and mineral bearing rocks to maintain soil fertility and productivity.

**LEISA PRACTICES FOCUSES ON**

- Reducing the use of non-renewable fuels and energy sources.

- Ensuring that agricultural practices help to shape positive landscapes and long-term sustained ‘**life support systems**’ for small scale farmers.
- Maximizing the best possible use of locally available resources.
- Right of local communities to manage, control and benefit from natural resources.

**BASIC PRINCIPLES OF LEISA:**

1. Water conservation
2. Soil conservation techniques
3. Enhance soil microbial activity
4. Maintain animal-plant relationship
5. Use solar energy
6. Use of locally available resources



Figure 1. Six different components of low input sustainable agriculture (LISA)

## TECHNIQUES AND PRACTICES OF LEISA:

1. Integrated nutrient management (INM)
2. Integrated pest management (IPM)
3. Organic manuring
4. Intercropping
5. Practices for avoid Land Degradation
6. Converting Farm Wastes into useful Organic Manure under the LEISA system

## BENEFITS OF LEISA:

- It does not advocate for the use of chemicals and commercial fertilizers.
- This reduces certain harmful effects on the environment that can pollute it.
- This preserves the natural environment, resulting healthy produce.
- It promotes the culture of animal husbandry through feeding on natural feeds.
- There is better protection of animal species, creating a natural balance in the ecosystem.
- Farmers are able to bring up healthy animals.
- These can fetch the best in the market values.
- Another benefit of sustainable agriculture is biodiversity.
- It promotes for the production of various kinds of plant and animal species.
- Plants are cultivated in rotations.
- This results to enriched soil and also prevention of the spread of diseases and pests outbreaks.

## LIMITATIONS OF LEISA:

- It also hinders the full exploitation of land, labour and capital because it advocates for the use of productive resources sparingly.
- It limits the proper land usage.

- Income that is generated from farming is also very limited due to sparingly use of land.
- It is difficult to maintain the fertility of soil by simply rotating crops.

## CONCLUSIONS

Agricultural practices are current unsustainable. Sustainable agriculture supports communities, local economies and the environment. Farmer's preferences for low-input systems vary significantly, depending on the stage of crop production. There is considerable interest among farmers in low-input approaches for most phases of crop production, 40-80 % of conventional farmers expressed interest in low-input practices. The major antecedent of preference for low-input practices was the farmers' level of concern about pollution, followed by their support for agricultural research. Preference for low-input practices did not bear a major relationship to general or agriculturally-related political ideology, attitudes toward the farm crisis or federal commodity programs, and profit orientation. There was no strong pattern for small or part-time farmers to be a disproportionately large constituency for low-input practices. The pattern of results was consistent with established agro-ecological knowledge, indicate that the production practices.

## REFERENCES

- Ruben, R., & Lee, D. R. (2000). Combining internal and external inputs for sustainable intensification. *Combining internal and external inputs for sustainable intensification.*, (65).
- Sarkar, D., Kar, S. K., Chattopadhyay, A., Rakshit, A., Tripathi, V. K., Dubey, P. K., & Abhilash, P. C. (2020). Low input sustainable agriculture: A viable climate-smart option for boosting food production in a warming world. *Ecological Indicators*, 115, 106412.