

GREEN MANURE

Incorporation of green plant residues as green manure for improvement of soil fertility is known to mankind since ages. **Green manuring can be defined as a practice of ploughing or turning into the soil, undercomposed fresh green plant tissue for the purpose of improving fertility status, physical and biological condition of the soil.**

- This practice was initiated in China as early as 1134 B.C.
- In 1988-89, 6.2 million ha. were reported to be under green manuring comprising 60% area and 80% area was located in 6 (six) State of U.P., A.P., M.P., Karnataka, Orissa and Punjab.

Characteristic of Green Manuring Crops:

- Capable of establishing and growing quickly.
- Tolerant to adverse climatic conditions such as drought, water logging, high and low temperatures etc and tolerant to pests and diseases.
- Should possess adequate *Rhizobium* nodulation potential and must be effective nitrogen fixer.
- Should be capable of growing very fast and capable of accumulating sufficient fixed N in 4-6 weeks.
- Easy to incorporate and quickly decomposable.

Types of Green Manures:

- a) **GREEN MANURING IN SITU:** Green manuring crops are grown and buried in the crop field either as a pure crop or as an intercrop with the main crop. Sunhemp (*Crotolaria juncea*), Dhaincha (*Sesbania aculeata*), Cluster bean (*Cymopsis tetragonoloba*), Cowpea (*Vigna sinensis*), Khesari (*Lathyrus sativus*), Berseem (*Trifolium alexandrium*) Green Gram (*Vigna radiata*), etc. are the common green manuring crops.

- b) **INTRODUCED GREEN LEAF MANURING:** It is a collection of leaves and tender twigs from shrubs and trees grown on bunds, waste land and nearby forest areas and incorporate them into cultivable fields. The common shrubs and trees used for green leaf manuring are Ipomea, Jatropha gossipifolia, different fodder crops, green manuring crops etc.

From decomposition and nutrient release point of view, the incorporated green matter consists of following fractions:

Water soluble fraction : Such as carbohydrates, Organic acids, soluble proteins, amino acids etc.

Insoluble fraction : Such as cellulose and hemicellulose.

Resistant fraction : Such as lignin.

List of some Green Manuring crops contributing Organic matter and Nitrogen to the soil

Local Name	Botanical Name	Growing season	Output in 45-60 days	
			Green matter (MT/ha)	Nitrogen contribution (Kg/ha)
Sunhemp	Crotolaria juncea	Wet	21.2	91
Dhaincha	Sesabania aculeata	Wet	20.2	86
Green gram	Vigna radiata	Wet	8.0	42
Cowpea	Vigna sinensis	Wet	15.0	74
Guar	Cyamopsis tetragonoloba	Wet	20.0	68
Khesari	Lathyrus sativus	Dry	12.3	66
Berseem	Trifolium alexandrium	Dry	15.5	67

MERITS OF GREEN MANURING

1. Contribute N ranging from 50-175 Kg/ha.
2. Huge quantity of Organic matter is added to the soil.
3. Increases water and nutrient holding capacity of the soil.
4. Increases microbial population in the soil.
5. Improves physical condition of soil and increases the availability of various macro and micro nutrients.
6. No adverse impact on soil and environment, hence environment friendly and help in maintaining the fertility of the soil in long term.

Tips for harvesting maximum benefits from green manuring

1. **Choice of crop.**
2. **Time of sowing.**
3. **Time of Incorporation into the soil.**
4. **Time gap between incorporation & sowing of next crop** – Time required for complete decomposition of the turned in green matter before planting the next crop depends upon :
 - a. Weather condition.
 - b. Nature of the buried green materials.
 - c. Soil texture and availability of moisture.