

Table of Contents

1 - INTRODUCTION	1
2 - REVIEW OF LITERATURE.....	4
2.1. Ridge width	5
2.1.1. Onion yield and its attributes	5
2.1.2. Faba bean yield and its attributes	9
2.2. Intercropping culture	12
2.2.1. Onion yield and its attributes	13
2.2.2. Faba bean yield and its attributes	15
2.3. Competitive relationships and yield advantages	19
2.3.1. Land equivalent ratio (LER)	19
2.3.2. Relative crowding coefficient (RCC)	20
2.3.3. Aggressivity	20
2.4. Intercropping economic advantage (MAI)	21
3 - MATERIALS AND METHODS.....	22
4 - RESULTS AND DISCUSSION.....	24
A. Bulbs yield and its attributes	24
B. Faba bean yield and its attributes	35
C. Quality of faba bean seeds	42
D. Relative yields and land equivalent ratio (LER)	44
E. Relative crowding coefficient (RCC)	47
F. Aggressivity	49
G. Intercropping economic advantage	52
5 - SUMMARY	54
Conclusion	60
6 - REFERENCES	61
7- ARABIC SUMMARY.....	...

List of Tables

Table No.	Title	Page
Table (1)	Effect of ridge widths, cropping systems and their interactions on bulb yield and its attributes during the two seasons (2013/14 and 2014/15).	31
Table (1)	Continued.	32
Table (2)	Effect of ridge width, cropping systems and their interaction on faba bean yield and its attributes during 2013/14 and 2014/15 seasons.	37
Table (2)	Continued.	38
Table (2)	Continued.	39
Table (3)	Effect of ridge width, cropping systems and their interaction quality of faba bean seeds during 2013/14 and 2014/15 seasons.	43
Table (4)	Relative yields and LER as affected by ridge width, cropping stems and their interaction during 2013/14 and 2014/15 seasons.	46
Table (5)	Relative crowding coefficient (RCC) as affected by ridge width, cropping systems and their interaction during 2013/14 and 2014/15 seasons.	48
Table (6)	Aggressivity as affected by ridge width, cropping systems and their interaction during 2013/14 and 2014/15 seasons.	51
Table (7)	Economic return as affected by ridge width, cropping systems and their interaction during 2013/14 and 2014/15 seasons.	53

ABSTRACT

A two-years study was carried out during the two successive seasons of 2013/2014 and 2014/2015 at the farm of Sers El-Lyan Agricultural Research Station, Agricultural Research Center, El – Menoufia Governorate, Egypt to identify and assess the suitable pattern of intercropping onion with faba bean for increasing land usage and profitability of farmers. The treatments between three ridge widths (60, 90 and 120 cm) and five cropping systems (100% faba bean + 27% onion, 100% faba bean + 33% onion, 100% faba bean + 41% onion, 100% faba bean + 55% onion, sole faba bean or sole onion) were studied. The experimental layout was conducted in randomized complete block with split plot design with three replications by allocating the ridge widths in the main plots and cropping systems in the sub plots. Subplot area consisted of (12 ridges-60 cm width or 8 ridges-90 cm width and 6 ridges-120 cm apart) and 3 meters long. Sole onion had the highest number of leaves per plant, bulbs length and diameter, total weight of the plant, bulb weight and bulbs yield per fad compared to those of intercropping patterns. The maximum number of leaves per plant, bulbs length and diameter, total weight of plants and bulb weight were obtained by intercropping pattern 100% faba bean + 27% onion, meanwhile the highest bulbs yield per fad was recorded by intercropping pattern 100% faba bean + 55% onion. Sole faba bean had the highest numbers of branches per plant and pods per plant, number of seeds per pod, plant total weight, pods weight per plant, seed yield per plant, 100 – seed weight, seed yield per fad, protein yield per fad, harvest index and seed P content compared to those of intercropping patterns. Intercropping pattern 100% faba bean + 27% onion produced the highest seed yield of faba bean and its attributes compared to those of the other intercropping patterns. The effect of interaction between ridge widths and cropping systems was significant for most traits of both species. Maximum relative yield of onion and land equivalent ratio were obtained by intercropping pattern 100% faba bean + 55% onion of ridge width 120 cm. On the other hand, maximum (RCC) was obtained by intercropping pattern 100% faba bean + 27% onion of ridge width 120 cm. The value of aggressivity of faba bean was positive for all treatments, while, the values of aggressivity were negative for all intercropped onion with faba bean in both seasons. Intercropping pattern 100% faba bean + 55% onion of ridge width 120 cm achieved the highest yields of both crops and good quality of faba bean seeds, as well as, economic return.

Keywords: Ridge width, Intercropping, faba bean, onion, Quality of faba bean seeds, Competitive relationships, Economic return.
