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Influence of intercropping on the incidence of gram pod borer *H. armigera* (Hub.) and its natural enemies in chickpea (*Cicer arientinum* L.)

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Abstract
A field experiment on influence of intercropping on the incidence of gram pod borer *H. armigera* (Hub.) and its natural enemies in chickpea (*Cicer arientinum* L.) was conducted at Entomology Research Farm, PGI, MPKV, Rahuri during *Rabi* 2019-20. Eight treatments intercrop with gram *viz.* mustard, coriander, linseed, oat, lentil, pea, wheat, sorghum and one sole crop of gram were evaluated. The result revealed that the treatment T_3 (Chickpea+ Coriander) had the lowest (2.38 larvae/mrl) population. The maximum population (6.43 larvae/mrl) was observed in treatment T_1 Chickpea sole crop. The mean percent parasitization of *C. chlorideae* was best influenced by intercrops. The treatment T_3 (Chickpea+ Coriander) had highest (26.7%) parasitization by *C. chlorideae.* Significant lowest pod damage (15.50%) was recorded in the treatment T_2 (Chickpea + Mustard). Regarding the economics of the intercropping system, the treatment T_3 (Chickpea + Coriander) was found superior. It recorded the highest net return of Rs.68344/hectare.

Keywords: Chickpea, intercropping, gram pod borer, *Helicoverpa armigera*, sole crop

Introduction
Pulses are the important group which occupies a unique position among the food crops in the world of agriculture by virtue of their high protein content. Gram (*Cicer arietinum* Linnaeus) commonly called as 'Chickpea' or 'Bengal gram' is the most important pulse crop of India grown in *Rabi* season. It is a self- pollinated crop and belongs to the sub family Papilionaceae of the family Leguminaceae (Bentham and Hooker, 1970) [3] with its probable origin in South West Asia i.e.in countries like Afghanistan and Persia. Pulses beside rich source of proteins, also enriched the soil by symbiotic nitrogen fixation. Due to their protein richness, pulses are the integral part of daily diet of the Indian people. In nutritional point of view, chickpea seeds contain protein (17.7%), lysine (0.49%) and methionine (0.11%) (Katiyar, 1982) [6]. In addition to this, it also carries 56.6% carbohydrates, ash, calcium, phosphorus, iron and vitamin B in considerable amount (Thakur, 1980) [14].
India is the largest producer of chickpea (*Cicer arietinum*) with 67 per cent of the global production and occupies nearly 31 percent of area in the country contributing over 37 per cent to the national pulse production (Reena *et al*., 2009) [9]. In 2017-18, chickpea was cultivated in about 106 lakh ha area in India. The country harvested a record production of > 111 lakh ton at the ever highest productivity level of 1056 kg/ha. As usual, Madhya Pradesh has contributed a significant 34% of the total gram area and 41% of total gram production in the country, thereby ranking first both in area and production. Maharashtra (18%) and Rajasthan (13%) were the next in terms of area. (Anonymous, 2018) [1]. Chickpea crop suffers a lot due to the attack of number of insect-pests. Among these Gram pod borer, *Helicoverpa armigera* (Hubner) (Lepidoptera: Noctuidae) is the most important pest of chick pea. *Helicoverpa armigera* (Hubner) causes up to 75 percent reduction in yield (Begum *et al*., 1992) [2]. On average about 30 to 40% pods are found to be damaged by the pod borer resulting in the yield loss of 400 kg/ha (Rahman, 1990) [8]. It is a polyphagous insect also known as American bollworm has become a pest of national importance in India, causing economic losses to several crops like chickpea, pigeon pea, cotton, tomatoes etc. (Sachan 1994) [10].

The intercropping is economical method of pest management and has become popular, particularly among the small and marginal farmers. Intercrops in the study were chosen on the basis of their wide cultivation among small-holder farmers in the region. The possible success of these crops in ensuring profit and reducing damage by the pests of chickpea. The application of chemical insecticides and biological insecticide is the common method of controlling this pest on chickpea. *Helicoverpa armigera* develops resistance to almost all the insecticides used for its control.

Materials and method

The present experiment on "Influence of intercropping on the incidence of gram pod borer *H.armigera* (Hub.) and its natural enemies in chickpea (Cicer arientinum L.)." was conducted at Entomology Research Farm, Post Graduate Institute, Mahatma Phule Krishi Vidyapeeth, Rahuri during *Rabi* 2019-20. Field trail was laid out in randomized block design (RBD) with 4 replication and 9 treatments including chickpea sole crop to evaluate the efficacy of 8 intercrop i.e., mustard, coriander, linseed, oat, lentil, pea, wheat, sorghum against pod borer in chickpea they are intercrop with chickpea 'Digvijay' variety. Crop was raised in plot measuring 3.6 x 4m with spacing of 30 x 10 cm between rows and plant, respectively. Crop was raised according to all agronomic package of practices under irrigated condition except the plant protection measures. Pod borer infestation per plant was recorded at weekly intervals from the randomly tagged 5 places per metre row length starting from flowering to pod maturity from three replications. All the pods were counted from each plot and examined. The data on damaged (bored), healthy and total pods was recorded from each plot on number basis by examining the pods for *H. armigera* infestation. The percent pod damage was calculated using the following formula:

$$\% \text{ Pod damage} = \frac{\text{Damaged pod}}{\text{Total pod}} \times 100$$

Twenty larvae of third instar were collected at 10 days interval from 4th replication and bring to laboratory for examine the associated parasitoid with larvae of *H. armigera* (Hub.). The larvae were supplied with fresh green gram leaves every alternate day and were observed daily in the forenoon for any change/cocoon/pupal formation etc.

Result and Discussion

Influence of intercropping on the incidence *H. armigera* larval population

The effect of intercropping on the incidence of *H. armigera* in various weeks were recorded. The various intercrops were mustard, coriander, linseed, oat, pea, wheat and sorghum. Significant effect was found on the *H. armigera* larval population at the various days after sowing.

The effect of inter cropping on the incidence of *H. armigera* (Hub.) in chickpea at the various day after sowing is presented in Table 1

35 Days after Sowing (DAS)

The minimum population of *H. armigera* (0.73 larvae/mrl) was found in the treatment T_2 (Chickpea + Mustard) followed by treatment T_3 (Chickpea + Coriander, 0.84 larvae/mrl). The treatment T_1 (Chickpea sole crop) and T_9 (Chickpea + Sorghum) was next better treatment (1.42 larvae/mrl and 1.45 larvae/mrl) respectively. The highest population of *H. armigera* (2.42 larvae/mrl) was found in the treatment T_8 (Chickpea + wheat).

42 DAS

The minimum population of *H. armigera* (2.06 larvae/mrl) found in the treatments T_2 (Chickpea + Mustard) and T_3 (Chickpea + Coriander) and T_6 (Chickpea + Lentil) which were at par with each other, followed by treatments T_4 (Chickpea + Linseed, 2.78 larvae/mrl) and T_9 (Chickpea + Sorghum, 3.27 larvae/mrl) respectively. The maximum population (4.03 larvae/mrl) was observed in treatment T_1 (Sole Chickpea crop).

49 DAS

The minimum pest population (2.04 larvae/mrl) was found in the treatment T_2 (Chickpea + Mustard) followed by the treatments T_3 (Chickpea + Coriander, 2.09 larvae/mrl) and T_4 (Chickpea + Linseed, 2.38 larvae/mrl) which were at par with each other. The maximum population was found (4.53 larvae/mrl) in the treatment T_1 (Sole Chickpea crop), followed by the treatments T_8 (Chickpea + Wheat, 4.31 larvae/mrl) and T_5 (Chickpea + Oat, 4.01 larvae/mrl) respectively.

56 DAS

The minimum population of *H. armigera* (1.96 larvae/mrl) was found in the treatment T_3 (Chickpea + Coriander), followed by the treatments T_2 (Chickpea + Mustard, 2.05 larvae/mrl) and T_9 (Chickpea + Sorghum, 3.35 larvae/mrl) respectively. The maximum population (5.52 larvae/mrl) was found in the treatment T_1 (Sole Chickpea crop).

63 DAS

The minimum pest population (2.28 larvae/mrl) was found in the treatment T_3 (Chickpea + Coriander), followed by the treatment T_2 (Chickpea + Mustard, 2.48 larvae/mrl) respectively, which were at par with each other. The maximum population (5.42 larvae/mrl) was found in the treatment T_1 (Sole Chickpea crop).

70 DAS

The maximum population of *H. armigera* (10.83 larvae/mrl) was recorded in the treatment T_1 (sole chickpea crop). The treatments T_7 (Chickpea + Pea, 7.06 larvae/mrl) and T_8 (Chickpea + Wheat, 7.06 larvae/mrl) having maximum population of pest after T_1 (Sole Chickpea crop) which were at par with each other. The minimum population (3.27 larvae/mrl) of *H. armigera* was observed in the treatment T_3 (Chickpea + Coriander) followed by the treatment T_2 (Chickpea + Mustard, 3.39 larvae/mrl).

77 DAS

The maximum population of *H. armigera* (12.50 larvae/mrl) was recorded in the treatment T_1 (Sole chickpea crop) followed by the treatments T_9 (Chickpea + Sorghum, 8.47 larvae/mrl) and T_8 (Chickpea + Wheat, 8.44 larvae/mrl) which were at par with each other. The minimum population (3.88 larvae/mrl) of *H. armigera* was observed in the treatment T_2 (Chickpea + Mustard) followed by the treatment T_3 (Chickpea + Coriander, 4.00 larvae/mrl) which were at par which each other.

84 DAS

There is decline trend were recorded in the population of *H. armigera*. The minimum population (2.47 larvae/mrl) was

recorded in the treatment T_2 (Chickpea + Mustard) followed by the treatment T_3 (Chickpea + Coriander, 2.69 larvae/mrl) which were at par with each other. The maximum pest population (7.78 larvae/mrl) were recorded in treatment T_1 (Sole Chickpea crop).

91 DAS

The minimum pest population (2.26 larvae/mrl) was recorded in the treatment T_3 (Chickpea + Coriander) followed by the treatment T_2 (Chickpea + Mustard, 2.49 larvae/mrl) which were at par with each other. The maximum population of *H. armigera* (5.83 larvae/mrl) were recorded in the treatment T_1 (Sole Chickpea crop).

It was concluded from the Table.1 that the intercropping of chickpea with various other *Rabi* crops had significant effect on the population of *H. armigera*. The statistical analysis of the data showed that the overall mean minimum population (2.38 larvae/mrl) was observed in the treatment T_3 (Chickpea + Coriander), followed by T_2 (Chickpea + Mustard, 2.40 larvae/mrl) which were at par with each other. The treatments T_4 (Chickpea + Linseed, 4.10 larvae/mrl), T_5 (Chickpea + oat, 4.64 larvae/mrl) and T_6 (Chickpea + Lentil, 4.02 larvae/mrl) also were at par with each other. The treatments T_7 (Chickpea + Pea, 4.60 larvae/mrl) and T_9 (Chickpea + Sorghum, 4.55 larvae/mrl) were also at par with each other. The maximum population (6.43 larvae/mrl) was observed in T_1 (Sole Chickpea crop) followed by T_8 (Chickpea + Wheat) with population 4.1 larvae/mrl.

Singh and Singh (1978) [12] found that, the intercropping can affect the microclimate of the agro-ecosystem, which ultimately produces an unfavorable environment for pest. Saha *et al.*, (2000) [11] found a general downward trend in infestation level of different pest in intercrop combination compared to their number in sole crop of preferred host. The intercrops were found to be more suitable for natural suppression of the pest population.

In the present investigation the minimum population of *H. armigera* (2.38 larvae/mrl) was observed in the Treatment T_3 (Chickpea + Coriander) followed by the Treatment T_2 (Chickpea + Mustard). The maximum population (6.43 larvae/mrl) was observed in T_1 (sole chickpea crop). These results are coincide with those of Paras and Chakravorty (2005) [7] who reported that, the chickpea intercropped with coriander harboured the minimum population, and the damage inflicted by the larvae as recorded in the same intercrop was also the minimum among the various intercrops. Highest seed yield was obtained in the chickpea intercropped with coriander. Ghugal *et al.*, (2013) [5] reported that, the intercropping combinations i.e. chickpea + marigold (0.97 larvae/mrl), chickpea + mustard (1.08 larvae/mrl) and chickpea + coriander (1.47 larvae/mrl) were the most effective in suppressing larval population of *H. armigera* as compared to sole chickpea which supports our findings.

Influence of intercropping on the incidence *Campoletis chlorideae* population

The effects of various intercrops on the parasitization of *H. armigera* by *C. chlorideae* were recorded and it is presented in Table 2. It is revealed that the overall mean per cent parasitization by *C. chlorideae* on *H. armigera* which were found to be the best affected by the intercropping of chickpea with various other *Rabi* crops.

The overall mean maximum parasitization (26.7 %) was observed in the treatment T_3 (Chickpea + Coriander). The treatment T_2 (Chickpea + Mustard) was second best treatment (24.40 % parasitization) followed by the treatment T_6 (Chickpea + Lentil, 21.65 %). The treatment T_1 (Sole Chickpea crop), T_4 (Chickpea+ Linseed), T_5 (Chickpea + Oat), T_8 (Chickpea + Wheat) and T_9 (Chickpea + Sorghum) was found 16.45%, 16.30 %, 14.00%, 14.9% and 16.7% parasitization, respectively. The minimum parasitization (12.15%) was observed in the treatment T_7 (Chickpea + Pea).

The present investigations found that, the overall mean maximum parasitization (26.7 %) was observed in the treatment T_3 (Chickpea + Coriander). Turkar *et al.*, (2000) [15] studied the effect of intercropping of coriander with chickpea on the activity of *C. chlorideae* and recorded significantly higher parasite activity as compared to sole chickpea, when the coriander was sown within the rows of chickpea which coincide with our results. Chandrashekhara *et al.*, (2014) [4] revealed that, the chickpea intercropped with coriander (4:2) recorded significantly highest total of 24.44 and 8.89 per cent parasitization by *C. chlorideae* and tachnid fly respectively from the *H. armigera* larvae which support our findings.

Effect on pod damage and grain yield

Intercropping of various other *Rabi* crops with chickpea also affect the larval population of *H. armigera* which affect the pod damage and yield which is presented in the Table 3. It showed the effect of intercropping on the per cent pod damage and the grain yield of chickpea under various treatments. Significant effect was found in different treatments.

The minimum pod damage (15.50 %) was observed in the treatment T_2 (Chickpea + Mustard) with 23.13 q/ha chickpea and 5.54 q/ha mustard yield. The treatment T_3 (Chickpea + Coriander) gave 16.63 % pod damage with 22.38 q/ha chickpea and 5.62 coriander yield. In treatment T_4 (Chickpea + Linseed) there was 18.56 % pod damage and 19 q/ha chickpea and 6.51 q/ha Linseed yield, which were at par with each other. In treatment T_5 (Chickpea + Oat) had 25.64 % pod damage with 18.50 q/ha chickpea and 1.38 q/ha Oat yield. T_6 (Chickpea + Lentil) had 19.92 % pod damage with 19.5 q/ha chickpea and 5.54 q/ha Lentil yield. In treatment T_7 (Chickpea + Pea) had 19.63 % pod damage with 19.75 q/ha chickpea and 7.1 q/ha Pea yield. In treatment T_8 (Chickpea + Wheat) had 24.69 % pod damage with 18.5 q/ha chickpea and 3.55 q/ha wheat yield. In treatment T_9 (Chickpea + Sorghum) had 19.19 % pod damage with 21 q/ha chickpea and 5.54 q/ha Sorghum yield. The maximum pod damage 29.25% was observed in the sole chickpea crop giving 16.13 q/ha yield.

The present investigations found that, the minimum pod damage (15.50 %) was observed in the treatment T_2 (Chickpea + Mustard) with 23.13 q/ha chickpea and 5.54 q/ha mustard yield, followed by the treatment T_3 (Chickpea + Coriander) gave 16.63 % pod damage with 22.38 q/ha chickpea and 5.62 coriander yield. Tripathi and Sharma (2008) [14] found highest yield increase in chickpea + mustard followed by chickpea + barley and chickpea + wheat which support our findings. Reena *et al.*, (2009) [9] reported that, the highest chickpea equivalent grain yield was recorded in chickpea + mustard (6:2) during both the seasons followed by chickpea + barley (4:2) during *Rabi* 2004-05 and chickpea + linseed / chickpea + coriander (4:2) during 2006-07. Pod damage by *H. armigera* was highest in chickpea sole crop which coincide with our results.

Economics of intercropping in chickpea

Intercropping gives extra yield from different intercrops than sole chickpea crop which gives increased production over sole

crop presented in Table 4. It showed that, the chickpea yield influenced by the intercropping effectively. Due to combination of various intercrops i.e. mustard, coriander, linseed, oat, lentil, pea, wheat and sorghum there being much variation in the net return received per hectare.

The net returns ranged from Rs 15041/ha to Rs 68344/ha. The lowest net return i.e. Rs 15041/ha was recorded in the treatment T_5 (Chickpea + Oat) and the highest net return was Rs. 68344/ha in the treatment T_3 (Chickpea + Coriander), followed by treatment T_2 (Chickpea + Mustard), T_7 (Chickpea + Pea) and T_4 (Chickpea + Linseed) with 52347, 41440 and 36461 Rs/ha., respectively.

Waseem *et al.*, (2017) [16] reported that among the all treatment highest cost benefit ratio was recorded in Chickpea + Coriander (1:2.93) which coincide with our results.

Table 1: Effect of intercropping on the incidence of *H. armigera* (Hub.) in chickpea

Treatments	Number of Larvae/Meter row length (Days after sowing)									
	35	42	49	56	63	70	77	84	91	Mean
T_1 (Sole Chickpea Crop)	1.42 (1.56)	4.03 (2.24)	4.53 (2.35)	5.52 (2.55)	5.42 (2.53)	10.83 (3.44)	12.50 (3.67)	7.78 (2.96)	5.83 (2.61)	6.43 (2.73)
T_2 (Chickpea +Mustard)	0.73 (1.31)	2.06 (1.75)	2.04 (1.74)	2.05 (1.75)	2.48 (1.86)	3.39 (2.09)	3.88 (2.21)	2.47 (1.86)	2.49 (1.87)	2.40 (1.84)
T_3 (Chickpea+Coriander)	0.84 (1.35)	2.06 (1.75)	2.09 (1.76)	1.96 (1.72)	2.28 (1.81)	3.27 (2.07)	4.00 (2.24)	2.69 (1.92)	2.26 (1.81)	2.38 (1.84)
T_4 (Chickpea + Linseed)	1.56 (1.60)	2.78 (1.94)	2.38 (1.84)	3.79 (2.19)	4.17 (2.27)	6.24 (2.69)	7.51 (2.92)	4.32 (2.31)	4.18 (2.27)	4.10 (2.26)
T_5 (Chickpea + Oat)	2.26 (1.81)	3.50 (2.12)	4.01 (2.24)	3.89 (2.21)	4.32 (2.31)	6.42 (2.72)	8.34 (3.06)	4.48 (2.34)	4.57 (2.36)	4.64 (2.38)
T_6 (Chickpea + Lentil)	1.75 (1.66)	2.06 (1.75)	2.74 (1.93)	3.63 (2.15)	4.10 (2.26)	5.78 (2.60)	7.55 (2.92)	4.27 (2.30)	4.31 (2.30)	4.02 (2.24)
T_7 (Chickpea + Pea)	1.61 (1.61)	3.50 (2.12)	3.63 (2.15)	4.13 (2.26)	4.23 (2.29)	7.06 (2.84)	7.70 (2.95)	4.56 (2.36)	4.99 (2.45)	4.60 (2.37)
T_8 (Chickpea + Wheat)	2.42 (1.85)	3.89 (2.21)	4.31 (2.30)	4.70 (2.39)	4.43 (2.33)	7.06 (2.84)	8.44 (3.07)	5.39 (2.53)	4.53 (2.35)	5.02 (2.45)
T_9 (Chickpea + Sorghum)	1.45 (1.57)	3.27 (2.07)	3.63 (2.15)	3.35 (2.25)	4.37 (2.32)	6.53 (2.74)	8.47 (3.08)	4.50(2.35)	4.71 (2.39)	4.55 (2.36)
Sem	0.07	0.08	0.12	0.13	0.12	0.17	0.23	0.13	0.13	0.13
C.D. at 5%	0.20	0.24	0.35	0.37	0.36	0.50	0.67	0.37	0.37	0.38

Parenthesis are transformed values based on $\sqrt{x + 1}$

Table 2: Per cent parasitization by *C. chlorideae* in different intercrops

Treatments	Number of *C. chlorideae*/20 larvae					
	Standard weeks					
	4th	5th	6th	7th	8th	Mean
T_1 Sole chickpea crop	21.50 (27.62)	10.50 (18.43)	30.50 (33.52)	0.00 (0.00)	20.25 (26.74)	16.45 (23.93)
T_2 Chickpea + Mustard	25.50 (30.33)	14.00 (21.97)	20.50 (26.92)	30.50 (33.52)	31.5 (34.14)	24.40 (29.60)
T_2 Chickpea + Coriander	30.75 (33.68)	20.50 (26.92)	21.50 (27.62)	39.75 (39.09)	21.00 (27.27)	26.70 (31.11)
T_4 Chickpea + Linseed	10.50 (18.91)	19.75 (26.39)	9.75 (18.19)	21.00 (27.27)	20.50 (26.92)	16.30 (23.81)
T_5 Chickpea + Oat	0.00 (0.00)	19.00 (25.84)	19.75 (26.39)	10.50 (18.91)	20.75 (27.10)	14.00 (21.97)
T_6 Chickpea + Lentil	20.00 (26.57)	10.75 (19.14)	21.5 (27.62)	30.50 (33.52)	25.50 (30.33)	21.65 (27.73)
T_7 Chickpea + Pea	10.00 (18.43)	10.75 (19.14)	9.75 (18.19)	30.25 (33.37)	0.00 (0.00)	12.15 (20.40)
T_8 Chickpea + Wheat	21.50 (27.62)	21.50 (27.62)	10.75 (19.14)	0.00 (0.00)	20.75 (27.10)	14.9 (22.71)
T_9 Chickpea + Sorghum	20.50 (26.92)	10.50 (18.91)	11.00 (19.37)	20.75 (27.10)	20.75 (27.10)	16.70 (24.12)

Figures in parentheses are angular transformed values

Table 3: Damaged pods (%) by *H. armigera* and grain yield (q/ha) of chickpea

Treatment	Pod Damage (%)	Grain yield (q/ha)	
		Chickpea	Intercrop
T_1 (Sole chickpea crop)	29.25 (32.74)	16.13	-
T_2 (Chickpea + Mustard)	15.50 (23.18)	23.13	5.54
T_3 (Chickpea+Coriander)	16.63 (24.06)	22.38	5.62
T_4 (Chickpea + Linseed)	18.56 (25.52)	19	6.51
T_5 (Chickpea + Oat)	25.64 (30.42)	18.50	1.38
T_6 (Chickpea + Lentil)	19.92 (26.51)	19.50	5.54
T_7 (Chickpea + Pea)	19.63 (26.30)	19.75	7.1
T_8 (Chickpea + Wheat)	24.69 (29.79)	18.50	3.55
T_9 (Chickpea + Sorghum)	19.19 (25.98)	21	5.54
SEm	0.80	0.65	
C.D. at 5%	2.34	1.90	

Figures in parentheses are angular transformed values

Table 4: Economics of different intercropping systems

Treatments	Yield q /ha		Gross income of production (Rs/ha)	Increased over sole crop (Rs/ha)
	Chickpea	Intercropping		
T_1 (Sole chickpea crop)	16.13	-	79609	-
T_2 (Chickpea + Mustard)	23.13	5.44	131956	52347
T_3 (Chickpea+ Coriander)	22.38	5.18	147953	68344
T_4 (Chickpea + Linseed)	19.00	5.21	116070	36461
T_5 (Chickpea + Oat)	18.50	1.46	94568	15041
T_6 (Chickpea + Lentil)	19.50	4.81	118151	38542
T_7 (Chickpea + Pea)	19.75	5.16	121049	41440

T_8 (Chickpea + Wheat)	18.50	4.17	98215	18606
T_9 (Chickpea + Sorghum)	21.00	4.60	114105	34496

Sale price (Linseed –4500 Rs/q, Coriander –7500 Rs/q, Lentil – 4800 Rs/q, Pea – 4800 Rs/q, Chickpea – 4875 R/q, Wheat – 1925 Rs/q, Mustard – 4425 Rs/q, Oat –3000 Rs/q, Sorghum – 2550 Rs/q). (Sale price (Chickpea, mustard, lentil, wheat and jowar) as per MSP of 2019-20.)

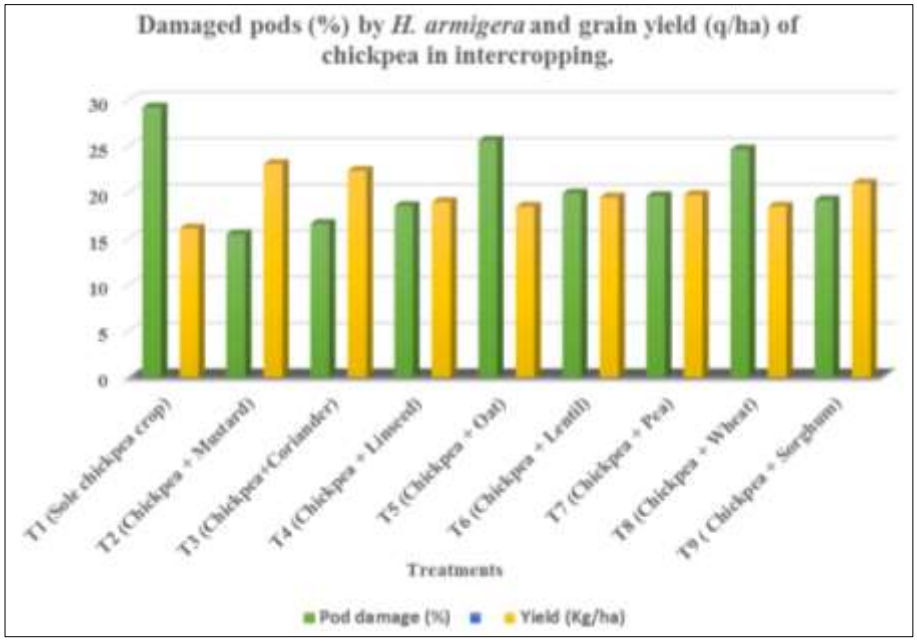

Fig 1: Damaged pods (%) by *H. armigera* and grain yield (q/ha) of chickpea in intercropping

Conclusion

In parasitization of *H. armigera* by *C. chlorideae*, all the intercrops were superior to the sole chickpea crop. Coriander was effective intercrop in encouraging the activity of *C. chlorideae*, followed by mustard and lentil. In Intercropping maximum yield (23.13 q/ha) of chickpea was obtained from Chickpea + Mustard. The average pod damage recorded ranged between 15.50 to 29.25 %.The maximum net return was obtained from Chickpea + Coriander.

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