

AI-3201 PRINCIPLES AND PRACTICES OF CROP PRODUCTION

UNIT 4.3



SPECIAL CROP PRODUCTIONS OF GREEN MANURES & FODDER CROPS

Special purpose crops grown for green manure and fodder play critical roles in enhancing soil fertility, providing animal nutrition, and supporting sustainable agricultural practices. In Tamil Nadu, several crops are cultivated specifically for these purposes:

Green Manure Crops:

1. Sunn Hemp (*Crotalaria juncea*): Sunn hemp is a popular green manure crop grown extensively in Tamil Nadu. It belongs to the legume family and is known for its ability to fix nitrogen in the soil through symbiotic relationships with nitrogen-fixing bacteria. Sunn hemp grows rapidly and produces abundant biomass, which can be incorporated into the soil to improve soil organic matter content and fertility. It also suppresses weeds and reduces soil erosion, making it beneficial for soil conservation efforts. Farmers often use sunn hemp as a cover crop during fallow periods or between main crops to rejuvenate the soil.

2. Dhaincha (*Sesbania spp.*): Dhaincha is another leguminous green manure crop cultivated in Tamil Nadu. It is known for its nitrogen-fixing ability and fast growth rate. Dhaincha improves soil fertility by adding organic matter and nitrogen through its biomass, which can be plowed back into the soil before planting subsequent crops. Farmers prefer dhaincha for its ability to enhance soil structure, water-holding capacity, and nutrient availability, particularly in rice-based cropping systems.

3. Horse Gram (*Macrotyloma uniflorum*): Horse gram is not only a pulse crop but also serves as a valuable green manure crop in Tamil Nadu. It is drought-tolerant and grows well in poor soils, making it suitable for enhancing soil fertility in marginal lands. Horse gram's deep root system improves soil aeration and nutrient cycling, benefiting subsequent crops in rotation systems. Farmers often grow horse gram during the off-season or as a cover crop to harness its soil-enriching properties.

Fodder Crops:

1. Napier Grass (*Pennisetum purpureum*): Napier grass is widely grown as a fodder crop in Tamil Nadu, especially for cattle and livestock. It is known for its high biomass production and nutritional value, providing essential nutrients like protein and fiber to animals. Napier grass is drought-tolerant and grows well in various agro-climatic conditions, making it suitable for fodder production throughout the year. Farmers cultivate Napier grass in fodder banks or as intercrops alongside other crops to ensure a steady supply of nutritious feed for their livestock.

2. Stylo (*Stylosanthes spp.*): Stylo is a leguminous fodder crop grown in Tamil Nadu for its high protein content and palatability to livestock. It improves soil fertility through nitrogen fixation and enhances fodder quality. Stylo is particularly suitable for dryland areas and can be grown as a perennial crop, providing reliable fodder supply during lean periods. Farmers often incorporate Stylo into pasture systems or use it for silage making to preserve fodder quality and availability.

3. Maize (*Zea mays*): While maize is primarily grown for grain production, it also serves as a significant fodder crop in Tamil Nadu. Maize silage is popular among dairy farmers for its nutritional value and energy content, supporting milk production in dairy animals. Maize fodder is grown extensively in irrigated areas and harvested at specific stages to optimize nutrient content for animal feed. Its versatility makes maize a staple fodder crop in mixed farming systems across the state.

The production and importance of green manures and fodder crops are significant in agriculture, contributing to soil fertility improvement, livestock nutrition, and overall sustainable farming practices. Here's an overview of their production and importance:

Production of Green Manures:

1. Green Manure Crops: Green manure crops are specifically grown to improve soil fertility through various mechanisms such as nitrogen fixation, organic matter addition, and soil structure improvement. Common green manure crops include legumes like:

- **Sunn Hemp (*Crotalaria juncea*):** Known for its rapid growth and nitrogen-fixing abilities. It enriches the soil with nitrogen and organic matter, suppresses weeds, and prevents soil erosion.
- **Dhaincha (*Sesbania spp.*):** Fast-growing and effective in adding biomass and nitrogen to the soil. It improves soil structure and fertility, particularly in rice-based cropping systems.
- **Horse Gram (*Macrotyloma uniflorum*):** Drought-tolerant and beneficial for marginal lands. Its deep roots improve soil aeration and nutrient cycling, enhancing overall soil health.

Production Process:

- **Cultivation:** Green manure crops are cultivated during fallow periods or as cover crops between main crops.
- **Management:** Farmers manage these crops to maximize biomass production and nitrogen fixation.
- **Incorporation:** At the end of their growth cycle, green manure crops are plowed back into the soil to decompose and release nutrients gradually.

Importance of Green Manures:

1. Soil Fertility Improvement:

- **Nitrogen Fixation:** Leguminous green manure crops fix atmospheric nitrogen into a plant-available form, reducing the need for synthetic fertilizers.

- **Organic Matter Addition:** Green manures increase soil organic matter content, enhancing soil structure, water retention, and nutrient availability.
- **Microbial Activity:** They promote beneficial microbial activity in the soil, supporting nutrient cycling and plant health.

2. Weed Suppression and Erosion Control:

- **Weed Suppression:** Dense foliage of green manure crops shades out weeds, reducing the need for herbicides.
- **Erosion Control:** Root systems of these crops bind soil particles, preventing erosion and improving soil stability.

3. Sustainable Agriculture:

- **Reduced Input Costs:** Using green manures reduces dependency on costly chemical fertilizers and promotes sustainable agricultural practices.
- **Environmental Benefits:** They contribute to soil conservation, water quality improvement, and biodiversity enhancement.

Production of Fodder Crops:

1. Fodder Crops: Fodder crops are cultivated primarily to feed livestock, providing essential nutrients like proteins, carbohydrates, and minerals. Common fodder crops include:

- **Napier Grass (*Pennisetum purpureum*):** High-yielding and nutritious, suitable for cattle and livestock throughout the year.
- **Stylo (*Stylosanthes spp.*):** Leguminous fodder crop with high protein content, improving soil fertility while providing nutritious feed.
- **Maize (*Zea mays*):** Used for both grain and fodder production, maize silage is popular among dairy farmers for its energy and nutritional value.

Production Process:

- **Cultivation:** Fodder crops are grown in dedicated fields or intercropped with main crops to ensure continuous availability.
- **Harvesting:** Crops are harvested at specific stages to optimize nutritional content and stored as green fodder or silage.
- **Feeding:** Fodder crops are fed to livestock to meet their nutritional requirements for growth, milk production, and health.

Importance of Fodder Crops:

1. Livestock Nutrition:

- **Nutrient-Rich Feed:** Fodder crops provide essential nutrients and energy to livestock, supporting growth, milk production, and overall health.
- **Seasonal Availability:** They ensure a consistent supply of nutritious feed, especially during dry seasons or when natural pastures are scarce.

2. Economic Benefits:

- **Livestock Productivity:** Improved nutrition from fodder crops enhances livestock productivity and profitability for farmers.
- **Diversified Income:** Selling surplus fodder or livestock products like milk and meat generates additional income for farm households.

3. Sustainable Livestock Management:

- **Health and Welfare:** Providing balanced diets through fodder crops ensures the health and welfare of livestock, reducing disease risks and veterinary costs.
- **Environmental Impact:** Efficient use of fodder crops minimizes environmental impacts associated with livestock farming, such as methane emissions and land degradation.

