

Importance of Green Manuring in Crop Production

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Green manuring can be defined as the growth of a crop for a specific purpose for incorporating it into the soil while green, or soon after maturity with a view to improving the soil and benefiting subsequent crops or the practice of ploughing or turning into the soil undecomposed green plant tissues for the purpose of improving physical condition as well as fertility of the soil.



Objectives of green manuring

1. Increasing organic matter content of soil
2. Maintain and improve soil structure
3. Reduce the loss of nutrients, particularly nitrogen
4. Provide a source of nitrogen
5. Reduce the soil loss by erosion

Types of green manuring

The practice of green manuring is adopted in various ways in different states of India to suit soil and climatic conditions. Broadly speaking, the following two types of green manuring can be differentiated.

Classification of Green manuring

Classified into two groups as

I. Green manure *in situ*

II. Green leaf manuring

I. Green manuring *in situ*: In this system, green manure crops are grown and buried in the same field which is to be green manured either as a pure crop or as intercrop with the main crop. This is most common green manure crops grown under this system are sunnhemp (*Crotalaria juncea*), daincha (*Sesbania aculeate*), Pillipesera (*Phaseolus trilobus*) and guar (*Cyamopsis tetragonoloba*).

- The green manure crops are mostly legumes which are fast growing and yield substantial succulent vegetation.
- There is little or no preparatory cultivation.
- Sowing is effected by broad cast adopting a heavy seed rate.
- Green manuring can be safely adopted for irrigated and irrigated dry crops.
- viz rice , tuber crops ,vegetables and orchards In case of dry crops it is unsafe because of limiting moisture.
- But when rains are sufficient and evenly distributed green manuring could be followed even under rain fed conditions when the rain fall is above 900 mm (Application of lime is suggested to neutralize organic acids that are formed during decomposition (Bone meal preferred).

Green manure crops

1. Sunnhemp (*Crotalaria juncea*)

- i) It is a unique crop possessing, fiber, fodder and green manurial value with nutrient composition of 2.3% N, 0.2% P and 1.4% K.
- ii) It can be raised beneficially for irrigated dry conditions.
- iii) Under high rain fall conditions it is grown in dry lands.
- iv) Grown in medium fertile soils.
- v) Seed rate is 45 kg ha⁻¹.
- vi) Green matter yield 9-17 tonnes ha⁻¹.

2. Daincha (*Sesbania aculeate*) and (*Sesbania speicosa*)

- i) They are erect growing deep rooted crops and useful to open soil and improve drainage in heavy soils.
- ii) Nutrient composition (3.5% N, 0.3% P and 1.0% K).
- iii) These crops are grown on heavy soils.
- iv) They are non fodder crops and non palatable.
- v) They correct sodic soils specially *S. speicosa* as it is less woody and less fibrous ,which gives heavy foliage and easily decomposable.
- vi) Seed rate 30 kg ha⁻¹.
- vii) Yield 5 tonnes ha⁻¹.

3. Indigo (*Indigofera tinctoria*)

- i) Slow growing, deep rooted drought resistant crop
- ii) It is not relished by cattle
- iii) Can be grown in fruit gardens and plantations during non monsoon
- iv) Seed rate is 20 kg ha⁻¹
- v) Yield is 5 tonnes ha⁻¹

4. Wild indigo (*Tephrosia purpurea*)

- i) It is suited for hard coarse gravelly textured soil and poor soils
- ii) It is used as a green leaf manure also
- iii) Self grown crop when sown once
- iv) Suitable for unirrigated orchards like mango, sapota
- v) Nutrient composition crop (1.8% N, 0.1% P and 0.3% K leaf 3.2% N, 0.1% P and 1.2% K)

II. Green leaf manuring

Green leaf manuring refers to turning into the soil green leaves and tender twigs collected from shrubs and trees grown on bunds, waste lands and nearby forest areas. The common shrubs and trees used are Glyricidia (*Sesbania speciosa*) and Karanj (*Pongamia pinnata*) etc.

Advantages of green manuring *in situ*

1. Green manure crops can be chosen to suit the soil, season, water facility and cropping pattern.
2. Reduces expenditure on collection and transportation of green leaf.
3. It is easy to incorporate the green manure crop in right time.
4. It reduces the loss of nitrogen from the soil.

Limitations of green manure crops *in situ*

1. There must be sufficient time available for growing the green manure crop, nearly 2- 3 months.
2. Extra expenditure has to be incurred for growing green manure crop.
3. Some of the green manure crops are of fodder value, they are liable for cattle tress pass.
4. They are susceptible for pests and diseases as such they may harbour them as alternate hosts.
5. Need timely rainfall or irrigation etc for growing.
6. Seeds may not be available in time.

Advantages of green leaf manuring

1. All the quantity of green leaf applied is entirely an addition to soil—neither the moisture nor nutrients are utilized from the soil
2. There is no fear of spread of pests and diseases
3. It can be adopted at any time irrespective of the season.

Limitations of green leaf manuring

1. The green leaf is not available everywhere exception for sturgeon sand waste lands.
2. Green leaf whichever is available has to be used without choice.
3. Green leaf may not be available sufficient quantity in all seasons.
4. Extra expenditure on collection and transport has to be incurred.

References

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