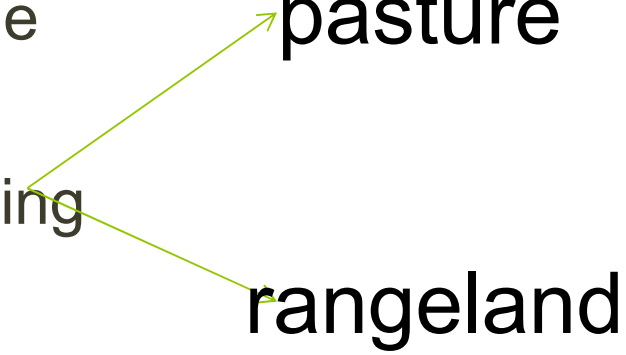
Forage crops

Forage crops

- Greenfeed
- Hay
- Silage
- Grazing



Forage crops

- ✓ Annual:برداشت یک یا چندچین دریک فصل رویش
  - پاییزه
  - بهاره
- ✓ Perennial:چندساله و چند چین در هر سال

نحوه کشت

- کشت اصلی
- کشت فی مابین
  - زمستانه
  - تابستانه
- کشت مخلوط

Forage composition

a) Soluble carbohydrate

b) Protein

c) Fibre

- ✓ structure carbohydrates :cellulose and hemicellulose
- ✓ Lignin

d) Minerals

Forage quality indicators

- Cereal and legumes: leaf, stem and grain
- Stem contain more fiber than leaf → Lower in digestibility and Declines with increasing plant maturity
- Proportion of leaf to stem
- The chemical composition of leaves and stem
- The grain comprises digestible component: starch and protein

- Foage quality estimated by in vitro because of the cost and time for feeding trials
- Forage quality included the measurement of plant cell wall and crude protein, water soluble carbohydrate and minerals

- NDF: Neutral detergent fiber
- ADF: Acid detergent fiber
- ADL: Acid detergent lignin
- WSC: water soluble carbohydrate
- CP: crude protein
- Ash: minerals
- DM: dry matter

Neutral detergent fiber(NDF)

- Boiling neutral detergent solution: SDS and EDTA(ethylene diamine tetraacetic acid)
- NDF: cellulose, hemicellulose and lignin
- NDF is an estimate of the cell-wall concentration the negatively to digestibility of forage and affecting intake.
- The filling effect of forage is related to cell wall
- NDF content related harvest stage

Acid detergent fiber(ADF)

- ADF is heated in acid detergent solution :sulphoric acid and CTAB
- ADF: lignin, cellulose
- ADF=NDF-hemicellulose
- ADF Have the negatively to digestibility of forage and affecting intake.

water soluble carbohydrate

- The wsc are important sources of energy for silage fermentation for organisms.
- Nonstructure carbohydrate: lactate

- WSC in a crop depends to:
  - stage of maturity
  - Leaf to stem ratio
  - Species
  - Time of day
  - Light intensity

Crude protein

- Growth and milk production of livestock
- Rumen bacteria

- CP: true protein and non-protein nitrogen(glutamine, glutamic acid,asparagin,asparic acid,gama-aminobutyric acid,nitrates
- non-protein nitrogen in silage:ammonia,amines and amide

- CP=N content*6.25

- CP related to:
- species
- stage of maturity
- Leaf content
- Level of N fertilization

- High protein forage (legumes) are more difficult to ensile: higher buffering capacity:lactate for change pH

Mineral nutrient of forage

a. Macronutrients
b. Micronutrients

- Mineral concentration in forage:
  - stage of growth
  - Soil type
  - Cultivation condition
  - Fertilizer application

- Grass tetany is a disorder with Mg deficiency in the blood
- Deficiencies of minerals impair the ability of micro organisms to digest fiber and synthesis protein.

Dry matter content

- DM: The percentage of the feed –water
- DM decrease with the fertilizer N and increase with crop maturity.