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**ASSIGNMENT TOPIC:- PREPARE A BUSINESS PLAN ON A CHOSEN AGRICULTURE ENTERPRISE FOLLOWING THE GUIDELINE IN THE NOTE**

### **RICE (ORYZA SATIVA)**

#### **Introduction**

Rice (*Oryza sativa*) contains two major subspecies: the sticky, short-grained *japonica* or *sinica* variety, and the non sticky, long-grained *indica* rice variety. Japonica varieties are usually cultivated in dry fields (it is cultivated mainly submerged in Japan), in temperate East Asia, upland areas of Southeast Asia, and high elevations in South Asia, while *indica* varieties are mainly lowland rice, grown mostly submerged, throughout tropical Asia. Rice occurs in a variety of colors, including *white, brown, black, purple, and red rices*. Black rice (also known as purple rice) is a range of rice types, some of which are glutinous rice.

#### **Importance**

Rice provides 21% of global human per capita energy and 15% of per capita protein. Although rice protein ranks high in nutritional quality among cereals, protein content is modest. Rice also provides minerals, vitamins, and fiber, although all constituents except carbohydrates are reduced by milling. Broken rice is used in brewing, distilling, and in the manufacture of starch and rice flour. Hulls are used for fuel, packing material, industrial grinding, fertilizer manufacture, and in the manufacture of an industrial chemical called furfural. Depending on the type of rice you choose, rice can serve as a good source of B vitamins, thiamin, niacin,

riboflavin, fiber, and iron. Rice is also an excellent source of manganese and magnesium. Enriched rice has vitamins and minerals added back after it is refined.

## **Production**

The cultivation of rice begins by planting water-soaked seeds in a properly prepared bed. Oftentimes, the seedlings are transplanted to the paddy when they reach a certain size. When the grains begin to ripen, the water is drained from the fields. Harvesting begins when the grain yellow and the plants start to droop. Nearly 100 million people depend on the production of rice from rain fed upland regions to provide them with rice to eat as their daily staple food. Almost two-thirds of the world's total upland rice area is in Asia. Bangladesh, Cambodia, China, India, Indonesia, Myanmar, Thailand, and Vietnam are important producers.

## **Consumption**

Global consumption of rice has seen a slight increase over the last several years. In the 2018/2019 crop year, about 486.62 million metric tons of rice was consumed worldwide, up from 437.18 million metric tons in the 2008/2009 crop year. Rice requires specific growing conditions to be successfully cultivated.

## **Choice of land**

Choose fertile land with good water retention capacity (contain some clay and/or organic matter, i.e. loamy soil); clayed soils are most desirable. • Heavy soils of valleys and fadamas are preferred. • Consult Soil Survey and Testing Service of the Institute of Agricultural Research and Training (IAR&T), Ibadan or any other reputable soil-testing unit if growing rice for one or more consecutive years on the same piece of land.

## **Choosing a variety**

Use healthy seeds of a locally adapted variety to get a good crop that has high yield potential and a good market price.

Each rice growing country should have a list of released varieties within the country.

IRRI provides small quantities of **seeds** on demand to any individual or organization anywhere in the world for the purposes of research, breeding, or training for food and agriculture.

## **Recommended varieties**

Several improved varieties of rice have been recommended and released in Nigeria. Some cassava varieties include:- CL111 (A very early, short-stature, long-grain, Clearfield rice variety that averages about five to seven days) , CL151 (A very early, semidwarf, long-grain, Clearfield rice variety that displays excellent yield potential), CL153, CL163 (MS) , CL172 (AR), CL272 (LA) e.t. c

## **Acquisition of planting materials**

The only raw material needed for commercial production of rice is the rice seed or seedlings. Additional use of herbicides, pesticides, and fertilizer can increase the likelihood of a larger yield.

## **Stem quality**

Imbalance use of fertilizers is one of the important factors for lodging of rice leading to paddy-yield reduction. Potassium (K) deficiency may be one of the contributing factors in this regard. Present study was conducted to assess the decrease in lodging losses due to use of K

fertilizer in the presence of nitrogen by determining various factors contributing to stem strength. Two levels of K, one with deficient (Kd) while other with recommended (Kr) K and three levels of N i.e. deficient (Nd), half of recommended (Nhr) and recommended (Nr) N were applied along with recommended dose of phosphorus and zinc to two fine-grain rice cultivars.

### **Time of planting**

Rice begins to grow from March to June, depending on the region. Rice fields are usually kept flooded with water, periodically changing the depth of flooding depending on the phase of plant development and to control pests and weeds.

### **Method of planting**

Farmers can choose among three different methods of planting rice i.e., transplanting, wet sowing and dry sowing. The latter two constitute direct sowing. Amount of irrigation water for each of these methods differs greatly but so also do crop yields, labor expenses and overall economic returns. Direct-seeding - method of planting seeds directly in the garden plot. ... Direct seeding or planting - is the sowing of seeds directly in the soil, by-passing the need for nurseries and irrigation.

### **Plant population**

Rice growers should aim to achieve a plant population in the range of 100 to 300 plants/m<sup>2</sup> for all sowing methods. This provides a buffer before grain yield declines should establishment problems occur. No difference in grain yield was observed for plant populations between 40 and 700 plants/m<sup>2</sup> in research where a direct comparison between plant population and grain yield was measured at over 800 sites. High grain yields can be achieved with plant populations below 40

plants/m<sup>2</sup> , but there is a declining trend in yield with decreasing plant population. At low plant populations it becomes increasingly important that plants are evenly spaced for grain yield to be maintained.

### **Chemical Control**

Actually, two groups of non-fungicidal rice blast chemicals are currently on the market; melanin biosynthesis inhibitors (MBIs), e.g., fthalide, tricyclazole, pyroquilon, carpropamid, diclocymet and fenoxanil, and the so called priming effectors or plant defense activators such as probenazole, acibenzolar-S-methyl and tiadinil, which induce host resistance against the pathogen's attack. Figure 1 shows "sales of blast fungicides in Japan", which indicates that non-fungicidal plant activator, probenazole, and melanin biosynthesis inhibitors like pyroquilon, carpropamid, tricyclazole and fthalide are main fungicides for the blast control. The exploitation and development of new anti-blast fungicides have been becoming more and more difficult in recent years; cost effective studies on the toxicity of the chemicals and residue analyses in crops, animals and the environment are highly required to secure human health and to preserve the ecosystems.

### **Fertilizer rate and time of application**

Ideally, fertilizer recommendations should be based on soil analysis but when this is not done then use the land history and vegetation as a guide. Fertilizer N use efficiency in lowland rice may be maximized through a better timing of application to coincide with the stages of peak requirement of the crop, and placement of N fertilizer in the soil. Proper phosphorus (P) nutrition is critical for producing maximum rice grain yields. Potassium fertilization field trials increased yields in 20 percent of the trial sites. Phosphorus is very important in the early vegetative

growth stages. Phosphorus promotes strong early plant growth and development of a strong root system. Field research has established the critical concentrations of P, K, and Zn in the soil by correlating soil test values of these mineral nutrients and rice plant performance.

## **Harvesting**

This cereal is harvested only after the grain has reached maturity, and two or three weeks after draining the rice-field. Premature cutting of the rice keeps the grain from reaching maturity, and can cause serious losses in the quality of the product. Generally, the ideal harvest time lies between 130 and 136 days after sowing for late, 113 and 125 for medium, and 110 days for early-maturing varieties. For dry season harvesting, an optimum time is 28 to 35 days after heading. In wet season harvest, optimum time is 32 to 38 days after heading. We harvest rice twice a year - sometimes only once if the year has been especially rainy. When we're not planting rice, our family usually does crop rotation. Sometimes we leave the land bare as well. two or three times a year, depending on the weather.

## **Diseases**

2.1, three fungal diseases, blast, sheath blight and sheath-rot, the bacterial disease, bacterial blight (BB) of rice and the viral disease, rice tungro disease (RTD), are listed as major diseases of rice

## **Pests:**

Black bug, Zigzag leafhopper, Rice skipper, Rice thrips., Rice whorl maggot, Mealy bug, Mole cricket, Ant are common pests.