

# **An overview of banana production Sindh**

**By**

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## **Background**

The centre of diversity for bananas is in South-East Asia (ranging from South-Western India through to Papua New Guinea) and bananas are an important food for many people in this region. Average consumption of bananas in Asia as a whole is approximately 8kg/person/year, though the average for some countries can be much greater (e.g. 34kg/person/year in the Philippines). However, according to FAO statistics, the average for Pakistan (0.9kg/person/year) is only about one tenth the regional averages.

Banana is grown commercially in Sindh province. About 87 percentage of the total area of Pakistan is planted in Sindh province with a production of 89 percentages in fruit cultivation. The area under banana at the time of independence was only 117 hectares and the production reported was 368 M. tons. The popular Hari chhal (Basrai) banana variety has been successfully acclimatized, then multiplied and spread all over the Sindh Province. Since then it seems that during that period till now, there have been no technical know-how ever established about better banana cultivation practices.

The aim of banana production is to produce high yielding plants while maintaining plantation health. To achieve this, it is essential to have a basic knowledge of what governs fruit production and quality. Here are the important things you need to know.

## **Key factors for better banana quality production:**

Climate, better soils, availability & quality of canal irrigation water, banana growth cycle and availability of skilled labor force

## **Climate:**

Basically banana is grown in tropical and sub-tropical areas of the world, roughly the area between latitudes of 30 degree N and 30 degree S. Within this band, there are varied climates with different lengths of dry season and different degrees and patterns of precipitations. A suitable banana climate is a mean temperature 22 to 32 degree C and mean rainfall of 4 inches

(10 cm) per month. In Sindh province, the annual rainfall is not sufficient to meet the requirements of banana plant (50 to 200 mm per annum). Whereas banana produce excellent quality crop where average rainfall ranges from 1200 to 2500 mm/annum. Banana is mainly located in the Indus Delta zone of Sindh, it perform extremely well in the coastal belts; recently its cultivation has expanded up to the much warmer north. There should not been more than 3 months of dry season. Cool weather and prolonged drought retard growth. Banana plants hardly produce only one leaf per month in winter, 4 per month in summer (maximum in the month of May). If a low temperature (at 13 degree C) in winter occurs, the bunch may not be able to emerge from the centre of crown, which is called 'Choke Throating" a typical character of 'Dwarf Cavendish' and the bud may not be able to emerge from the stem. This will have a major impact on yield and quality. If the temperature even lower than that of 13 degree C, the leaves and new suckers starts to burn. Smudging, by burning dry trash covered with green leaves to create smoke, can raise the temperature 2 to 4 degrees. Flooding the field in advance of a cold nap will keep the ground warm if the chill weather is brief. Besides, microsprinkler irrigation system can help reduce the chilling injury. Wind is detrimental to banana plants. Light winds shred the leaves, interfering with metabolism; stronger winds may twist and distort the crown. Winds to 30 mps break the petioles; winds to 40 mph will topple a pseudostem that is supporting the weight of a heavy bunch unless the stem is propped, may cause root damage in non fruiting plants that are not blown down; winds of 60 mph or over will uproot entire plantations, especially when the soil is saturated by rain. Wind velocity in lower Sindh is a great problem, as much as 15-20% plus losses are observed. In order to save banana from high wind velocities windbreaks are often planted around banana fields to provide some protection from cold and wind.

### **Better Soils:**

The banana plant will grow and fruit under very poor conditions but will not flourish and be economically viable or productive without deep, well-drained soil. Alluvial soils of river valleys are ideal for banana growing. Soils which have potassium level above 300 ppm and phosphorus level greater than 15 ppm are ideal soils for its successful cultivation. Heavy clay, sandy, alkaline, saline and waterlogged soils are not suitable for banana cultivation. Banana is a long duration, highly sensitive, nutrient consuming crop, before taking decision to plant banana on any soil it is advised to get the soil analysis done so that the future investment on it could be properly utilized. Soil pH may range from 7.5-8 with good internal drainage.

### **Availability & quality of canal irrigation water:**

Mainly there are two sources canal irrigation water and tube well or underground water. Since banana is highly sensitive to drought & salinity, better to avoid tubewell water because it can have higher EC above 2 and salts greater than 600-800 ppm. In case of non-availability of canal

irrigation water, tube well water can be used but only after analysis in a very limited frequency or in combination with canal water. Main application method is flood irrigation.

### **Banana growth cycle:**

Bananas plants tend to clump, with the main stem called the mother plant and subsequent suckers called daughter plants. Once the bunch has ripened or is removed by harvest, the mother stem dies and the suckers develop into mature plants that then continue the cycle. The cycle can be described as the emergence, 15<sup>th</sup> leaf stage, 25<sup>th</sup> leaf stage, bunch emergence, bract fall, half maturity, full maturity etc. And in ratoon crop vegetative and reproductive phases are extremely important.

### **Availability of skilled labor force:**

Since banana cultivation is a highly labor intensive, therefore labor force needs to be arranged prior to plantation. For better quality banana production these workers need to be properly trained on various aspects of improved banana cultural practices including banana bunchy top virus disease management.

Plantation managers use knowledge of these stages to implement farm practice and manage productivity. This includes matching fertilizer and irrigation requirements to plant growth, and identifying when key pest & disease management practices must be applied.

### **Knowledge Gaps and Interventions:**

Banana production is quite different for commercial cultivation (Export Oriented) & local consumption (Domestic oriented) so the level of 'sophistication' is always be too high when it comes to commercial cultivation.

### **Banana Crop Modeling:**

Banana crop modeling presents challenges to both farmers and researchers. Farmers want to increase production, reduce costs, and remain profitable under variable climate and economic conditions. Researchers want to match soils, climates, and crop growth and give sound management advice.

Before implementing banana production practices there are three major areas which need to be properly understood..

### **1. Cultivars & Healthy Planting Material:**

Good quality, disease free, healthy, uniform planting material in the form of tissue culture. Currently Dwarf Cavendish, (Basrai) is being grown commercially on more than 90% area in Sindh, recently tissue cultured Grand Naine and William Hybrid are getting popularity among all stakeholders in Pakistan. Three more tissue cultured Chinese cultivars are introduced by PARC, Islamabad (Pishang, B-10 and W-11). So far these tissue cultured new cultivars are performing extremely well with better feedbacks from markets. These may need to be propagated with the help of biotechnology at much faster rate in order to replace conventional planting material “bunch harvested pseudostem with corm”.

### **2. Better banana production technology:**

Right now banana being grown only to supply domestic markets in very conventional & rough methods therefore losses are huge.

Following are the banana cultural practices:

Site selection, land preparation “primary & secondary tillage tools including laser land leveling”, planting layout, intercrops, cultivars (new), healthy & disease free planting materials, time of planting, spacing, planting methods, plant establishment, desuckering, followers, planting density, composting or manuring (time of application), chemical fertilization macro & micro (application timings each through soil and foliar feed on the basis of soil & leaf analysis and growth cycle), irrigation water application, earthing up, weeding, interculturing (timings and frequency), mulching, deleafing, cutting height of bunch harvested pseudostem, stool or mat management, trash management, winder breakers, debelling, propping and bunch harvest.

The bad practice of selling banana crop to contractors need to be immediately stopped. This will help banana producers to learn many things in the field by themselves. Learning by doing may advance the cause. By keeping above mentioned banana cultural practices in mind productivity, quality and sustainability all can be achieved if the guidelines may properly followed and implemented in the field.

Since Sindh has desert like hot & dry sub-tropical climate where normal growth & physiology of banana plants do suffer from winter and extremely higher temperatures in hot summer therefore manipulating the banana plant has become extremely important for consistent production of banana bunches. It can only be achieved by timing of sucker selection,

fertilization (soil & leaf analysis) on the basis of growth cycle and with higher efficiency irrigation & fertigation systems like microsprinklers even with wise use of flood irrigation.

### **3. On postharvest problems:**

We may need the services of a Food scientist/ post harvest technologist (physiologist, biochemist & plant pathologist).

There are three major areas to be researched in banana post harvest handling,

- a. to standardized ripening regimes (temperature, ethylene, ethephon, etc)
- b. post harvest treatments to minimize rots (anthracnose & stem end rots) and
- c. physiochemical studies (finger drop & finger splitting) after ripening.

Domestic markets are divided into three, a. Kabul, b. Lahore & c. local (nearby markets). Kabul market offer 100-200 PKR more than Lahore market /40kg. Same is true with Quetta market. We called it unofficially exported banana to Central Asian States via Kabul and bordering province of Iran via Quetta. On the ground scale of post harvest losses are huge but uncalculated. Roughly it is estimated that 20-30% banana fruit is moving from Sindh to these destinations. Green bananas are cut and taken on the workers shoulders and placed on the open land to be loaded into the open end ordinary trucks without any covering on each bunch and then transported to various wholesale markets. In between there is no temperature control, ripening, bruises & compression losses. No doubt prices of banana/40 kg has increased manifold since 2006, mainly due to unofficial export to these destinations but we are not getting any feedbacks of our produce quality. Current cost of production is 80,000-150,000 PKR/acre. So in terms of income/acre many progressive banana growers are far better than any banana producing countries of the world but in terms of quality, resource utilization & average yield of province we are far behind than all other countries.

### **Interventions.**

In order to improve banana yield and quality it is highly recommended that multilocational and on-farm demo plots may need to be established in order to sample the opinion of local farmers on emerging technologies in banana cultivation to establish better understanding about the various characteristics, behavior & performance of different banana cultivars, their phenological (growth) cycles, soil types, nutritional requirements on the basis of soil & leaf analysis, higher efficiency irrigation systems with fertigation and various other environmental and agronomical factors, , insect & disease management systems, bunch care, handling methods and various post harvest operations.

**Conclusion:**

Banana is extremely labor intensive fruit crop by doing so huge employment opportunities to the local peoples can be provided.

If we broadly analyze the whole banana supply chain & production system at the expense of dwindling resources caused by poor management practices, much more needs to be done on scientific grounds in order to mitigate those losses. We have to seriously take up above mentioned issues and provide some concrete solutions. It can never be achieved if we work separately; collective & dedicated collaborative efforts are required from everyone associated directly or indirectly with this banana business.