

Lesson 12
FIBRE

What is a fiber?

- Sometimes, just a single cell (sclerenchyma) that is long and dead at maturity.
- Gives structural support to plant stems.
- Ones used for cloth are usually derived from herbaceous plants (but see bark cloth, below)
- Fibers often are associated with the vascular bundle of a stem.
- Sometimes the entire vascular bundle, that includes fibers as well as xylem and phloem is considered the "fibre" for spinning, such as in linen

Plant vs. animal

- Animal fibers such as wool and silk are composed mainly of protein (keratin and fibroin)
- Plant fibers are composed chiefly of cellulose
- But also may have lignin, tannins, gums, pectins and other polysaccharides
- Cellulose is very strong - tensile strength rivals steel

VEGETAL FIBRES

- FAO includes 12 primary crops and
- Five derived agricultural products

FIBRES OF ANIMAL ORIGIN

- Same uses as vegetal fibres,
- But are of much higher value

Vegetable fibres

- COTTON
- FLAX - *Linum usitatissimum*
 - Flax is cultivated for seed as well as for fibre
 - The fibre is obtained from the stem of the plant
- HEMP - *Cannabis sativa*
 - *Synonyms*
 - *hemp, marijuana, bhang, ganja, hashish*
 - This plant is cultivated for seed & fibre
 - The fibre is obtained from the stem
- KAPOK - *Ceiba pentandra*
- JUTE
 - White jute (*Corchorus capsularis*)
 - Red jute, tossa (*C. olitorius*)
- JUTE-LIKE FIBRES
 - China jute (*Abutilon avicennae*)
 - Congo jute, malva, paka (*Urena lobata*; *U. sinuata*)
 - Indian flax (*Abroma augusta*)
 - Kenaf, Mesta (*Hibiscus cannabinus*)
 - Rosella hemp (*H. sabdariffa*)
 - Sunn hemp (*Crotalaria juncea*)
- RAMIE

- China grass, white ramie (*Boehmeria nivea*)
- Rhea, Green ramie (*B. tenacissima*)
- **SISAL** *Agave sisalana*
 - Sisal fibre is obtained from the leaves of the plant
- **AGAVE FIBRES**
 - Haiti hemp (*Agave foetida*)
 - Henequen (*A. fourcroydes*)
 - Ixtle, Tampico (*A. lecheguilla*)
 - Maguey (*A. cantala*)
 - Pita (*A. americana*)
 - Salvador hemp (*A. letonae*)
- **MANILA HEMP** *Musa textilis*
 - The fibre is obtained from stalks of certain banana trees
- **COIR** *Cocos nucifera*
 - Coir fibre is obtained from the fibrous covering of the mesocarp

Animals Fibres

- **WOOL**
 - A natural fibre taken from sheep or lambs
- **GOAT HAIR**
 - Hair from cashmere, angora (mohair) and similar goats
- **HAIR OF HORSES**
- **SILK WORM**