Feeds
Grasses, Legumes, Grains

Roughages

Pasture

- an area of land that contains forage growth where animals may graze
- economical because they are relatively inexpensive to maintain and may provide high quality protein and vitamins and minerals, as well as carbohydrates (cellulose)
- are the major feed source in the U.S. for dairy cattle, beef cattle, sheep, goats and horses
- may be permanent, rotated or temporary pastures
- may consist of grasses, legumes, or a mixture of both

Hay

- any green forage that is grown, harvested, and then preserved for later use by dehydrating to less than 15% moisture content
- nutrient content and palatability can be affected by the plant species, physiolgical stage at cutting, handling and weather damage
- an important energy source for cattle, sheep, goats and horses
- alfalfa (see left) accounts for the majority of hay in the U.S., but a wide variety of grasses, legumes and cereal grain crops can be used
- hay can be fed as rolled bales, square bales, cubes, or ground meal

High Energy Feeds

Oats

- widely grown
- bulky and palatable
- higher protein than most grains
- usually rolled, crimped or ground
  for feeding
- used extensively in horses
- also used for some cattle and sheep, particularly show animals
- lower energy density than corn and wheat
- excellent for young animals starting on feed

Barley

- contains more protein, lysine and fiber than corn
- very palatable
- good feed for all species
- usually steam rolled, crimped or coarsely ground for feeding
- not as widely available as wheat, oats and corn
- less energy dense than corn and wheat

Wheat

- widely grown in U.S. but mostly for human food
- high cost
- usually coarsely ground or cracked for feeding
- high energy density
- frequently used in only limited amounts in livestock diets due to high soluble starch content

Wheat Bran

- outer covering of wheat which is removed during the manufacture of wheat flour
- rich in niacin, vitamin B-1, phosphorus and iron
- used as a source of bulk and mild laxative
- widely used in horse rations and is a favored supplement for use in gestating cow, sheep and swine rations

Corn

- most extensively produced feed grain
- most widely used and best energy feed
- high in starch but low in protein and fiber
- very palatable
- notoriously low in Lysine
- the primary grain fed to all swine and poultry as well as finishing cattle and sheep on feed

Milo
Also known as Grain Sorghum

- 98% of grain sorghum in U.S. is used in livestock and poultry rations
- due to extremely hard seed coat, is usually processed before feeding
- most common in dry regions without enough summer rain for corn production
- high energy
- some strains high in tannins

Rye

- not an important grain crop in the U.S.
- high in protein
- lower palatability than most grains
- needs to be ground except when fed to sheep
- can be used as a laxative when fed in high amounts

Molasses

- extremely palatable
- excellent energy source
- quality is determined by sugar content
- can be dried (see right) or liquid form
- can be cane, beet, citrus or wood molasses
- frequently used in diets for young animals being introduced to dry feeds
- liquid form commonly added to diets to reduce dust

Soybeans

- rarely fed to livestock in whole form but can be if heated first to deactivate the antinutritional factors (trypsin inhibitor)
- can provide a valuable protein and energy source
- soybeans are usually fed as soybean meal
- whole soybeans are usually fed to increase energy density of diet

Protein Feeds

Soybean Meal

- produced by grinding the flakes which remain after extracting the oil
- has the highest nutritional value of any plant protein source
- the most widely used protein supplement source in the U.S.
- very palatable
- can be used for all species

Cottonseed Meal

- finely ground flakes that remain after most of the oil has been extracted from the whole cottonseed
- it contains no less than 36% crude protein
- low in lysine, tryptophan, vitamin D, carotene, and calcium
- high in phosphorus
- may contain a toxic substance, gossypol
- an excellent protein source for ruminants which can tolerate gossypol but should be limited for monogastrics due to toxicity factor

Vitamins & Minerals

Vitamin A

- required by all farm animals
- requirements frequently met by common feedstuffs high in carotene
- carotene, which is found in plants, is converted to vitamin A by the body
- vitamin A can be a synthetic form (see right)
- other common sources of supplemental vitamin A are cod and other fish liver oils

Vitamin E

- widely available in leafy plants
- grains provide some Vitamin E
- antioxidant

Limestone

- natural source of calcium
- relatively inexpensive

Plain White Salt

- natural source of sodium and chlorine
- needed especially by grazing animals
- may be in block, granulated or rock form

Trace Mineral Salt

- contains salt and one or more trace minerals (cobalt, copper, Iodine, iron, mangenese, selenium and zinc)
- commonly fed *ad libitum* in loose (see right) or block (see below) form

Dicalcium Phosphate

- a synthetic source of calcium and phosphate

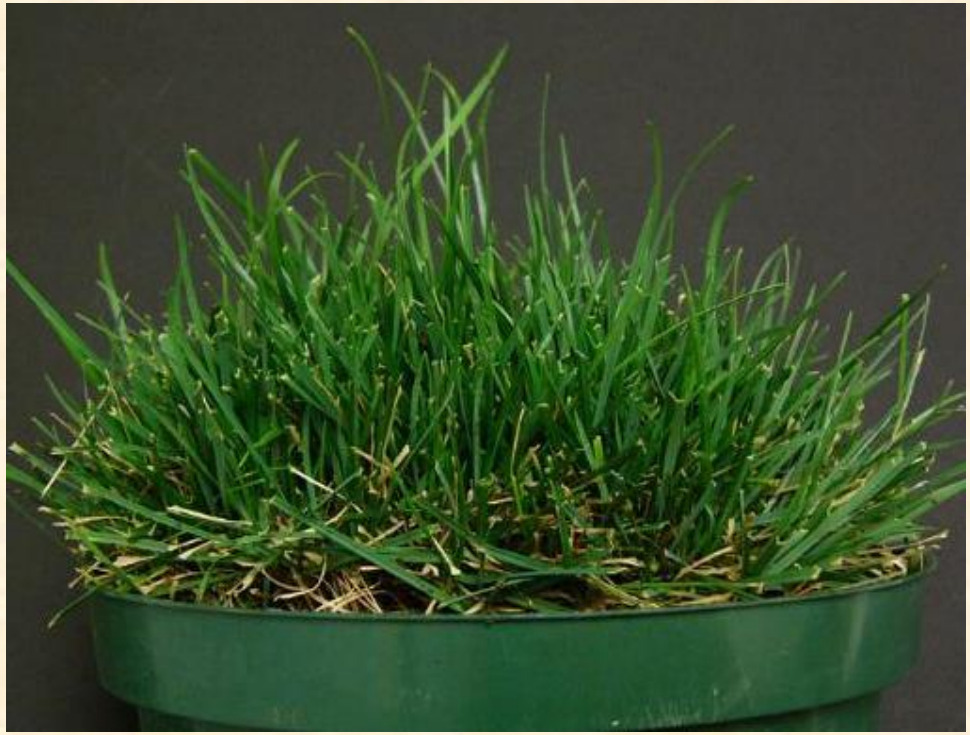
Grass and Legumes

http://www.turffiles.ncsu.edu/turfid/ItemID.aspx?orderID=GR&orderDesc=Grass

http://www.agry.purdue.edu/ext/forages/publications/legumes/alfalfa.htm

Kentucky bluegrass

- dark green color, medium to fine texture, and, due to its aggressive rhizome system, can recover from stresses
- has a boat-shaped leaf tip and distinctive light-colored lines on both sides of the midrib



Orchardgrass

- leaves are a characteristic blue-green color
- seedhead is easy to distinguish from other grasses
- prominent midvein on the underside of the leaves

Tall Fescue

- for a cool-season species, tall fescue is tolerant to heat and drought, disease resistant, and persists with minimum care
- has a tendency to clump due to its bunch-type growth habit and may need to be re-seeded each year in areas that exhibit thin growth patterns due to excessive summer stresses.
- tall fescue has rough leaf blade margins whereas annual and perennial ryegrass have smooth ones

Bermudagrass

- medium- to fine-textured warm-season turfgrass that spreads by rhizomes and stolons
- excellent heat, drought, and salt tolerance but does not do well in shade
- most widely used species on athletic fields and golf course fairways/tee boxes due to its high wear tolerance and rapid recovery

Sudangrass

- can be utilized as a forage for the purposes of hay, silage, greenchop, or as a grazing forage
- with different types of sorghum sudan hybrids being developed it is beginning to become of some importance among pasture owners as a valuable summer annual
- produces easily collected seeds which is making it increasingly readily. With a high heat tolerance this grass is very useful in the Southeast and Gulf coast state.

Timothy

- has long been a favorite hay for horses.
- it is easily cured into bright lime-green colored hay that is dust free
- it’s nutrient content is well suited as a mature horse diet, stems and leaves are large but soft, horses find the hay very palatable
- it looks like a dried blade of grass, fairly wide and its color is a soft green to grey/brown green
- timothy hay also has "solid cattails" which distinguishes it from Orchard grass which has "broken cattails"

Perennial Ryegrass

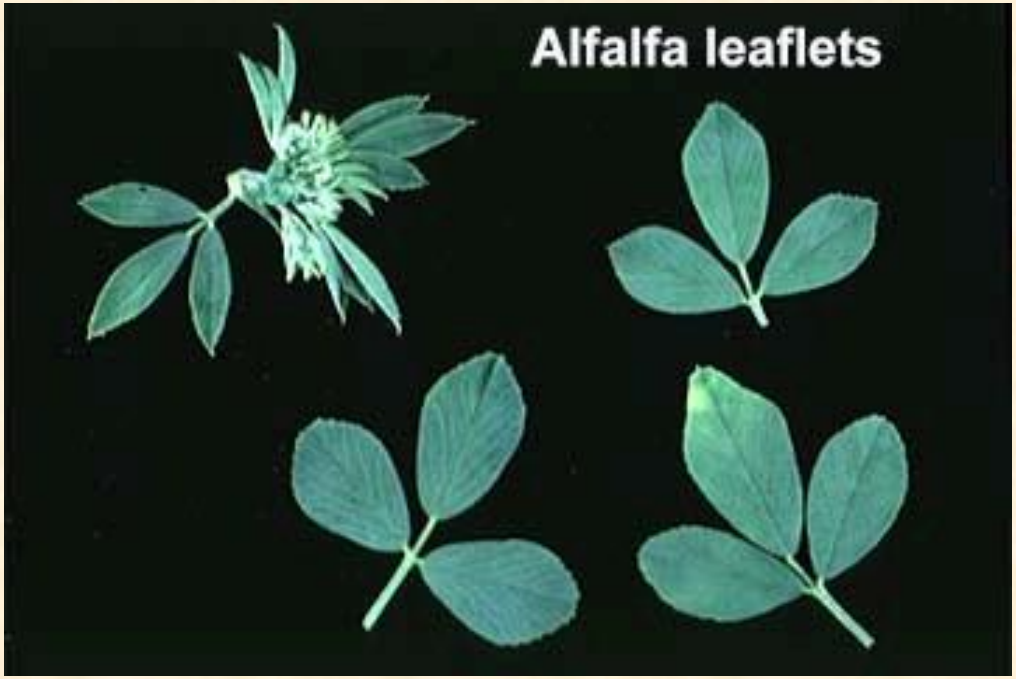
- perennial ryegrass is a very competitive cool-season grass, best adapted to coastal regions that have moderate temperatures throughout the year
- it prefers full sun but will tolerate partial shade
- fine-textured, rich green grass with the leaf folded in the bud
- leaf margins are parallel, the back of the leaf is shiny, and the tips of the leaf blades are tapered
- perennial ryegrass has a bunchgrass-type growth habit

White Clover

- Palmately trifoliolate; serrations most conspicuous midway between tip and base
- inverted V-shaped "water mark" not always evident
- small, pointed stipules
- leaflet smaller than ladino clover
- height 3-10 inches, perennial

Alfalfa

- Pinnately trifoliolate (three leaflets per leaf)
- serrations on tip of leaflets
- height 15-56 inches, perennial



Red Clover

- Palmately trifoliolate; leaflets not serrated; inverted V-shaped "water mark" usually present
- stems leaves and petioles pubescent.
- height 12-36 inches, perennial

Lespedeza

- Pinnately trifoliolate; midrib pubescence pointed upward
- leaflet on a very short petiole
- summer annual