

## ABSTRACT

Field experiments were carried out at El-Gemmaiza Agricultural Research Station, EL-Gharbia governorate , Egypt during the two successive seasons, 2000 and 2001 to study rice ratooning ability under the effect of three nitrogen rates ( 0, 20 and 40 kg N/fed. ) and three cutting heights of the main crop rice plants at 5, 10 and 15cm above the soil surface levels on plant characters, yield, yield components and grain quality of three early maturing rice varieties (Akiyutaka, HR4856 and SR13925) to give good rice ratooning ability.

The obtained results indicated that plant height (cm), number of tillers/m<sup>2</sup>, heading date (in days), panicle length (cm), number of panicles/m<sup>2</sup>, number of spikelets/panicle, number of filled grain/panicle, 1000-grain weight, grain yield ( ton/fed.), total biomass ( ton /fed. ), harvest index and grain quality characters increasing gradually by increasing nitrogen rates from 0 up to 20 and 40 kg N/fed.

Results showed that number of tillers/m<sup>2</sup> , panicle length (cm), number of panicles/m<sup>2</sup> , number of spikelets/panicle, number of filled grains/panicle, 1000 - grain weight, grain yield ( ton/fed. ) , total biomass ( ton /fed. ) and grain quality characters increasing gradually when harvested the main rice crop at 10cm, followed by 15cm and 5cm cutting heights, while plant height

(cm), and heading date increased by increasing cutting heights from 5cm to 10 and 15cm, but harvest index decreased gradually due to cutting the main rice crop at 15cm followed by 10cm and 5cm in both seasons.

The recorded results indicated that Akiyutaka as rice ratooning variety was superior in growth characters, grain yield and its components as well as grain quality, while SR13925 gave the highest value for harvest index and HR4856 gave the highest value of head rice percentage, but SR13925 gave the lowest value of plant height (cm), number of tillers/m<sup>2</sup>, heading date, panicle length (cm), number of panicles/m<sup>2</sup>, number of spikelets/panicle, number of filled grain / panicle, 1000 - grain weight, grain yield ( ton/fed.), total biomass ( ton /fed. ), brown rice percentage, milling percentage and head rice percentage .

It could be concluded that the best rice ratooning grain yield could be obtained when planting Akiyutaka early maturing rice ratooning variety at Middle Delta Zone and harvested the main rice crop at 10cm above soil surface and fertilized the ratoon crop with 40kg N/fed.

## CONTENTS

	<b>Page</b>
<b>INTRODUCTION</b>	1
<b>REVIEW OF LITERATURE</b>	4
<b>MATERIALS AND METHODS</b>	38
<b>RESULTS AND DISCUSSION</b>	44
<b>A –Growth characters</b>	44
1- Plant height	44
2- Number of tillers / m <sup>2</sup>	48
3-Heading date (in days )	52
<b>B- Grain yield and its components:</b>	56
1- Panicle length (cm)	56
2- Number of productive tillers	60
3- Number of spikelets / panicle	64
4- Number of filled grains / panicle	68
5- 1000 – grain weight	72
6- Grain yield (ton/fed.)	75
7- Total biomass (ton/fed.)	79
8- Harvest index	83
<b>C- Grain quality characters</b>	87
1-Brown rice ratooning percentage	87
2- Milling rice percentage	90
3- Head rice ratooning percentage	94
<b>SUMMARY</b>	98
<b>ACKNOWLEDGMENT</b>	103
<b>REFERENCES</b>	104
<b>ARABIC SUMMARY</b>	