

Seminar on
'Recent Rice Research at the IARI in relation to
doubling the national rice production

Talk by:

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on
dwarf
'Development of new rice varieties'

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During 1964-65, 36.1 million hectares were under rice in India and the total production was 38.73 million tonnes. Out of the total area, nearly 13 million hectares have assured irrigation. An additional 1 ton per hectare can easily be produced in this area during 1967. A short and non-lodging variety is basic to getting the best out of fertilizer and water. Three of the chief limiting factors of yield in our irrigated rice growing regions are (a) the low response to nitrogen and other nutrients by the tall varieties (b) the restriction imposed by the lodging tendency on the supply of water during the advanced stages of grain development (c) the impossibility of adjusting the growing season in such a way that it synchronizes with natural lower temperature and sunny days which are conducting for efficient photosynthesis and good grain development. More than 30% increase in grain yield has been found by a change in planting time in some varieties. The monsoon season when rice is widely grown in India is unfortunately the most unsuitable for grain production. Even if high doses of fertilizers are applied, the reduced photosynthesis caused by cloudy skies limits their use by the plant, since carbohydrate reserves are essential for nitrogen use. The discovery of a dwarf, erect-leaf and photoinsensitive type of rice in Taiwan called Dee-geo-woo-gen was hence an important landmark in the yield history of indica rices.

Tests conducted in different parts of the country have shown that both Taichung Native-1 and IR-8, which are dwarf and non-lodging varieties are capable of yielding 6 to 8 tonnes per hectare when grown under proper management. Many short-strawed, photoinsensitive varieties

will shortly be ready for release from the hybrids of adapted Indian varieties and Dee-gee-woo-gen, Taichung Native-1 and IR-8 already made in India. At the IARI, a dwarf Basmati variety of rice is currently under development. This would help to double the yield of the Basmati varieties now grown.

Powerful research tools are available which can help to rectify some of the prominent defects of the high yielding varieties like Taichung Native-1, Taichung-65 and Tainan-3. Through the treatment of seeds of these varieties with physical mutagens like X-rays and gamma rays and chemical mutagens like ethyl-methane-sulphonate, resistance to bacterial blight has been induced in Taichung Native-1. Similarly, non-sticky grains have been produced in Taichung-65. These new varieties, if cultivated with adequate fertilizers and pest and disease control, would help us to increase rice production by over 10 million tonnes during 1967.