Economic botany

Abulais Shomrat  
AE-74, Batch: 2016-17 (64th)

Department of Botany

University of Dhaka

**Foods from plants**

**Cereals**

* A cereal is any edible components of the grain (botanically, a type of fruit called a caryopsis) of cultivated grass, composed of the endosperm, germ, and bran. Cereal grains are grown in greater quantities and provide more food energy worldwide than any other type of crop and are therefore staple crops. Edible grains from other plant families, such as buckwheat (Polygonaceae), quinoa (Amaranthaceae) and chia (Lamiaceae), are referred to as pseudocereals.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Scientific name** | **Family** | **Bangla name** | **Common name** | **Photo** |
| *Oryza sativa* | Poaceae | ধান  Dhan | Rice | Image result for Oryza sativa |
| *Zea mays* | Poaceae | ভুট্টা  Bhutta | Corn | Image result for Zea mays |
| *Hordeum vulgare* | Poaceae | বার্লি  Barley | Barley | Image result for Hordeum vulgare |
| *Triticum aestivum* | Poaceae | গম  Gom | Wheat | Image result for triticum aestivum |

**Millets**

* Amount of carbohydrate is less.
* Millets are a group of highly variable small seeded grasses, widely grown around the world for fodder and human food. Generally, the millets are small-grained, annual, warm weather cereals belonging to grass family. They are highly tolerant of drought and other extreme weather conditions.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Setaria italica* | Poaceae | কাউন  Kaun | Foxtail millet | Image result for Setaria italica |
| *Fagopyrum esculentum* | Polygonaceae | বাজরা  Bajra | Buck wheat | Image result for Fagopyrum esculentum |

Legumes

Nuts

Pulse

**Fruits**

i. Temperate

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Malus domestica* |  | আপেল  Apple | Apples | Image result for Apple scientific name |
| *Pyrus communis* |  | Nashpati | Pear | Image result for pear scientific name |
| *Fragaria \* ananassa* |  | স্ট্রবেরী  Strawberry | Strawberry | Image result for Strawberry scientific name |

ii. Tropical

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Mangifera indica* |  | আম  Aam | Mango | Image result for Mangifera indica |
| *Psidium guajava* |  | পেয়ারা  Peyara | Guava | Image result for Psidium guajava |

Plant fibre includes:

* Malvaceae
* Liliaceae

Rubber, resin, gum, tea, coffee

**Important plants and plant products**

(5 categories)

1. Foods:

* Cereals and millets
* Legumes and nuts
* Vegetables
* Fruits – a. Temperate, b. Tropical

2. Plants and plant products of industrial use:

* Rubber
* Fibre and fyf
* Cellulose
* Tannin and dye
* Wood and cork
* Gums and resin
* Pectine

3. Medicinal plants and drugs

* Medicinal plants
* Fumatories (smoke) and masticatories
* Alcaloids
* Glucoside

4. Food adjuncts

* Spices and condiment (preparations used to enhance flavour and taste of food).
* Vitamin
* Non-alcoholic beverage
* Alcoholic beverage

6. Lower plants of economic use

* Fungi
* Lichen
* Algae

Good to know

* 95-98% rubber comes from Euphorbiaceae family.
* Fibres can be categorised into 6 main groups

i. Brush

ii. Textile

iii. Filling

iv. Rough weaving

v. Natural fabrics

vi. Paper making fibre

* Dye: *Indigophera indica*
* Pectine is fruit jelly.

3 other uses of plants:

* The role of colorless plants in the economy of nature.
* Bacteria play in different diseases.
* Effect of forest plants and natural vegetation in controlling flood and soil erosion.

*Vetiveria zizanioides* (Vetiver grass) - Poaceae.

Lichen: In case of scarcity of food.

Drugs (Algotin): *Claviceps purpurea* (ergot fungi)

Gum of Arabic: *Acacia Senegal* - Fabaceae

**Medicinal plants**

A plant which possess medicinal properties is known medicinal plant.

Medicinal plant is a plant that synthesizes and accumulates secondary metabolites and possess thermapeutic properties or exerts pharmacological effect on animal body particularly on human body.

According to WHO consultative group of medicinal plants,

A medicinal plant is any plant in which one or more organs contain substances that can be used for therapeutic purposes or which is a precursor for synthesis of useful drug.

Good to know:

* 21,000 medicinal plants as listed by WHO.
* BARC stands for Bangladesh Agricultural Research Council.
* M. Salar Khan is the father of angiosperm taxonomy of Bangladesh.

He conducted Botanical Survey of East Pakistan in 1971.

* There are about 1,000 medicinal plants in our country.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Book** | **Writer** | **Year** | **Number of MP** | **Remarks** |
| Medicinal Plants of Bangladesh: A Preliminary List Giving Actions and Uses | M. Salar Khan and  Ahmed Mozaharul Huq (A M Huq) | 1975 | 182 species | Published by BARC |
| Our Medicinal Plant Wealth | Md. Abul Hassan and A M Huq | 1993 | 499 species |  |
| Medicinal Plant of Bangladesh | Prof. Abdul Goni | 2003 | 455 species | Chemical constituents and uses |
| Medicinal Plant of Bangladesh | Dr. Md. Yusuf | 2007 | 747 species | 1994- First edition  2007- Second edition |
|  |  | 2010 |  | The Ministry of Agriculture |
|  |  | 2005 |  | Medicinal Plant Protection Act |

**Classification of medicinal plants**

*Abrus precatorius*: Kuch – Climber - Red seed - Used in 17 diseases

**According to habitat**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Type | Scientific name | Family | Bangla name | Common name |  |
|  | Acalypha indica | Euphorbiaceae |  | Indian mercury, Indian copperleaf | Image result for Acalypha indica |
|  | Andrographis paniculata | Acanthaceae |  |  |  |
|  | Boerhavia diffusa |  |  |  |  |
|  | Centella asiatica |  |  |  |  |
|  | Cynodon dactylon |  |  |  |  |
| Herb | Chenopodium album |  |  |  |  |
|  | Chenopodium ambrosioides |  |  |  |  |
|  | Eclipta alba |  |  |  |  |
|  | Euphorbia hirta |  |  |  |  |
|  | Aristolochia indica |  |  |  |  |
|  | Bacopa monnieri |  |  |  |  |
|  | Asparagus racemosus |  |  |  |  |
|  | Gloriosa superba |  |  |  |  |
|  | Leucas aspera |  |  |  |  |
|  | Mentha arvensis |  |  |  |  |
|  | Scoparia dulcis |  |  |  |  |
|  | Achyranthes aspera |  |  |  |  |
|  | Ageratum conyzoides |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Abroma augusta |  |  |  |  |
|  | Adhatoda zeylanica |  |  |  |  |
|  | Calotropis procera |  |  |  |  |
|  | Calotropis gigantean |  |  |  |  |
|  | Datura metel |  |  |  |  |
|  | Glycosmis pentaphylla |  |  |  |  |
|  | Ricinus communis |  |  |  |  |
|  | Lawsonia inermis |  |  |  |  |
|  | Ocimum tenuiflorum |  |  |  |  |
| Shrub | Ocimum graticimum |  |  |  |  |
|  | Cassia sl. |  |  |  |  |
|  | Cassia S. stri. |  |  |  |  |
|  | Senna |  |  |  |  |
|  | Chaemicrista |  |  |  |  |
|  | Cassia nodusa |  |  |  |  |
|  | Cassia alata to Senna alata |  |  |  |  |
|  | Cleodendrum viscosum |  |  |  |  |
|  | Cleodendrum indicum |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Acacia nilotica |  |  |  |  |
|  | Acacia catechu |  |  |  |  |
|  | Aegle marmelos |  |  |  |  |
|  | Aphanamyxis polystachya |  |  |  |  |
|  | Azadirachta indica |  |  |  |  |
|  | Carica papaya |  |  |  |  |
|  | Cinnamomum tamala |  |  |  |  |
|  | Cinnamomum verum |  |  |  |  |
|  | Terminalia arjuna |  |  |  |  |
| Tree | Terminalia chebula |  |  |  |  |
|  | Terminalia belliria |  |  |  |  |
|  | Oroxylum indicum |  |  |  |  |
|  | Alstonia scholaris |  |  |  |  |
|  | Punica granatum |  |  |  |  |
|  | Saraca asoca |  |  |  |  |

**According to habit**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Tree | Holarrhena antidysenterica (bud) | Apocynaceae | Hoimonti, Kurchi |  |  |
|  | Litsea glutinosa (leaf) | Lauraceae | Menda | Bolly gum |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Allamanda cathartica | Apocynaceae |  | | Golden trumpet | | Image result for Allamanda cathartica | |
|  | Asparagus racemosus | Liliaceae | Shotomulii | |  | | Image result for Asparagus racemosus | |
|  | Aristolochia indica | Aristolochiaceae | Ishwar mul | |  | |  | |
| Climbers | Tinospora cordiflora |  | Doloncho | |  | | Image result for Tinospora cordifolia | |
|  | Hemidesmus indicus |  | Onontomuul | |  | | Image result for Hemidesmus indicus | |
|  | Coccinia grandis | Cucurbitaceae | Telakucha | | Ivy gourd | | Image result for Coccinia grandis | |
|  | Momordica charantia |  | Kakrol | |  | |  | |
|  | Abrus precatorius |  | Kuch | |  | |  | |
|  | Cuscuta reflexa | Cuscutaceae | Swarno lota | |  | | Image result for Cuscuta reflexa | |
| Parasite | Cassytha filiformis |  | Akash bel | |  | | Image result for Cassytha filiformis | |
|  | Dendrophthoe falcata |  | Boro menda | |  | | Image result for Dendrophthoe falcata | |
| Epiphyte | Vanda tessellata | Orchidaceae | | Rasna | |  | | Image result for Vanda tessellata |

**According to parts used**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *Andrographis paniculata* | Acanthaceae | কালোমেঘ  Kalo megh | Crete | Image result for Andrographis paniculata |
|  | *Cynodon dactylon* | Poaceae | দুর্বাঘাস  Durba ghas |  | Image result for Cynodon dactylon flower |
| Whole plant | *Boerhavia diffusa* | Nyctaginaceae | পুনর্ভবা  Punorvoba |  | Image result for Boerhavia diffusa |
|  | *Phyllanthus niruri* | Phyllanthaceae | ভুঁই আমলা  Bhui amla | Gale of the wind, stone breaker, seed under leaf | Image result for Phyllanthus niruri |
|  | *Cuscuta reflexa* | Cuscutaceae | স্বর্ণলতা  Swarno lota |  | Image result for Cuscuta reflexa |
|  | *Scroparia dalsis* |  |  |  |  |
|  | *Acacia catechu* | Minosaceae | খয়ের  Khoyer |  | Image result for Acacia catechu |
| Stem | *Alstonia scholaris* | Apocynaceae | ছাতিম  Chatim |  | Image result for Alstonia scholaris |
|  | *Aphanamixis polystachya* | Meliaceae | পীতরাজ  Pit raaj |  | Related image |
|  | *Acorus calamus* | Acoraceae | বচ  Boch | Sweet flag | Image result for Acorus calamus |
|  | *Aristolochia indica* | Aristolochiaceae | ঈশ্বরমূল  Ishwar mul |  | Image result for Aristolochia indica |
|  | *Asparagus racemosus* | Liliaceae | শতমূলী  Shoto muli |  | Image result for Asparagus racemosus |
|  | *Hemidesmus indicus* | Asclepiadaceae | অনন্তমূল  Ononto mul |  | Image result for Hemidesmus indicus |
|  | *Withania somnifera* | Solanaceae | অশ্বগন্ধা  Oswa gandha |  | Image result for Withania somnifera |
| Root | *Rauvolfia serpentina* | Apocynaceae | স্বর্পগন্ধা  Sorpo gondha | Snake root, Devil pepper | Image result for Rauwolfia serpentina |
|  | *Catharanthus roseus* | Apocyncaceae | নয়নতারা Noyon tara | Periwinkle | Image result for Catharanthus roseus |
|  | *Azadirachta indica (Leaf and bark)* | Meliaceae | নিম  Neem | Neem | Image result for Azadirachta indica |
|  | *Cinnamomum verum* | Lauraceae | দারুচিনি  Daruchini |  | Image result for Cinnamomum verum |
| More than one parts | *Curcuma zedoaria* | Zingiberaceae | বন আদা  Bon ada | White tumeric | Image result for Curcuma zedoaria |
|  | *Litsea glutinosa* | Lauraceae | মেন্দা  Menda | Bollygum | Image result for Litsea glutinosa |
|  | *Senna alata* | Caesalpiniaceae | দাঁতমর্দন  Datmordon | Emperor’s candlestick | Image result for senna alata |
|  | *Aloe indica* | Liliaceae | ঘৃতকুমারী  Ghrito kumari | Indian aloe | Image result for Aloe indica |
| Leaf | *Lawsonia inermis* | Lythraceae | মেহেদী  Mehedi | Henna | Image result for Lawsonia inermis |
|  | *Clerodendrum viscosum* | Lamiaceae | ভাট  Bhat |  | Image result for Clerodendrum viscosum |
|  | *Piper betle* | Piperaceae | পান  Paan | Betel leaf | Image result for Piper betle |
|  | *Bryophyllum pinnatum* | Crassulaceae | পাথরকুচি Patharkuchi | Life plant | Image result for Bryophyllum pinnatum |
|  | *Adhatoda vasica* | Acanthaceae | বাসক  Basok | Malabar nut | Image result for Adhatoda vasica |
|  | *Calendula officinalis* | Asteraceae | ক্যালেন্ডুলা  Calendula | Marigold | Image result for Calendula officinalis |
|  | *Hibiscus rosa-sinensis* | Malvaceaea | জবা  Joba | China rose | Image result for Hibiscus rosa-sinensis |
|  | *Tagetes erecta* | Asteraceae | গাঁদা  Gnada | Aztec Marigold | Image result for Tagetes erecta |
| Flower | *Carthamus tinctorius* | Asteraceae | কুসুম  Kusum | Safflower |  |
|  | *Rosa centifolia* |  |  |  |  |
|  | *Aegle marmelos* | Rutaceae | Bel | Golden apple, stone apple, wood apple | Image result for Aegle marmelos flower |
| Fruit | *Ananas sativus* | Bromeliaceae | Ananros | Pine apple | Image result for Ananas sativus flower |
|  | *Averrhoa carambola* | Oxalidaceae | Amra | Carambola, star fruit | Image result for Averrhoa carambola |
|  | *Punica granatum* | Lythraceae | Dalim | Pomegranate | Image result for Punica granatum flower |
|  | *Momordica dioica* | Cucurbitaceae | Korola | Spiny gourd |  |
|  | *Vitex negundo* |  | Nishinda | Chinese chaste tree |  |
|  | *Abrus precatorius* | Fabaceae | Kuch | Coral bead, crab’s eye, love pea | Image result for Abrus precatorius |
|  | *Nigella sativa* | Ranunculaceae | Kalo jira |  | Image result for Nigella sativa |
| Seeds | *Ricinus communis* | Euphorbiaceae | Reri | Castor oil plant | Image result for Ricinus communis |
|  | *Bixa orellana* |  | Lotkon | Arnotta plant |  |
|  | *Croton tiglium* |  | Joyfol | Croton oil plant |  |
|  | *Trigonella foenum-graceum* | Fabaceae | Methi |  | Image result for Trigonella foenum graecum |

**Plants used for disease treatment**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | *Terminalia arjuna* | Combretaceae | অর্জুন  Arjun |  | Image result for Terminalia arjuna |
|  | *Terminalia chebula* | Combretaceae | হরিতকি  Haritoki | Chebulic myrobalam | Image result for Terminalia chebula' |
| Cardiac disease | *Tinospora cordifolia* | Menispermaceae | গুলঞ্চ  Guloncho |  | Image result for Tinospora cordifolia |
|  | *Punica granatum* | Lythraceae | ডালিম  Dalim |  | Image result for Punica granatum |
|  | *Calotropis procera* |  |  |  |  |
|  | *Holarrhena antidysenterica (Bark)* | Apocynaceae | হৈমন্তী, কুর্চি  Hoimonti, Kurchi |  | Image result for holarrhena antidysenterica |
|  | *Centella asiatica* | Apiaceae | থানকুনি  Thankuni | Indian pennywort | Image result for Centella asiatica |
| Dysentry | *Aegle marmelos* | Rutaceae | বেল  Bel |  | Image result for Aegle marmelos |
|  | *Calotropis gigantea* | Apocynaceae | আকন্দ  Akondo |  | Image result for calotropis gigantea |
|  | *Litsea glutinosa* | Lauraceae | মেন্দা  Menda |  | Image result for Litsea glutinosa |
|  | *Terminalia chebula* | Combretaceae | হরিতকি  Haritoki |  | Image result for Terminalia chebula' |
|  | *Phyllanthus niruri* | Phyllanthaceae | ভুঁইআমলা  Bhui amla |  | Image result for Phyllanthus niruri |
|  | *Boerhavia diffusa* | Nyctaginaceae | পুনর্ভবা  Punorvoba |  | Image result for Boerhavia diffusa |
| Jaundice | *Cajanus cajan* | Fabaceae | অড়হড়  Orhorr |  | Image result for Cajanus cajan |
|  | *Asparagus racemosus* | Liliaceaea | শতমূলী  Shotomuli |  | Image result for Asparagus racemosus flower |
|  | *Argemone mexicana* |  | শিয়ালকাঁটা  Shialkata |  |  |
|  | *Eclipta album* |  | কালোকেশী  Kalokeshi |  |  |
|  | *Coccinia grandis* | Cucurbitaceae | তেলাকুচা  Telakucha | Scarlet gourd | Image result for Coccinia grandis |
|  | *Cinnamomum tamala* | Lauraceae | তেজপাতা  Tej pata | Bay leaf | Image result for Cinnamomum tamala |
|  | *Momordica charantia* | Cucurbitaceae | করলা  Karla |  | Image result for Momordica charantia |
|  | *Cajanus cajan* | Fabaceae | অড়হড়  Orhorr | Pigeon pea | Image result for Cajanus cajan |
| Diabetes | *Trigonella foenum-graecum* | Fabaceae | মেথী  Methi |  | Image result for Trigonella foenum graecum |
|  | *Syzygium cumini* |  | জাম  Jaam |  |  |
|  | *Ficus benghalensis* |  | বট  Bot |  |  |
|  | *Barringtonia acutangula* |  | হিজল  Hijal |  |  |
|  | *Acacia nilotica* | Minosaceae | বাবলা  Babla |  |  |
|  | *Acalypha indica* | Euphorbiaceae | মুক্তাঝুড়ি  Mukta jhuri | Cat’s tail | Image result for Acalypha indica flower |
|  | *Adhatoda vasica* | Acanthaceae | বাসক |  | Image result for Adhatoda vasica flower |
| Asthma | *Piper nigrum* | Piperaceae | গোল মরিচ  Gol morich | Black pepper | Image result for Piper nigrum |
|  | *Euphorbia hirta* | Euphorbiaceae | দুধিয়া  Dudhia |  | Image result for Euphorbia hirta |
|  | *Acorus calamus* | Acoraceae | বচ  Boch |  | Image result for Acorus calamus |
|  | *Calotropis gigantea* | Apocynaceae | বড় আকন্দ  Boro akondo |  | Image result for calotropis gigantea |
|  | *Andrographis paniculata* | Acanthaceae | কালোমেঘ  Kalo megh | Crete | Image result for Andrographis paniculata |
| Anthelmintic | *Punica granatum* | Lythraceae | ডালিম  Dalim |  | Image result for Punica granatum |
|  | *Azadirachta indica* | Meliaceae | নিম  Neem |  | Image result for Azadirachta indica |
|  | *Carica papaya* | Caricaceae | পেঁপে  Pepe |  | Image result for Carica papaya flower |
|  | *Euphorbia hirta* | Euphorbiaceae | দুধিয়া  Dudhia |  | Image result for Euphorbia hirta |
|  | *Aegle marmelos* | Rutaceae | বেল  Bel |  | Image result for Aegle marmelos flower |
| Diarrhoea | *Andrographis paniculata* | Acanthaceae | কালোমেঘ  Kalo megh | Crete | Image result for Andrographis paniculata |
|  | *Centella asiatica* | Apiaceae | থানকুনি  Thankuni | Indian pennywort | Image result for Centella asiatica |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |