

Studies on the Use of Chinese Hybrid Rice with Modified SRI in Guinea

Prof. Peng Jiming

China National Hybrid Rice Research and Development Centre,
Changsha, Hunan 410125, China

Guinea is one of the nations in West Africa where growing rice is important and it is a main staple food for the people. Its rice yields average only 1.5 tons per hectare, however, and are much lower than those in the rest of the world. With the increase of population, the shortfall in rice production becomes more and more serious. Therefore, it is very important to increase the rice yield.

I made field experiments with Chinese hybrid rice using modified SRI practices in Guinea from January to May 2003. The result showed that high yields from Chinese hybrid rice with modified SRI can be obtained, and that Chinese hybrid rice with modified SRI has vast yield potential compared with Guinea's present varieties. The highest yield was 9232 kg/ha. On April 28, rice experts and officials from the Ministry of Agriculture and Animals of Guinea and its Rice Research Institute and Seed Company, rice farms, the FAO Office in Guinea, the China Agribusiness Farm (Group) Company, the China National Hybrid Rice R&D Centre, and the Chinese Embassy in Guinea assessed the experiments conducted in Koba county, Guinea. They gave high praise to these efforts and thought this innovation has a bright future in Guinea.

1. Materials used in trials

- 1.1. Time: Jan.-May,2003
- 1.2. Location: Koba county, Guinea
- 1.3. Varieties: GY032, GY033, GY034, GY035, GY036 and GY037 developed at the China National Hybrid Rice Research and Development Centre
- 1.4. Areas: the total area of the trials was 1.09 hectares, including 0.14 hm² GY032, 0.093 hm² GY033, 0.067 hm² GY034, 0.263 hm² GY035, 0.3 hm² GY036, and 0.227 hm² GY037.

2. Methods in trials

- 2.1 Sowing was done on Jan 14. The amount of seed sown in the seed bed was 450 kg/ha.. It was transplanted on Feb 5-7. The spacing was 26cm × 26cm . Harvesting was on May 7-14.
- 2.2 Application of fertilizers: 200 kg organic manure per hectare was used as basic fertilizer. Dressing fertilizer was 195 kg urea per hectare and 465 kg as compound fertilizer
- 2.3 Water management: The fields were not kept continuously irrigated and the seed beds were kept dry up to the third leaf. From the third leaf to transplanting, there was deep irrigation. After transplanting, the fields were irrigated and then let dry. During the whole tillering period, intermittent irrigation was adopted . After heading stage, shallow water was kept on the field. On the tenth day before harvesting, the fields were all drained..
- 2.4 Management of insect pests, diseases, mice and weeds: Weeds were controlled through the mechanical weeding and the application of herbicides. Apart from herbicides, however, no insecticides, fungicides and other chemicals were used to control pests, diseases and mice during the growth. period. There was no significant loss of yield to pests or diseases (such as stem borer, bacteria disease, and sheath blight).

3. Results and discussion

- 3.1 The experimental rice was harvested with a combine harvesting machine (there was some grain loss, especially GY035). The harvested results (see table) were that one hybrid yield was over 9 tons per hectare, four hybrids were more than 7.5 tons per hectare, and one hybrid was more than 5 ton per hectare. Of them, the yield of GY037 was 8436 kg/ha, and from GY036, 7794 kg/ha. The yield of GY032 was highest, up to 9232 kg per hectare. These yields are 3-6 times for those currently obtained from the local cultivars in Guinea.

Table Traits and yields of the hybrids with SRI

Hybrid varieties	Growth duration (days)	Height per plant (cm)	Length per panicle (cm)	Total grains per panicle	Filled grains per panicle	Seed set (%)	1000-grain weight (g)	Effective panicles (0000000 /hm ²)	Yield harvested (kg/hm ²)
GY037	113	104.31	21.68	138.36	124.32	89.85	28.14	2.817	8,436
GY036	114	98.23	21.22	160.18	142.13	88.73	25.88	2.645	7,794
GY035	104	112.93	24.80	136.30	122.90	90.17	34.65	2.601	7,527
GY034	112	95.79	20.48	151.20	122.52	81.03	29.06	2.700	7,714
GY033	110	92.75	25.60	121.33	95.33	78.57	31.25	2.269	5,592
GY032	120	109.30	26.15	151.75	125.95	82.99	31.80	2.952	9,232

3.2 The experimental results show that high yields from Chinese hybrid rice with modified SRI methods can be obtained in Guinea. The causes of high yields are that the Chinese hybrid rice has very strong growth characteristics assisted by a good cultivation system – SRI. The Chinese hybrid rice (see table) has lower plant height, non-lodging, strong tillering ability, short growth duration, high seed-setting ratio and 1000-grain weight. Modified SRI methods saved irrigation water. It was most important in that it promoted the growth of tillers and was very good for hybrids with growth advantage.

3.3 In applying SRI in Guinea, the control of weeds needs attention. Comprehensive management may be more effective. Besides herbicides, use of machine-leveling and weeding are easy to remove the weeds before sowing or transplanting.

3.4 In their actual productive operations, farmers in Guinea use less fertilizer than in the experiments. It is necessary to increase the amount of organic or chemical fertilizers applied.

Photo 1: GY032 with SRI



Photo 2: Guinea farmer with hybrid and SRI

