

---

# Sorghum Practice in Sindh, Pakistan

By Mrs. Farzana Panhwar, May 2005

---

**Author:** Farzana Panhwar (Mrs)

**Address:** 157-C, Unit No.2, Latifabad, Hyderabad  
(Sindh), Pakistan

**E-mail:** farzanapanhwar@hotmail.com  
farzanapanhwar@yahoo.com

**Fax:** 92-21-5830826 and 92-221-860410

**Publisher:** Digitalverlag GmbH, Germany  
www.ChemLin.com

© 2005 Digitalverlag GmbH, Germany

Edition ChemLin

www.ChemLin.com

## Sorghum Practice in Sindh, Pakistan

### Introduction

Pakistan has a geographical area of 796,095 square kilometers. It lies between 23 and 27 degrees North Latitude and 61 and 76 degrees East Longitude in the northern hemisphere. Administratively the country is divided into four provinces, Punjab, Sindh, Northwest Frontier Province and Baluchistan.

Sorghum is an important coarse grain summer crop, which can be grown successfully in dry, arid conditions and on marginal soils. Since the people like wheat more as a human food, sorghum production has declined in the past 60 years when new barrages made winter irrigation of wheat more economically proposition. Since sorghum is also used as feed and fodder source, its importance in the poultry sector is expected to increase.

The Punjab and Sindh are the major sorghum producing provinces of Pakistan contributing respectively 47% and 26% of the total acreage. About 60% of the total area under this crop is irrigated, while the rest is rain-fed.

The area under sorghum has fluctuated due to declining trends of its use as food. This is due to the land under cultivation for sorghum being shifted to cotton, summer and wheat in winter. There are no changes in the climatic patterns but perennial irrigation has changed the agriculture economy altogether.

In Pakistan the area under sorghum and millet on the average is 1.5 million hectares and the yield is approximately 5.4 tonnes/hectare. The yield is more than wheat and rice, which stand at 3.0, 2.2 tonnes/hectare. These yields are much lower than those of millet and sorghum. However, the demand for millet and sorghum is much less and there is no direct competition as wheat is essentially a winter crop and sorghum is a summer crop. Its direct competitor is cotton and sugar-cane. There is also no competition with rice as it is confined to waterlogged areas, where sorghum can have very low yields.

Sorghum is also classified among aggressives and is capable of rapid growth and high yields.

### Climate

It needs moderate rainfall and a minimum of twelve inches of rain from the time of sowing to harvest. Average temperature will be 80-90 °F for grain production and maturity.

### Soils

It can be grown in a variety of soils, heavy and light alluviums, red, gray, yellow loams and also sandy soils.

## Varieties or Genes

The cultivated sorghum might have evolved from wild Arundinacea. According to Snowden (1936) and following are closely related *S. Arundinaces*, *S. Verticelliflorum*, *S. Sudanense*.

- The genetically evolved variety show some resistance to insects, dwarf size, early maturity, photo-insensitiveness and higher in biomass production.
- Genes for productivity are available in : Durra, Conspicum, Caudatum and Zerazera.

## Varieties

Sorghum can be divided in to 3 categories i.e., summer winter and fodder crops. These can further be categorized as below:

### Major sorghum varieties of the world

- Sudan.
- Open pollinated sorghum.
- Sorghum Traditional.
- Sorghum Sweet.

### Popular cultivators

Piper, Sweet, Sudan, Trudan, Jumbo.  
Sugar drip.  
Speed feed, Forager, Rising fast,  
Zulu, Cow Chow, High Pro.  
Sugar graze, Honey drip, FS-26.

## Sweet Sorghum

Its characteristics are:

- Stem thick.
- Medium speed of growth.
- Recovery after cutting or grazing is slower than other sorghum forage type.
- Flowering comes later.

## Sweet sorghum varieties

- Sweet sorghum varieties are JS-20, JS-263, JS-29/1, Sweet Sudan-59-3, Vidisa-60-1, Sundia-1049, M-35/1, Co-11, and M.P. Chari. They yield 700-800 q/ha.

## Cultivated sorghum (*S. bicolor* ssp, bicolor)

It has a number of cultivators listed below:

- Basic race (bicolor, guinea caudatum, kefir and durra).
- Hybrid races (guinea-bicolor, cadatum-cicolor, kafir-bicolor, durra-bicolor, guinea-caudatum, guinea-kafir, guinea-durra, kafir-caudatum, durra-caudatum and kafir-durra).
- Wild sorghums (*S. bicolor* ssp, arundinaceum spontaneous).
- Six races (arundi-naceum, aethiopicum, virgatum, verticuliform and propinquum).

### **Rainy season sorghum varieties**

These varieties are:

- CSH5.
- SPV-51.

### **Post-rainy season sorghum varieties**

These are:

- SPV-86.
- M35-1.

### **Summer sorghum varieties.**

These varieties are:

P-J, 4-K, 8-K, 16-K, 24-K, D-340, ADP-1, ADP-2, CO-1, CO-2, CO-3, CO-10, CO-11, Nandyal, Fulgar, While, Fulgar, Yellow, Bilichigan, 20, 29/1, 263, 893, 8B, 5 Tall, Y-3 and G-3.

### **Winter sorghum varieties.**

H-1, 1735-M, 47-3, N-1, N-2, N-3, N-4, N-6, N-6, Maldandi, 35-1, 47-3, Budhperio-53, Broach-8, N.D-15, P.J, 3-R, 4-R, 7-R, Billijola (S2), Yenegar, S22, M.35-1, and M.47-3.

### **Fodder sorghum varieties of South Asia**

South Asia has many varieties. A few are:

Imphi, Nandyal, Chesalio, 10-2 Nanyal, Talaviri, Chong, Chinnamangal, Vellaicholam, Kakki, Volgar, Irungu, Sundhia, Nilwa and nandyal.

### **Cereal cum fodder varieties**

The varieties suitable for cereal cum fodder are:

1-GFRI-S-427, 1-GFRI-S-452, 1-GFRI-S-700, J-S-6090 and J.S. 73153. Their yield potential of fodder is 400-500 q/ha.

### **Forage varieties**

The forage sorghum varieties are:

JS-731500, JL-44 and SSG-59-3 with yield potential of 500-600 q/ha.

### **Other less important sorghum varieties**

Some other varieties are:

Milo, Hegari, Feterita, Durras, Shallus, Kaoligas. Meloland, Caprock, Red-lane, Combined Kafir Goga, Chutiala, Bodh, Tundi, Rattore, Sarokartuho, Red-turi, Red-Janpur, Badgar.

### **Sorghum (sorghum Vulagare Pers)**

It is staple food of the poor classes, Grain may be broken and cooked in the same way as rice. It can be ground and flour used for a variety of preparation, inferior only to wheat for bread making.

### **Sorghum varieties of Sindh**

Some more acceptable and suitable varieties are:

Coga, Chutiola, Bodh, Tundi, Rattor and Sororkartunho, Red-turt, Red-Janpur and Badgar are grown in Sindh.

### **Recent introduction in Pakistan**

Recently meloland caprock, red-lane and combined kafir have been introduced in Pakistan. The disadvantages of these varieties are:

- They need high doses of fertilizers, though yields is more than the old varieties.
- They have poor grain colour and quality and are more susceptible to pest attack.
- They have relatively low stability under adverse conditions.
- They have low fodder colour and dry stalk output.

### **Planting season**

March to July is the time of sowing for seed, the seed rate is 50 kg/ha and March to October is the season for fodder production.

### **Existing cultural practices in Sindh**

The current rain yield of sorghum in Sindh is 2500 kgs/ha. This is due to poor cultural practices namely:

- Inadequate fertilizer use.
- Poor land preparation.
- Thin plant population (Traditional broadcasting method, results in uneven seed distribution, low germination and patchy crop).
- The attack of common insect and pests, stem borer and shoot-fly.
- Thinning of crops for fodder, which results in low stand and yield.

### **Fertilising**

Sorghum requires lot of fertiliser and its fertiliser requirements are:

- 125 kgs Super Phosphate/ha.
- 125 kgs Sulphate or Muriate of Potash/ha.
- 125 kgs Urea/ha. (Usually this is required at the time of planting).
- The Nitrogen fertiliser should not allowed to contact the seed, otherwise poor germination will result. After each grazing the nitrogen fertiliser is needed.

### **Intercropping**

The intercropping patterns of Sindh are:

- Sorghum-berseem clover-bajra-millet.
- Maize-berseem clover-bajra-cowpea.
- Sorghum-berseem clover-mize-cowea.
- Bajra-turnip-oat-maize-cowpea.
- Sorghum-igeon pea. The latter used as intercrop.

### **Yield of high density planting**

Higher plant population per unit land results in to following yields of fodder acre:

Yield of dry crop vary from 400 to 800 lbs of grain and 3,000 to 4,000 lbs of fodder per hectare.

### **Pollination**

Sorghum is predominately self-pollinated.

### **Grazing**

Strip grazing or forage harvesting is better than allowing cattle to graze the whole paddock.

### **Insects attacking stalks, leaves and roots**

Insect attacking in sorghum are:

- Shootfly.
- Stem borer.
- Midge.
- Head mould.
- Charcoal rot.
- Root-rot.
- Stalk borrs (sesamia Cretica and Sesamia Calamistis).
- Corn-worms (Heliothis Zeac and Heliothis Obsoleta).
- Sorghum files (Therigona Exigna A. Indica and A. Quadriponcatat).

### **Diseases attacking the head**

The three principle types of smut accoutering on sorghum are:

- Covered-Kernel Smut (sphacelotheca Sorghi).
- Loose-Kernel Smut (Spacelotheca Crventa).
- Gead Smut (sphacelotheca Reiliana).

### **Uses**

The local varieties contain the following important ingredients:

- 7.4 to 9.3% protein.
- 1.9 to 2.5% Lysine.
- 9.3 to 11.6% Leucine.
- The sorghum protein is deficient in Lysine and rich in Leucine : Lysine ratio.

Important uses of sorghum are grains, fodder, ethanol production, brewing and fermentation industries. Sorghum flour is used as a binder and stiffening agent for paper, sugar and alcohol manufacture and many other fermentation products.

Sorghum is an annual crops and requiring planting every year. Its forage provide large quantities of feed over a short space of time. The are valuable for intensive grazing or to fill in seasonal gaps of feed supplies.

### **Poisonous sorghum stages**

Forage sorghum contain poisonous cyanogenic glucosides during young growth and early regrowth. These are converted to hydrogen cyanide and when eaten, can kill livestock. The precaution to avoid poisoning are:

- No graze new growth when below 75cm in height.
- No graze stress crop.
- The empty stock not allowed to feed sorghum.
- Select, on of low prussic acid varieties.

### **Cure against positioning**

In case of poisoning, cattle is drenched with 69ml of photographic hypo in 500ml of water.

## CONCLUSION

### Breeding needs

In Pakistan the farmer are using poor quality of seeds. The existing varieties are susceptible to seed borne diseases such as smut, leaf-blight and downy mildew. Research efforts are needed to develop new varieties with inbred resistance to disease breeding. The basis of breeding should be:

- Increased grain yield and fodder.
- Plant height.
- Seeding vigour.
- Leaf area index.
- Emergence of seed through soil crust.
- Shoot maturity period.
- Seed colour.
- Quality protein value of seed and fodder.
- Endosperm texture.
- Panicle length and breadth.
- Panicle weight.
- Insect and disease resistance.
- Nutritional quality.
- High lysine content.
- Heat resistance.
- Drought tolerance.
- Plant, soil and water management lead-in to most economic cost of bye-product.

### REFERENCES

1. *Arnon, I, 1972, Crop Production in Dry Regions, Vol.2, National Book Foundation of Pakistan, (Sorghum & Millets pp. 92-135).*
2. *Chopra, V.L., 1989, Plant Breeding, Theory and Practice, Oxford & IBH Publishing Co., (Often Grass - Pollinated Crops: Sorghum pp. 225-233).*
3. *Ministry of Food and Agriculture, Government of Pakistan, 1988, Report of the National Commission on Agriculture.*
4. *Raghavan, D., 1961, Handbook of Agriculture, Indian Council of Agricultural Research, New Delhi, (Sorghum pp. 148-153).*
5. *Ram, Mahabal, 1986, High Yielding Varieties of Crops, 2nd Edition, oxford & IBH Publishing Co., (Fodder Crop. pp. 549-579).*
6. *Tata, S.N., 1987, Handbook of Agriculture, Indian Council of Agricultural Research, New Delhi, (Sorghum pp. 815-827).*

**Author:** Farzana Panhwar (Mrs)  
**Address:** 157-C, Unit No.2, Latifabad, Hyderabad  
(Sindh), Pakistan.  
**E-mail:** farzanapanhwar@hotmail.com  
farzanapanhwar@yahoo.com  
**Fax:** 92-21-5830826 and 92-221-860410  
**Publisher:** ChemLin  
http://www.ChemLin.com  
  
May 11, 2005

---

More articles of Mrs. Farzana Panhwar see: <http://www.ChemLin.de/publications/index.htm>

To publish your research papers please contact [office@ChemLin.de](mailto:office@ChemLin.de)