

# RICE PLANT TYPE FOR HIGHER GRAIN YIELD

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A paper submitted to the Ministry of Agriculture and Natural Resources, Publicity and Information Section, Western State, for Agricultural Radio Broadcast. 1972

In many cultivated cereal crops, attention in recent years has been focused on the ideal plant type. The plant architect has been the main factor that is responsible for the green revolution in some of the cereals. The introduction of short sorghum types has increased the <sup>grain</sup> grown yields of this crop considerably. Wheat and rice are also very good examples of what a difference a change in morphology of plant can make.

The question that we may first ask is what is wrong with the present unimproved or semi-improved rice we grow in Nigeria as far as plant type is concerned? Generally our rice are too tall, with droopy leaves and non-fertilizer responsive. The grain to straw ratio is very low and the yield rarely exceeds 3000 lbs/acre under the best cultural practices. Associated with this height is the problem of lodging. There are many reasons why lodging is undesirable in plants. Lodged plants shed more of their grains than when they are upright. Thus yield is drastically reduced. The farmers will spend more time in harvesting lodged plants. Both the shed and unshed grains are opened to pests and diseases, causing quantitative and qualitative loss. Most of the grains free from disease and pest attack will be stained especially in lowland rice. This decreases the attractiveness of the grain and the dirt serve as media for fungus and bacteria growth. *Panicle sprouting also accompanies lodging varieties with poor weak dominance*

The droopy wide and long leaves of most of our Nigerian rice caused mutual shading and indirectly responsible for plant lodging. Shading of lower leaves means less accumulation of dry matter. Thus the grain yield is reduced.

The non-responsiveness to Nitrogen is highly associated with the very tall and heavy <sup>weak</sup> stems of our present rice. High nitrogen fertilizer makes them grow more luxuriously and consequently lodging.

In light of the discussions above on the inherent problems with our present rice plant type researchers both in the Federal and State Agricultural station and at the International Institute of Tropical Agriculture are working on the future rice plant type to remove or reduce to the minimum the present disadvantages associated with the recommended rice grown in Nigeria. The future rice will not be taller than 100-150 cm or 3-4½ft. At this height most rice will not lodge if they possess stiff straw.

This will reduce grain loss and other undesirable consequences discussed above. Plant breeders consider many plant characteristics such as stem size, internode length, leaf wrappings etc. in making their decision as to what plant will and will not lodge. Therefore future plant type will possess short stiff straw, with shorter internodes and good basal leaf wrapping. This plant type will considerably reduce lodging and will be nitrogen responsive.

The future rice plants will possess shorter and narrower leaves that are more upright. These will allow for maximum utilization of light energy and will not cause lodging.

It will be possible to grow these improved rice on a higher population and will give economic returns to fertilizer and other recommended cultural practices as yields will be doubled or tripled.

It will not be too long now that Nigerian farmers will have short stiff, straw with narrow short leaves held more upright, plants that will not lodge and produce much higher grain yields.