Importance of forages

- Agriculture is the art and science of crop & animal production
  - Crop production is also to animal production
  - Animal production in turn for crop production
- Animal population need to be re-oriented
  - Unproductive to be given away
  - We have approximately
    - 20% of world’s cattle
    - 50% of buffaloes
    - More than 120 million goats and
    - 60 million sheep (Deb Roy, 1993)
- Natural gracing is limited
  - Crop wastes are recycled & but limited
- Hence
  - Exclusive cultivation and agronomic managements like
    - Control of bushes and weeds
    - Pasture establishment
    - Introduction of legumes/grasses
    - Fertilizer application
    - Cutting and grazing management are need of the hour

Forage grasses

Guinea Grass – *Panicum maximum*

- Season & varieties
  - Throughout year – CO 1
- Field preparation
  - Well drained soil with ridges & furrows, not at heavy clay
  - FYM 25t
• Seed rate
  o 2.5 kg /ha, Slips - 66,000 nos.

• Spacing
  o 50 x 30 cm

• Fertilizer
  o 50-50-40 NPK
  o 25 kg N at every cut

• Harvest
  o First cut at 75 DAS or 45 DAP, then at 45 days
  o Green fodder 175 t from 8 cuts
  o May be intercropped with Hedge Lucerne for nutritious fodder

Blou Buffel Grass / Anjan grass - Cenchrus glaucus

• Season & varieties
  o NE Monsoon – CO 1 (Neela Kolukkattai)

• Field preparation
  o Well drained soil high ca content with ridges & furrows
  o FYM 25 t

• Seed rate
  o 6-8 kg /ha

• Spacing
  o 50 x 30 cm, sow at shallow depth, break seed dormancy

• Fertilizer
  o 25-40-20 NPK
  o 25 kg N at every cut

• Harvest
  o First cut at 75 DAS, then 4-6 cuts depending upon growth
  o Green fodder 40 t from 4 cuts

Bajra Napier Hybrid

• Season & varieties
  BN 2, NB 21, CO 1, CO 2

• Field preparation
  o Well drained soil with ridges & furrows – not at heavy clay
FYM 25t
- Seed rate
  - 40,000 slips
- Spacing
  - 50 x 50 cm
- Fertilizer
  - 50-50-40 NPK
  - 100 N kg after each cut
- Harvest
  - Cut at 75-80 DAP subsequent at 45 days interval
  - Green fodder 250 - 400 t

Deenanath Grass - *Pennisetum pedicillatum*
- Season & varieties
  - Throughout the year – CO 1
- Field preparation
  - Well drained soil with ridges & furrows
  - Heavy clay or water logging not suitable
  - FYM - 25t
- Seed rate
  - 2.5 kg
- Spacing
  - 30cm solid row
- Fertilizer
  - 40-60-40 NPK
  - 20 N kg on 30th DAS
- Harvest
  - 55-60 DAS
  - Green fodder 40 - 45 t also as rainfed 20-25 t

Para grass / Water grass / Buffalo grass - *Brachiaria mutica*
- Season & varieties
  - Thru’ year
- Field preparation
All type of soils more suited to moist and waterlogged soils
- FYM 25t

**Seed rate**
- 40,000 slips

**Spacing**
- 50 x 50 cm

**Fertilizer**
- 20-40-0 NPK
- 20 N kg after each cut

**Harvest**
- Cut at 60-90 DAP subsequent at 30-45 days interval
- Green fodder 200 - 240 t

**Other grasses**

- Marvel grass
  - *Dicanthium annulatum*

- Rhodes Grass
  - *Chloris gayana*

- Elephant grass / Napier grass
  - *Pennisetum purpureum*

- Johnson grass
  - *Sorghum helepense*

- Sudan grass
  - *Sorghum sudanense*

**Forage legumes**

**Lucerne - Medicago sativa**

- Season & varieties
  - Thru' year, CO 1
  - Not suitable for very hot and cold climate

- Field preparation
  - Apply 12.5 t FYM
  - Beds & channels 10-20 m
• Seed rate
  o 20 kg /ha of cuscuta free seeds

• Spacing
  o 25cm with solid row

• Fertilizer
  o 25-120-40 NPK

• Harvest
  o First cut at 75-80 DAS, subsequent cut at 25-30 days
  o Green fodder
    ▪ 70-80 t in 10 cuttings

Hedge Lucerne – *Desmanthus virgatus* (*Velimasal*)

• Season & varieties
  o Thru’ year, Velimasal

• Field preparation
  o Apply 12.5 t FYM
  o Ridges & Furrows

• Seed rate
  o 20 kg /ha

• Spacing
  o 50cm with solid row

• Fertilizer
  o 10-60-30 NPK - to be applied below the seed rows

• Harvest
  o First cut at 90 DAS at 50cm ht, subsequent cut at 45 days
  o Green fodder
    ▪ 125 t

Hedge Lucerne + Grasses

• Grasses suitable are Guinea and BN Hybrids
• Ratio - 3:1
• First cut at 50 DAS and further at 45 d
• Cutting height of velimasal is 50cm
• Additional fodder yield of 100-125t
- Nutritious proportion

**Stylo – *Stylosanthes scabra* (Muyal masal)**

- Season & varieties
  - Jun, July to Sep, Oct, *S. hamata* annual & *S. scabra* perennial

- Field preparation
  - Apply 12.5 t FYM
  - Beds & channels

- Seed rate
  - 6 kg /ha

- Spacing
  - 30 x 15cm

- Fertilizer
  - 20-60-15 NPK - to be applied below the seed rows

- Harvest
  - First cut at 75 DAS at flowering, subsequent cuts
  - Green fodder
    - First year low subsequent years 30 t/annum

**Fodder Cowpea**

- Season & varieties
  - June, July – CO 5

- Field preparation
  - Apply 12.5 t FYM
  - Beds & channels

- Seed rate
  - 40 kg /ha

- Spacing
  - 30 x 10 cm

- Fertilizer
  - 25-40-20 NPK - to be applied below the seed rows

- Harvest
  - 50-55 days after sowing (50% flowering)
  - Green fodder
- 18-20 t/ha
- As soon flowering starts

**Sirrato - *Macroptilium atropurpureum***

- Drought tolerant pasture
- Compatibility with cereals & grass
- Native of C & S America
- Deep rooted perennial
- Trailing, hairy stems
- Can tolerate grazing pressure
- Can tolerate shade
- Wide range of soils

**Multiple choice questions**

1. Napier grass is native of ____________
   a. Abyssinia  b. Asia  c. **Tropical Africa**

2. Crop comes up well under water undulated condition & with sewage water
   a. **Para grass**  b. Guinea grass  c. BN grass

3. Dominant grass species found in India, called as Anjan grass in India
   ____________
   a. Guinea grass  b. Stylosanthes  c. **Cenchrus**

4. The planting of a hectare would need about ________ rooted sets of BN Hybrid
   a. 23000  b. 43000  c. **33000**

5. Queen of forage crops is ________
   a. Lucerne  b. BN grass  c. Guinea grass