

ABSTRACT

Field experiments were conducted in a sandy soil in Ismailia Experiment Station, ARC during 2002 / 2003 and 2003 / 2004 seasons to study the effect of 4 bio-fertilization levels (0, 250, 500 and 750 g Nitrobin/fad) and 3 densities (1750, 2000 and 2250 seeds / m²) on the yield and quality of 3 flax varieties (Sakha 1 and Sakha 2 as local dual purpose varieties and Belinka as an imported fiber type variety). Nitrobin is a mixture of 3 N fixing bacteria spp, 2 *Azospirillum* + 1 *Azotobacter*).

Results indicated that:

- 1- Sakha 1 performed well in plant height, straw yield/plant and / fad, total fiber yield, long fiber and biological yields/fad, upper branching zone length and number of capsules / plant.
- 2- Sakha 2 performed well in seed index, seed yield /plant, seed and oil yields/fad and oil %.
- 3- Belinka produced thinner stems, lower seed index, greater long fiber %, total fiber yield %, the finest fibers and lowest oil %.
- 4- Inoculating the soil by Nitrobin increased stem diameter, straw yield / plant and / fad, number of capsules / plant, total and long fiber yields/ plant and / fad, biological, seed and oil yields / fad, oil % and fiber fineness.
- 5- Increasing plant density from 1750 to 2000 and 2250 seeds/m² increased plant height, technical stem length, long fiber %, fiber fineness, long fiber, total fiber, straw and biological yields / fad, but decreased stem diameter.
- 6- The interaction among the experimental factors indicated that the greatest straw yield was 4.15 t/ fad produced by Sakha 1 treated with 250g Nitobin and seeded at 2000 seed /m² on the average of both season. The greatest seed yield was 513 kg / fad, produced by Sakha 2 supplied with 250 g Nitrobin and seeded at 2250 seeds / m². The best fiber fineness was produced by Belinka inoculated with 250 g Nitrobin and seeded at 2250 seeds / m², being 270 Nm.

CONTENTS

	Page
INTRODUCTION	1
REVIEW OF LITERATURE	2
I- Varietal differences	2
II- Bio-fertilization	12
III- Plant density	18
MATERIALS AND METHODS	29
RESULTS AND DISCUSSION	34
I- Straw yield and its components	34
1- Plant height (cm).....	34
2- Technical stem length (cm).....	37
3- Stem diameter ...(m m).....	40
4- Straw yield/plant (g).....	43
5- Straw yield (ton/fad.)	46
6- Fiber yield (kg/fad.)	51
7- Long fiber yield (kg/fad.).....	55
8- Biological yield ...(ton/fad).....	59
II- Seed yield and its components	63
1- Upper branching zone length (cm)...	63
2- Number of capsules/ plant	66

3- No. of seeds / capsule.....	70
4- Seed index (g).....	72
5- Seed yield / plant (g).....	75
6- Seed yield (kg/fad).....	78
7- Oil yield (kg / fad).....	83
III- Technological characters	87
1- Long fiber percentage	87
2- Total fiber percentage.....	90
3- Fiber fineness (Nm)	94
4- Oil percentage	98
SUMMARY	103
REFERENCES	110
ARABIC SUMMARY	