

# Importance of rice crops



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There are 16 elements essential in optimum amounts and utilizable form for rice growth. Major elements include , C, H, O, N, P, K, Ca, Mg, and S, while minor elements include Fe, Mn, Cu, Zn, Mo, B, and Cl. Nutrient elements of Nitrogen, phosphorus, zinc, and potassium are usually applied by rice growers. (De Datta, 1981). Zinc was accepted as an essential micronutrient about 70 years ago (Sommer and Lipman, 1926). Rice is cultivated under diverse climatic conditions in Pakistan, where the rice cultivation areas can be divided into four ecological zones (Salim et al. 2003).

Zone -I consists of the northern mountainous areas having sub-humid climate and average monsoon rainfall of 750-1, 000 mm generally in summer. Rice varieties with short duration and tolerant to cold stress are suggested for cultivation in zone -i. In the broad strip of land between the Ravi and the Chenab zone -ii is located, with sub humid and sub tropical climate and a rainfall of 400-700 mm in July- August generally. Season for rice production is quite long and appropriate for growing both coarse and fine aromatic varieties.

The " Kalar tract" a habitat of the world's famous basmati rice, is situated in this zone. Zone-iii is a large area of land located on the west bank of river Indus with arid sub-tropical climate , an average rainfall of 100 mm and very high temperature. At the time of rice nursery growing the temperature some times raise above 50 0C. The climate is appropriate for cultivating coarse varieties but inappropriate for basmati rice varieties. Zone -IV is made by the Indus delta with climate of arid tropical marine having no marked seasons( Bashir et al, 2007).

In Pakistan more than 20 varieties of rice are released for cultivation these include, Basmati-370 (world's best quality for basmati rice), Basmati-385, Super basmati (the major basmati variety being exported), Rachna basmati, Basmati-2000 (released for cultivation in Zone-ii , in 2001 and its yield is higher than all the basmati varieties), Shaheen basmati (with higher yield under saline conditions), Khushboo-95( aromatic variety), IRRI-6 (Mehran-69), KS-282, DR-82, DR-83, DR-92, Sada hayat, Shua-92 (released for salt affected areas in zone-iv), NIAB, IRRI-9 (released for salt affected areas), JP-5, SWAT-I (released for cultivation in zone-i), SWAT-II (appropriate for colder areas of zone-i), Pakhal (released for hilly areas of Hazara division, zone-i) (Bashir et al, 2007)

In Asia Rice is feeding more than 2 billion people (FAO 1995). 27% of dietary energy and 20% of dietary protein intake over all is provided by rice (Anonymous, 2003). Rice is life for majority of people in the world and it is deeply rooted in cultural heritage of the societies. Twofold Increase in rice consumer is expected by the year 2020 as population of the world recorded six billion in 2006, will increase to 10 billion by 2025 (Khush and Toennissen 1991). The goal of hunger eradication, poverty alleviation, national food security and economic development can be achieved by improving the productivity systems of rice. In Pakistan rice is grown on 10% of the cultivated area, which accounts in agriculture for 6. 1% of value added and 1. 3% in gross domestic product (Anonymous 2006). During 2005-2006 rice Production was estimated as 5, 547 thousand tones, 10. 4% higher than the previous year with 6. 1% increase in yield per hectare (Anonymous, 2006).

The annual rice export of Pakistan is about 2.5 million tons, which earn 513.0 million dollars for the country (Anonymous 1998).

In 2005-06 rice was cultivated on about 2.531 million hectares area and total production was 5.5 million tones which was 9.5% higher than the previous year and 10% more than the set target.

(Anonymous. 2006. Economic Bulletin, Econ. Res. Wing, National Bank of Pakistan, Jan- Feb. pp. 17-18.)

Rice was cultivated on 4.2 million hectares and the yield was 10.1 million tons (Anonymous, 2010). In 2010 China, India, Indonesia, Bangladesh and Vietnam were the top rice producer, with a total rice production of 166.41, 132.01, 52.07, 38.06 and 34.51 million tones respectively. While in Pakistan rice production was low. (Anonymous, 2010).

Anonymous. 2010. Pakistan statistical year book. Fed. Bur. Stat., Statistical division, Karachi, Pakistan.

Anonymous, 2010. World Rice Production published in The Rice trade august 3rd, 2010.

The growth and consumption of rice in Asia is about 90% of the total rice production where 2.7 billion people, nearly half population of the world use rice as staple food .

Said, A., A. Zada and M. Tahir. 2000. Improved cultural practices for profitable rice production in North West Frontier Province. TASRAN Computer Associate, Mingora, Swat, Pakistan.

The total land area of Pakistan is 79. 61 m ha.

Land Use Category / Agriculture ,,, Area / 22. 7 ,,,,,, Per cent/ 29. 4

(Khan, 2006, p. 45)

Khan, M. H. (2006) ‘ Agriculture in Pakistan: Changes and Progress 1947-2005’,

Vanguard Books(Pvt.) Ltd., Lahore.

(Definition: Fiscal Year (FY) is a term that is used to differentiate an organization’s budget or financial year from the calendar year. A fiscal year usually starts at the beginning of a quarter, such as April 1, July 1 or October 1.)

In FY 2010, rice production in Pakistan was about 6883 thousand tons. It contributes 1. 4 percent to the GDP. Pakistan produces very

high quality rice both for domestic consumption and for export purposes (MOF,

2011). Pakistan exports rice to the Middle East and EU.

Rice production in 2010-11 was 4823 thousand tons. During 2011-12 (july-march) it reached 6, 160 thousand tons which shows an increase of 27. 7% .

MOF (2012) ‘ Economic Survey of Pakistan 2011-12’, Ministry of Finance, Government of Pakistan, Islamabad.

Rice ranking as second largest staple food grain crop of Pakistan is a major earning source of foreign exchange. High quality of rice is produced for export and fulfilling the domestic needs. Rice is accounting 1. 0% of GDP and 4. 9 % of the value added in agriculture. During 2010-11 rice was cultivated on 2365 thousand hectares with the production of 4823 thousand tons . the area under rice cultivation is 2571 thousand hectares in 2011-12(july-march) and the production is estimated as 6160 thousand tons.

Rice production has increased to 6, 160 thousand tons in 2011-12 from 4, 823 thousand tons in 2010-11 showing an increase of 27. 7 percent.

Thus, four major crops (wheat, rice, cotton, and sugarcane) on average, contribute 28 percent to the value added in overall agriculture and 5. 9 percent to GDP.

Production of Major Crops thousands tons.(000 Tons)

2008-09 , 6, 952 ,,,, 2009-10 , 6, 883 ,,,,,,, 2010-11 (P), 4, 823 (MOF, 2011)

MOF (2011) ‘ Economic Survey of Pakistan 2010-11’, Ministry of Finance, Government of Pakistan, Islamabad.

Rice is the second largest staple food crop in Pakistan and is a major source of export earnings in recent years. It accounts for 4. 4 percent of value added in agriculture and 0. 9 percent in GDP. Pakistan grow high quality rice to meet both domestic demand and exports. Area sown for rice is estimated at 2365 thousand hectares, 17. 9 percent less than last year (2883 thousand hectares). The production of the crop is estimated at 4823 thousand tons, 29. 9 percent less than last year. This is mainly attributed to devastating

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floods of July, 2010. (MOF, 2011)

MOF (2011) ' Economic Survey of Pakistan 2010-11', Ministry of Finance, Government of Pakistan, Islamabad.

Area, Production and Yield of Rice Year

Area Production Yield

year (000 Hectare) % Change (000 Tons) % Change (Kgs/Hec.) % Change

2007-08 2515 -2. 6 5563 2. 3 2212 5. 0

2008-09 2963 17. 8 6952 25. 0 2346 6. 1

2009-10 2883 -2. 7 6883 -1. 0 2387 1. 7

2010-11 2365 -17. 9 4823 -29. 9 2039 -14. 6

2011-12(p) 2571 8. 7 6160 27. 7 2396 17. 5

P: Provisional (July-March) Source: Ministry of Food and Agriculture pakistan, Federal Bureau of Statistics

Bashir, K., Khan, N. M., Rasheed, S., Salim, M. (2007). Indica rice varietal development in Pakistan: an overview. Paddy Water Environ, 5: 73-81

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Rice (*Oryza sativa* L.) is one of the most favoured world cereals and is staple food for approximately over half of the world's population for fulfilling their food needs (Dowling et al., 1998; Itani et al., 2002). According to an estimate more than 148 million hectares area is under rice cultivation in 114 countries of the world (FAO, 2006). On a global basis, rice provides 21 and 15% per capita of dietary energy and protein, respectively (Maclean et al., 2002).

Approximately, 90% of the world's rice is grown in less developed countries, especially in Asia, including Pakistan (Mae, 1997). Khush (2001) indicated that, to ensure world food security, the rice production in Asia must increase from 545 million tons to 700 million tons by year 2025. In Pakistan, rice is the second major food crop and plays a vital role in foreign exchange earnings by contributing 1. 2% to the GDP, while the area under rice cultivation was 2. 581 million hectares with the production of 5. 438 million tons during 2006-07 (Anonymous, 2007). The sustainability as well as high yields of rice are needed for food security in many of the subsistence

farming systems in Asia (Cooper, 1999; Munson, 1985; Marschner, 1995; Fageria and Baligar, 1997).