

L09

Crop 12 Small Millets

- Special characters
 - Finger millet - Ragi
 - Highly tolerant to alkalinity, even >pH 11.0
 - Foxtail millet - *Kangni*
 - Susceptible to both drought & water logging
 - Kodo millet - *Kodra*
 - Highly drought resistant
 - Little millet - *Kutki*
 - Highly drought resistant & tolerant to water logging
 - Proso / Common millet - *Cheena*
 - Highly drought resistant
 - Barn yard millet - *Sawan*
 - Highly drought resistant & tolerant to water logging
- Special characters ...
 - They grow during adverse soil & climate
 - Mostly shorter in duration
 - Some of them are suitable for contingency plan
 - Proso & little mature in shorter duration, they provide food during lean months for tribal people
 - They are grown in Asian & African countries
- Area in the World
 - Millet (Pearlmillet +small millets) - 92-94 38 million ha
 - 19 in Africa 17 in Asia and smaller area in Americas, Oceana, & the former USSR
 - Average productivity 750 kg (28million t)
 - Total area is always lumped together
 - Individual crop area not so accurate
 - 50% = 19 million ha for Pearlmillet
 - 10% = 3.8 million ha in finger millet
 - 30% = 11.4 million ha in Foxtail & Proso milliets
 - <10% =3.0 million ha for other 8 species
- Area in India
 - Area declined from 7.7 in 1949-50 to 4.0 million ha
- Importance ...
 - 19 million ha in the world
 - 11.4 million ha in Foxtail & Proso milliets
 - 3.0 million ha for other 8 species
 - In India 1.5 million ha with 0.7 million t (Agriculture 1999)
 - In India 5 crops - in Africa more than 8
 - Most small millets except *Setaria italica*
 - are grown in warm regions 35-40°C

- Grow well in moderate weather 26-29°C
- Fox tail millet grows well in temperate and as well as tropics

Area, Production, Productivity

State	Million ha	Million t	Kg/ha
MP	0.90	0.21	0.24
UP	0.12	0.13	1.03
Maharashtra	0.10	0.05	0.50
TN	0.09	0.08	0.85
AP	0.07	0.04	0.62
Karnataka	0.08	0.03	0.46
Bihar	0.05	0.03	0.56
All India	1.55	0.66	0.42

Thenai – *Setaria italica*

- Thenai – *Setaria italica*
 - Fox tail millet, Kangni or kakun
 - 0.5 million ha in India
 - Known earlier than 4150 BC
 - India, China, Japan, Russia, Europe, S&N America, Australia as small millet
 - In India AP, Karnataka, TN, Rajasthan, UP
 - Inflorescence dense, cylindrical and bristly
 - Tillering, stems are smooth and small
 - Varieties in TN: CO 6 -90 d, CO5 – 95 d
- Samai – *Panicum sumatrense*
 - Little millet, Kutki or Gunduli
 - India, Sri Lanka, Pak, Myanmar, SE Asia
 - In India 0.5 million ha
 - Mainly Karnataka, AP, TN, Orissa, Bihar & Maharashtra
 - Like rice it can be cooked and used
 - Tillering, solid / hollow small stem
 - Inflorescence large, open panicle with numerous spikelets
 - Varieties in TN: CO3- 85d, CO2 – 85d, CO1 – 90d, PAIYUR 2 – 100d
- Varagu – *Paspalum scrobiculatum*
 - Kodo millet, Kodra
 - A cereal can be sown after continuous drought
 - Preserved in temple *kalasas*, walls etc
 - Seed viability longer
 - Should be used only fully matured grain
 - Good medicinal value to cure diseases in lungs, loose motion, healing the wounds and to maintain the body in balanced activity
 - Mostly in S. India
 - In TN average yield is 1.4 t as against 0.3 t of All India
 - Profusely tillering, fully sheathed solid internodes
 - Var: CO3 – 120d, APK -1 100d
- Panivaragu *Panicum miliaceum*
 - Proso / Common millet, Cheena

- Spread from Manchuria 300 years ago
- In China & Eurasia cultivated before wheat & barley
- Requires very little water
- Stems are slender and leafy up to panicle – 90-120cm tall
- Grains are olive brown in color
- Varieties: CO 3 – 75d, CO 4 – 70d & K2 75d
- Kudiraivali *Echinochloa frumentacea*
 - Barnyard millet, Sawan
 - India, China, Japan & Africa
 - It is a grain cum fodder
 - Husked rice is nutritious and tasty
 - It originated from rice weed
 - In India MP, UP, TN, AP, Karnataka, Bihar
 - In TN Ramnad, Tirunelveli, Virudunagar & Madurai
 - Varieties: CO 1 – 110d, K1 85d, K2 – 90d

Small Millets- Agro-techniques

- Season
 - Rainy season, mostly rainfed
- Field preparation
 - Starting from summer ploughing, fine tilth
- Seeds rate & spacing
 - Varies from 8-15kg
 - Line sowing – 10kg
 - Seed drill – Goru – 12.5 kg
 - Spacing 22.5 (10”) x 10 (4”) cm
- Sowing
 - Beds and compartmental bunding
 - Sow the treated seeds
 - Sow as pre-monsoon
 - Cover the seeds
- Manures & fertilizers
 - Organics in the last plough to conserve moisture
 - Responds to inorganic
 - 20-40 kg N, 10-20 kg P₂O₅, 10-20 kg K₂O
 - When irrigated a higher N dose up to 60 kg
 - Fox tail millet responds well to N
 - Jalshakthi & Organic improves common millet
- Irrigation
 - Though rainfed one or two irrigations
 - At critical periods -capable of enhancing yield
- Weed management
 - Mostly hand weeded
 - Isoproturan @ 0.5 kg on 3rd day
 - 2,4 D Na salt @0.5 kg on 20-25DAS

- Thinning is done during 1st hand weeding

- Cropping system
 - Though solid it is mixed with cotton, maize, sorghum, redgram & other pulses
 - Since Kharif season crops, in Rabi with rape seed, mustard, gram, lentil, linseed, barley etc under rainfed
- Harvest
 - After ear heads fully matured
 - Two times cutting is also good
 - Ear heads are dried and threshed
 - Only after husking used for consumption
 - Better to be used after storage