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THE EFFECT OF SOME ORGANIC MANURES AND INSECTICIDES ON SUGAR BEET PRODUCTIVITY AND POPULATION DYNAMIC OF BEET FLY, *Pegomya mixta* VILL

Abo El-Ftooh A. A.[1]; K.M. Agami [2] and M.M. Abd-El Rahman[3]

1- Dept. of Sugar Crops Diseases & Pests. Sugar Crops Res. Inst., Agric. Res. Center, 12619, Giza, Egypt

2- Department of Agricultural Practices. Sugar Crops Research Institute, Agricultural Research Center (ARC), 12619, Giza, Egypt

3- Agricultural Physiology and Chemistry Dept. . Sugar Crops Research Institute, Agricultural Research Center (ARC), 12619, Giza, Egypt

ABSTRACT

The effect of some organic soil amendments such as cattle, poultry and sheep manures and four insecticides nudrin 90%, selecron 72%, tracer 24% and vertmik 1.8% and their interaction on sugar beet productivity and the infestation rate of beet fly, *P. mixta* were carried out at Damanhour and Nubariya regions under field conditions.

The results raveled that population density of *P. mixta***,** root yield**,** top yield, sugar yield and quality parameters were significantly affected by all organic manures and insecticides treatments. Generally, the highest accumulative larvae of *P. mixta* recorded with poultry manure followed by cattle manure and sheep manure in Damanhour and Nubariya regions. Also, in two locations poultry manure gave remarkable results in suppression in root, top and sugar yields as well as sucrose and purity% compared with cattle and sheep manures. All tested insecticides in the two locations significantly reduced the population density of beet fly, *P. mixta* on sugar beet plants in comparison with the cheek treatment. Sugar beet plants sprayed by selecron 72% the reduction% of *P. mixta* population increased with the time elapsed treatment. Selecron 72% was the most effective against *P. mixta* followed by tracer 24%, vertmic1.8% and nudrin 90%. Also selecron 72% was ranked the first in root and top yield, however, sugar yields gained the highest value by tracer treatment. Top, root and sugar yields, T.S.S.% and purity% were significantly affected by the interaction between tested organic manure, and insecticides. The highest top, root and sugar yields were obtained with (cattle manure x selecron 72%), (poultry manure x tracer 24%) and (cattle manure x tracer 24%) treatments, respectively. However the highest values of T.S.S. and purity% were obtained with (poultry manure x tracer 24%) treatment.

INTRODUCTION

Sugar beet (*Beta vulgaris* L.) is the second most important sugar crops and is a source of nearly 30 percent of the world's sugar supply. Sugar beet is considered to be one of the newest commercial crops and sometimes is confused with red beets Food and Agriculture Organization (2011). Sugar beet has a white root and is not edible when harvested. It is a biennial crop grown as an annual because its roots are harvested in the first year for sugar production. It is essentially a crop of temperate regions, although it can be successfully grown even in the tropics and subtropics during winter. Its commercialization in the tropics would be dependent on the ability to utilize

the infrastructure created by the sugarcane industry. At the moment the crucial problems facing the Egyptian Agriculture is soil degradation. Soil fertility deterioration is a major constraint for higher crop production in Egypt. The most important impediments to the use of organic fertilizer are slower release nature of organic N sources could be problematic for sugar beets if the timing of N release interferes with late season sugar beet growth and sugar content. A better understanding of the N release dynamics from manures and composts is needed to know- how best to use these resources without causing excessive available N at the end of the season, the associated higher nitrate and conductivity, reduced sugar content and recoverability. The increasing land use intensity without adequate and balanced use of chemical fertilizers and with little or no use of organic manure have caused severe fertility deterioration of our soils resulting in stagnating or even declining of crop productivity (Islam, 2002). The mineral fertilizers became available from the basic problems faced by the farmer with the beginning of each growing season. At the beginning of each season facing farmers in Egypt lack of nitrogen fertilizer and the high prices, and that was the purpose of the research measure the efficiency of organic manure and study the problems caused by this fertilizers for sugar beet crop. Sugar beet plants attract numerous insects during the growing season. Beet fly, *Pegomya mixta* Vill was a major insect and caused lot of damage to sugar beet crop by feeding within a leaf, producing large blotches or meandering tunnels and then leaves was died and effect on plant health. In Egypt, (Bassyouny 1987; Abo El-Ftooh, 1995 & 2002; Ebieda *et. al.* 1996 and Maareg *et al.* 2005a) they found that the key insect pests of sugar beet are beet fly, *P. mixta* Vill. and tortoise beetle. The goal of this investigation is to decrease the dependent on mineral fertilizers and found the ideal of pesticides which reduce the population of *P. Mixta* which attracted by fermented organic manure and chemical fertilizers and reduce to submit eco-friendly control measures of agriculture environment.

MATERIALS AND METHODS

Materials used:-

1- The tested fermented organic manures:

a- Cattle manure (contained N, P, & K with values of 0.6, 0.2 & 0.5%, respectively)

b- Poultry manure (contained N, P, & K with values of 1.1, 0.8, & 0.5%, respectively)

c- Sheep manure (contained N, P, & K with values of 0.7, 0. 3, & 09%, respectively)

d- Control (without organic manures)

2-The tested insecticides used:-

a. Nudrin 90 % SP
b. Selecron 72% EC
c. Tracer 24 % SC
d. Vertmik 1.8% EC

The insecticides characterized in Table 1.

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The experimental:-

This study was conducted at the experimental farm Nubariya Agricultural Research Station, West Nubariya and Damanhour (Hafs village), Al Behera governorate during two successive seasons, 2009/2010 and 2010/2011, to study the effect of tested organic manures, insecticides and their interaction on sugarbeet yield and quality as well as the infestation rate by sugar beet fly, *P mixta*. The split plot design with four replicates was, used. Organic manures as well as ammonium nitrate (as the check treatment) in the main plot and the four insecticides were allotted randomly in the sub plot. Each plot included 14 ridges, 50 cm apart and 10 m length thus the area of plot was 70 m^2 .The experimental soil was fertilized with fermented organic manures (at the rate of 15 cubic meters) during soil preparation .However, the mineral fertilizer, ammonium nitrate (33.5%) was added at 80 unit of nitrogen per feddan in three equal portions at 30, 60, and 90 days from sowing. Sugarbeet cultivar, Gloria was sown on the 15th October in both seasons. Seeds were sown in hills, 20 cm apart .Thirty days after sowing, thinning to one plant per hill was carried out. Mechanical and chemical analyses of the soil used in the study are shown in Table 2.

Table 2: Chemical and physical characteristics of the experimental Soil in Damanhour and Nubariya regions during 2009/ 2010 and 2010/ 2011 seasons.

Nutrients P.P.M				Calcium carbonate%	Sodium dissolved in water (5 : 1)	Total dissolved salts (5 : 1)		PH1): (5	season
Boron	Potassium	Phosphor	Nitrogen		Sodium (Mlamkavie / L)	%Salts	(EC) Mellimosz / cm		
Damanhour region (Soil type: clay)									
0.3	23	4	70	2.9	5.21	0.32	1.02	8.4	1st
0.48	34	6	80	4.2	7.5	0.4	1.24	8.3	2nd
Nubariya region (Soil type: sandy loam)									
0.4	45	10	70	5.4	2.3	0.17	0.52	8.3	1st
0.48	58	8	40	2.5	6.3	0.31	0.98	8.5	2nd

Soil depth (cm): 0- 40 cm

For scouting the population density of sugarbeet fly, *P. mixta* in the filed randomly chosen 50 sugarbeet leaves were carefully examined monthly from each plot. The samples were started from the 15th of December till 15th May in both successive growing seasons.

The insecticides were applied in 15th March in the second season and the percentage of reduction of population densities of *P mixta* larvae obtained according to the equation of Henderson and Telton (1955) as following:

$$\text{The percentage of reductions in insect} = 1 - \frac{Ta \times Cb}{Tb \times Ca} \times 100$$

Where,

Ta = The number of collected alive insects from the plot after treatment

Tb = The number of collected alive insects from the plot before treatment

Ca = The number of collected alive insects from the check plot after the date of treatment

Cb = The number of collected alive insects from the check plot before the date of treatment. The relative population densities of *P. mixta* were recorded for seven times, i.e., 1, 3, 4, 5, 7, 14 and 21 days.

At maturity (210 days after sowing), the outer two ridges were considered as for each plot while plants of the other ridges were harvested to determine the root, top and sugar yields. Also, the quality characters in sugar beet roots included percentage of sucrose (Su%) was determined fallowing Le Docte (1927), percentage of total soluble solids (T.S.S%) was measured in the fresh roots using hand refractometer and juice purity percentage was determined as a ratio between Su% and T.S.S.% according to Carruthers and Old Field (1961). The insecticides were applied in Damanhour and Nubariya regions at 15th March, 2011. Data of all characters was statistically analyzed according Statistical analysis was performed by COSTAT program according to Steel and Torrie (1981) and the means of each treatments were compared by the value of LSD (least significant difference test) at 5% probability.

RESULTS

1- Population density of beet fly, *Pegomyia mixta* Vill on sugarbeet plants:

Data in Table 3 cleared that the larvae of beet fly, *P mixta* Vill was recorded on sugarbeet plants through two successive growing seasons in Damanhour and Nubariya regions.

Table 3: Effect of some organic manures on population density of beet fly, *Pegomya mixta* Vill on sugarbeet plants in Damanhour and Nubariyia regions through the two growing seasons.

Fermented organic manures	Examine period	15/12		15/1		15/2		15/3		15/4		15/5		Total number of larva / 50 laves	
		1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
Damanhour region															
Sheep manure		19	36	28	32	35	36	34	35	34	33	28	25	178	217
Cattle manure		27	30	32	37	36	37	35	40	37	30	21	24	211	229
Poultry manure		32	27	36	46	39	47	36	42	32	37	22	21	220	245
Check		20	35	29	41	39	41	36	39	35	35	28	28	202	247
L.S.D (0.05)		1st 1.631						2nd 1.591							
Nubariyia region															
Sheep manure		19	19	25	25	30	31	36	39	37	37	18	15	166	180
Cattle manure		15	33	22	29	39	37	39	43	25	26	18	20	155	206
Poultry manure		25	17	32	24	37	40	34	40	28	26	17	19	195	189
Check		33	25	43	34	38	37	29	37	26	29	16	16	201	190
L.S.D (0.05)		1st 1.200						2nd 1.215							

In Damanhour region

Data during the first season indicated that in the plots of sheep manure treatment two peaks of beet fly larvae were observed on February 15th and April 15th represented by 35 and 34 beet fly larvae /50 leaves, respectively. Also, two peaks on February 15th and April 15th considered with 36 and 37 larvae /50 leaves, respectively for cattle manure treatment plots. One peak occurred on March 15th consisted of 39 larvae/50 leaves was noticed in plots of both poultry manure and check treatments.

In the second season, on sugarbeet plants of sheep manure plots two equal peaks were showed on January 15th and February 15th represented by 36 and 36 larvae /50 leaves, respectively. One peak was occurred on March 15th consisted of 40 larvae/50 leaves in plots of cattle manure. Also, one peck was noticed on February 15th recorded 47 larvae 50/ leaves of poultry manure plots. On the check plots two equal peaks were observed on January 15th and February 15th represented by 41 larvae/ 50 leaves of both period.

Regarding population dentists of beet fly, P*. mixta* on treated sugarbeet plants with organic during the two growing seasons, generally, total number of beet fly larvae was higher in treated sugarbeet with poultry manure treatment than treated sugarbeet with cattle manure and sheep manure.

Statistically analysis showed that significant differences among total population of beet fly, *P. mixta* larvae on sugarbeet plants for tested organic fertilizers, sheep, cattle and poultry manures as well as check treatments. The total of accumulative amounted (178& 217), (211& 229), (220& 245) and (202& 247) larvae/ 50 leaves were recorded on sugarbeet plants of sheep, cattle and poultry manures and cheek treatments in the 1st and 2nd season, respectively.

In Nubariya region:

In the 1st season, data in Table 3 cleared that one peak of this insect, 37 larvae/ 50 leaves in the April 15th on sheep manure plots. Two equal peaks represented by 39 larvae/ 50 leaves of each in February 15th and March 15th, respectively, of cattle manure plots. One Peak 37 larvae/ 50 leaves were observed on February 15th in the plots of poultry manure treatment. Also, one peak, 43 larvae/ 50 leaves in January 15th on the check treatment plots.

In the 2nd season, in sheep manure plots, data indicated that one peak of beet fly, 39 larvae/ 50 leaves on March 15th. Also, one peak was observed in cattle manure plots represented by 43 larave /50 leaves March 15th. Two equal peaks, 40 and 40 larvae/ leaves were recorded on February 15th and March 15th, respectively, of poultry manure plots. The same trend was observed in check plots two equal peaks (37 and 37 larvae/ 50 leaves) at the same times. This result agree with Rubeiz, *et al.* (1995) which recorded that populations white fly was higher in the poultry manure treatments in comparison to the inorganic N and the control treatment.

Statistical analysis appeared that significant differences among accumulative total average of beet fly larvae/ 50 leaves for the three tested organic manures and the check treatments. The accumulative total average

of larvae were 166, 155, 195 and 201 in the 1st season and 180, 206, 189 and 190 in the 2nd season for plots of sheep, cattle, poultry manures and check treatments, respectively.

Generally, the highest total accumulative recorded for poultry manure followed by cattle manure and sheep manure, respectively in both Damanhour and Nubariya regions.

2- Effect of some organic manures on productivity of sugarbeet.

2-1-Yield characters:-

Data presented in Table 4 it observed that root, top and sugar yields of sugarbeet were significantly affected by organic manure treatments in the first and second seasons compared with ammonium nitrate (as cheek treatment) at Damanhour and Nubariya regions.

In Damanhour region

The highest value in root yield of sugarbeet (27.50& 29.00 tons/ fed) was achieved by poultry manure followed by check treatment (25.25& 27.25 tons/ fed), cattle manure (20.00& 21.50 tons/ fed) and sheep manure (12.68& 14.75 tons/ fed) in 1st and 2nd seasons, respectively. Sugar yield in the first season followed the same trend with an average (4.80& 5.63 tons/ fed), (4.43& 4.79 tons/ fed), (3.83& 4.35 tons/ fed) and (2.55& 2.84 tons/ fed), respectively, for Poultry manure, check, cattle manure and sheep manure, respectively. On the other hand, the check treatment gave the highest top yield (12.54& 10.55 tons/ fed) followed by poultry manure (9.25& 9.17 tons/ fed), cattle manure (6.95& 8.90 tons/ fed**)** and sheep manure (3.95& 7.22 tons/ fed), respectively.

Table 4:- Effect of some organic manures on yield characters of sugar beet at Damanhour and Nubariya regions.

Fermented organic manure	Root yield (tons / fed)			top yield (tons/ fed)			Sugar yield (tons/ fed)		
	1st	2nd	Mean	1st	2nd	Mean	1st	2nd	Mean
Damanhour region									
Sheep manure	12.68	14.75	13.71	3.95	7.22	5.58	2.55	2.84	3.60
Cattle manure	20.00	21.50	20.75	6.95	8.90	7.92	3.83	4.35	5.45
Poultry manure	27.50	29.00	28.25	9.25	9.17	9.21	4.80	5.63	6.95
Check	25.25	27.25	26.25	12.54	10.55	11.54	4.43	4.79	6.15
L.S.D (0.05)	1.90	3.06		0.39	0.62		0.27	0.36	
Nubariya region									
Sheep manure	10.75	12.50	11.63	7.23	10.39	8.81	2.78	2.18	2.48
Cattle manure	17.25	18.50	17.88	8.54	11.97	10.26	4.20	3.77	3.99
Poultry manure	25.75	26.00	25.88	9.03	13.82	11.43	5.63	4.76	5.19
Check	21.50	22.75	22.13	10.25	14.40	12.32	4.73	5.23	4.98
L.S.D (0.05)	1.18	1.35		0.78	1.78		0.56	0.49	

In Nubariya region

Also poultry manure achieved the highest root yield of sugarbeet (25.75& 26.00 tons/ fed) following by check treatment (21.50& 22.75 tons/ fed), cattle manure (17.25& 18.50 tons/ fed) and sheep manure (10.75& 12.50 tons/ fed) in the first and second seasons respectively. Sugar yield, in the first season followed the same trend, however, in the second season poultry manure gave the highest sugar yield (5.63 tons/ fed) followed by

check (5.23 tons/ fed), cattle manure (4.20 tons/ fed) and sheep manure (2.78 tons/ fed), respectively. The check treatment achieved the highest top yield (10.25 and 14.40 tons/ fed) followed by poultry manure (9.03& 13.82 tons/ fed), cattle manure (11.97& 10.26 tons/ fed) and sheep manure (7.23& and 10.39 tons/ fed) in the first and second seasons.

2-2- Yield quality:-

Data in Table 5 shown that T.S.S% Sucrose% and Purity% were significant affected with the different treatments in the first and second seasons at Damanhour and Nubariya regions.

In Damanhour region:

Data indicated that the highest amounts of T.S.S% were resulted from the plots fertilized with cattle manure (26.26%& 25.75%) and poultry manure (26.44%& 25.19%), however the lowest amounts of this character (22.41%& 21.00%) were resulted from the root juice of sheep manure plots in the 1^{st} and 2^{nd} seasons, respectively. The highest values of sucrose percentage (20.64%& 19.33%) were recorded with plants of poultry manure plots, while, the lowest ones (17.89%& 17.00%) were obtained from plants of sheep manure plots. The same trend recorded with purity percentage, the highest values (79.83%& 80.95%) were achieved by sheep manure, however the lowest ones (73.72%& 74.76%) recorded with cattle manure plots in both seasons, respectively.

In Nubariya region:

Data indicated that the treatment of cattle manure was achieved the highest values in the T.S.S% (25.56%& 23.58%), however, the sheep manure treatment achieved the lowest T.S.S% values (21.93%& 20.00) in the 1^{st} and 2^{nd} seasons, respectively. Plants of poultry manure was recorded the highest values in the sucrose% (20.68%& 19.28%) and purity% (86.23%& 85.39%) in the first and second seasons, respectively. The lowest values of sucrose% (17.70%& 17.33%) and purity% (75.98%& 79.94%) recorded in the plants of sheep manure and cattle manure in 1^{st} and 2^{nd} seasons, respectively.

Table 5: Effect of some organic manures on quality characters of sugarbeet at Damanhour and Nubariya regions.

Fermented organic manures	T.S.S (%)			(Sucrose %)			Purity (%)		
Seasons	1^{st}	2^{nd}	Mean	1^{st}	2^{nd}	Mean	1^{st}	2^{nd}	Mean
Damanhour region									
Sheep manure	22.41c	21.0d	21.84	20.64 a	17.00c	18.82	80.59a	92.10a	86.53
Cattle manure	26.26a	25.75a	26.00	19.36 b	19.25b	19.50	76.94c	73.72c	71.21
Poultry manure	26.44a	25.19b	26.00	17.89c	19.38ab	18.64	74.76d	67.66d	75.33
Check	24.67b	24.33c	24.50	19.63 b	19.51 a	19.67	80.19b	79.57b	79.88
L.S.D (0.05)	0.376	0.32		0.161	0.14		0.287	0.248	
Nubariya region									
Sheep manure	21.93	20.00	20.97	20.68 a	17.33d	17.50	85.94a	86.65a	86.30
Cattle manure	25.56	23.58	24.57	19.42 b	18.85 c	19.17	81.29b	77.99d	79.64
Poultry manure	23.89	22.58	23.24	17.70c	19.28 b	20.00	80.71c	83.42c	82.06
Check	22.41	24.17	23.29	19.26 b	19.67a	19.50	80.91c	85.39b	83.15
L.S.D (0.05).	0.478	0.410		0.169	0.15	0.16	0.571	0.44	

In short, poultry manure gave remarkable results in suppression in yield and quality characters of sugarbeet than other tested organic manures .these results obtained here agree with Maareg *et al.* (2008) and Yassen (2010) who reported that remarkable sugarbeet plant growth, yield and quality parameters suppression was observed on plants growing in soil amended with chicken manure , pigeon-dung and poudrette best.

3- Efficacy of some insecticides against sugarbeet fly, *Pegomyia mixta*.

The effects of four insecticides, nudrin 90% SP, selecron 72% EC, tracer 24% SC and vertmik 1.8 EC tested against sugarbeet fly, P*. mixta* under field conditions at Damanhour and Nubariya regions. The efficacy of tested insecticides was calculated by using Hinderson and Tilton (1955) equation.

Data in Table 6 revealed that, the all tested insecticides reduced the population density of beet fly, *P*. *mixta* on sugarbeet plants in comparison with the check treatment at Damanhour and Nubariya regions. The reduction percentages of *P*. *mixta* increased with the time elapsed treatment. Generally, the insecticide, selecron 72% was superior compared to nudrin 90%, tracer 24% and vertmic 1.8 through all the periods post treatments, respectively.

Table 6: The reduction percentage of larvae of beet fly, *Pegomya mixta* Vill after spraying of some insecticides on sugarbeet plants at Damanhour and Nubariya regions.

Application region	N	D	N	D	N	D	N	D	N	D	N	D
Reduction period	**1 day**		**3 days**		**5 days**		**7 days**		**14 days**		**21 days**	
Nudrin 90% sp	29.25	9.52	22.38	19.05	30.22	28.57	40.00	40.48	63.24	61.90	81.00	80.00
Selecron 72% EC	82.01	81.5	86.11	86.00	91.18	90.00	95.04	95.5	97.99	98.00	99.55	99.75
Tracer 24% SC	52.33	47.37	70.22	71.43	85.99	85.71	85.67	86.00	91.60	90.33	91.66	91.42
Vertmik 1.8% EC	69.21	69.13	55.00	52.17	58.33	56.52	65.33	65.22	79.11	78.26	86.22	85.71

N. Nubariya Agricultural Research Station (Nubariya region)
D, Damanhour region (Hafs village)

In Damanhour region

Regarding the initial effect (one day after spraying) the insecticide, selecron 72% EC was more effective in controlling sugarbeet fly than other tested insecticides resulting in 81.5% reduction followed by vertmik 1.8% EC (69.21%), tracer 24% SC (47.37%) and nudrin 90% SP (9.52%). After 21 days of spray, results showed that selecron 72% also was the most effective against beet fly, whereas the reduction percentage was higher than the other tested insecticides. The mean reduction for insecticide, selecron 72% was 99.75% followed by tracer 24% (91.42%), vertmik 1.8% (85.71%) and nudrin 90% (80.0).

In Nubariya region

Results showed that tested insecticides reduced the population densities of sugarbeet fly, *P. mixta* on sugarbeet plants. The reduction of insecticides was arranged descending as follow:- selecron 72% (82.01%), vertmik 1.8 % (69.21%), tracer 24% (52.33%) and nudrin 90% (29.25%) after

one day of spray and arranged as selecron 72% (99.55%) > tracer 24% (91.66%) > vertmik 1.8% (86.22%) > nudrin 90% (81%) after 21 days of spray.

From the previous results, It could be noticed that sugarbeet plants sprayed by selecron 72% resulted the highest reduction in sugarbeet fly, *P. mixta* on sugarbeet plants compared with the results of tracer 24%, vertmik 1.8% and nudrin 90% insecticides. These results were in agreement with that obtained by Ebieda and Sohir Badr (1998) and Ebieda *et al.* (1996) they found that selecron 72%, carbofos 50% and methavine insecticides were more effective compounds against *Cassida vittata* and *P. mixta* on sugarbeet plants than malathion 57% nudrin 21.6% and larvin 80% insecticides.

4- Effect of some insecticides on productivity of sugarbeet.

Data in Table 7 shows that yields of root, top and sugar as well as root juice purity affected with insecticides treatments, however, T.S.S and sucrose% were not affected with these treatments. This data also, indicated that insecticide, selecron and check treatments were ranked the first in yield of roots (30.32 and 30.50 tons/ fed.) and tops (14.321 and 14.36 tons/ fed.), respectively. On the other hand, the lowest yields of root and top (23.89 and 10.00 tons/ fed), respectively were obtained by insecticides, vertmik and tracer, respectively.

The sugar yield gained the highest weight (4.91 and 5.01 tons/ fed.) by insecticide, tracer and check treatments, respectively. However, insecticide, vertmik achieved the lowest weight of sugar yield (4.08 tons/ fed.), in general, check and vertmik treatments recorded the highest purity% (82.54 and 82.465) followed by selecron (81.61%), tracer (79.45%) and nudrin (72.17 %) insecticides, respectively.

Table 7: Effect of some insecticides on productivity of sugarbeet.

Insecticides (Treatments)	Roots yield (Ton/ fed.)	Top yields (Ton/ fed.)	Sugar yields (Ton/ fed.)	T.S.S %	Sucrose %	Purity %
Nudrin	25.45	11.70	4.37	23.87	18.22	72.17
Selecron	30.32	14.32	4.74	23.00	18.96	81.61
Tracer	28.78	10.00	4.91	21.89	18.09	79.45
Vertmik	23.89	11.22	4.08	22.33	19.09	82.46
Check	30.50	14.36	5.06	22.34	18.92	82.54
L.S. D.	1.576	0.830	0.147	1.176	0.575	1.465

5- The effect of interaction between organic manures and insecticides on sugarbeet productivity.

Results in Table 8 indicated that the top, root and sugar yields were significantly affected by the interaction between the tested organic manures and insecticides on Damanhour region in the second season. The highest root yield (28.92 tons/ fed) was obtained from sugarbeet plots fertilized with poultry manure and sprayed by tracer 24% insecticide, whereas, plots of sheep manure which sprayed by nudrin 90% gave the lowest root yield (12.00 tons/ fed) as compared with other organic manures under different insecticides.

Sugar yield was significantly affected by the interaction between tested organic manures and insecticides. The highest sugar yield (4.10 tons/

fed.) was obtained with cattle manure plots sprayed by tracer 24%, while the lowest one (2.83 tons/ fed.) was obtained by applied insecticide, nudrin 90% on sugarbeet plots received sheep manure. However, the highest and lowest top yield obtained by cattle manure x selecron 72% and cattle manure x tracer 24% treatments, respectively.

The quality characters, T.S.S.% and purity% were significant affected by interaction between tested organic fertilizers and pesticides, while, the sucrose% character there was not significant affected by interaction between organic manure and pesticides. The higher value of T.S.S.% (19.50%) was recorded in plots fertilized by poultry manure and sprayed with tracer 24% insecticide. While the lowest value (13.20%) was achieved in plots fertilized by sheep manure and sprayed with vrtmik 1.8% insecticide. On the other hand, the highest value was shown in purity% character (69.25) obtained by poultry manure plots which sprayed by insecticide, tracer 24%, while, the lowest value (50.45%) was recorded in the plots fertilized by sheep manure and treated with insecticide, nudrin 90% (50.45%).

Table 8: The effect of interaction between organic manures and insecticides on sugarbeet productivity at the Damanhour and Nubariya regions

Sugar yield characters	Pesticides / organic manures	Nudrin 90% SP	Selecron 72% EC	Tracer 24% SC	Vertmik 1.8% EC	LSD
Root yield	Sheep manure	12.00	18.75	14.50	13.50	1.215
	Cattle manure	18.50	25.50	21.25	14.75	
	Poultry manure	26.75	24.00	28.92	25.50	
	check	22.25	24.00	26.75	18.50	
Top yield	Sheep manure	7.00	10.07	7.50	7.00	1.250
	Cattle manure	9.13	11.57	6.25	8.45	
	Poultry manure	10.20	10.58	8.75	9.80	
	check	11.08	10.18	11.00	10.82	
Sugar yield	Sheep manure	2.83	3.16	3.10	2.25	0.102
	Cattle manure	3.50	3.60	4.10	2.83	
	Poultry manure	3.50	3.90	3.85	4.10	
	check	4.00	3.85	3.83	3.50	
T.S.S%	Sheep manure	15.75	16.25	15.75	13.25	0.904
	Cattle manure	16.25	18.50	19.25	17.00	
	Poultry manure	15.00	18.50	19.50	16.75	
	Ammonium nitrate	14.75	18.75	17.25	16.50	
Sucrose%	Sheep manure	12.68	13.17	13.88	13.20	0.417
	Cattle manure	13.45	14.00	14.18	14.18	
	Poultry manure	13.67	15.50	15.58	13.85	
	check	14.67	14.55	15.75	14.78	
Purity %	Sheep manure	50.45	62.50	52.78	61.22	1.122
	Cattle manure	52.88	58.62	63.75	54.25	
	Poultry manure	56.72	62.50	69.25	54.12	
	check	60.00	62.75	59.38	59.12	

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تأثير بعض الأسمدة العضوية المتخمرة و المبيدات الحشرية علي إنتاجية بنجر السكر و الكثافة العددية لذبابة بنجر السكر*Pegomya mixta* vill

عادل أبو المعلطي أبو الفتوح[1] ، كمال محمد عجمي[2] و محمد مصطفى عبد الرحمن [3]

[1]- قسم بحوث الأمراض و الآفات. معهد بحوث المحاصيل السكرية – مركز البحوث الزراعية - جيزة

[2]- قسم بحوث المعاملات الزراعية. معهد بحوث المحاصيل السكرية – مركز البحوث الزراعية - جيزة

[3]- قسم بحوث الفسيولوجي و الكيمياء. معهد بحوث المحاصيل السكرية – مركز البحوث الزراعية - جيزة

أجريت هذه الدراسة فى منطقتى دمنهور والنوبارية تحت ظروف الحقل فى موسمى 2009/ 2010 و2010/ 2011 لدراسة بعض المحسنات العضوية للتربة (مثل سماد الأبقار ، سماد الدواجن و سماد الأغنام) وأربعة مبيدات حشرية هي (نويدريين 90% ، سيلكرون 72% ، تريسر 24% و فترميك 1.8%) وكذلك التفاعل بينهم علي الإنتاجية ومعدل الإصابة لذبابة بنجر السكر *P. mixta* وأوضحت النتائج أن الكثافة العددية *P. mixta* ومحصول الجذور والأوراق والسكر وعوامل الجودة تأثرت معنويا بكل الأسمدة العضوية والمبيدات الحشرية المختبرة. وعموما كان التعداد التراكمي لليرقات *P. mixta* قد سجل أعلي قيم في المعاملة بسماد الدواجن و يليه سماد الماشية ثم سماد الأغنام.

الاختبارات التي تمت في المنطقتين كانت جديرة بالملاحظة وأعطت نتائج مقارنة لكلا من الصفات المحصولية مثل محصول الجذور والورق والسكر وكذلك نسبة السكر والنقاوة في المعاملة بسماد الماشية وسماد الأغنام.

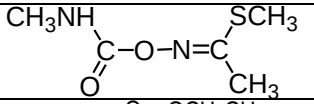
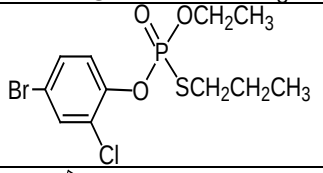
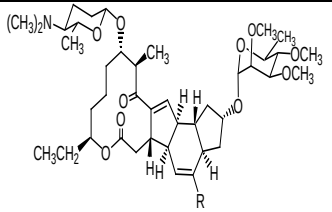
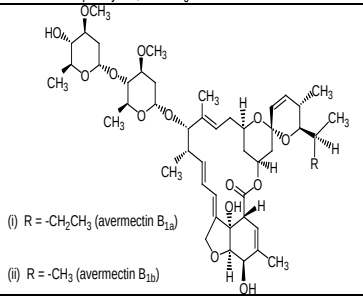
أعطت كل الاختبارات خفضا معنويا لتعداد ذبابة بنجر السكر *P. Mixta* علي محصول بنجر السكر مقارنة بالمعاملة الكنترول (نترات الامونيوم 33.5%). بنجر السكر المعامل بالسيلكرون 72% كان أكثر تأثيرا ضد ذبابة البنجر يليه التريسر 24% ثم الفرتيمك 1.8% ثم النيودرين 90% وأيضا كان ترتيب السيليكرون الأول في إنتاجية محصول الجذور والأوراق بينما محصول السكر والمواد الذائبة الكلية والنقاوة تأثرت معنويا في التفاعل بين الأسمدة العضوية المتخمرة والمبيدات الحشرية اعلي محصول للجذور ومحصول الأوراق والسكر كانت نتيجة التفاعل بين سماد الماشية x مبيد السيليكرون ، سماد الدواجن x مبيد التريسر ، سماد الماشية x التريسر علي التوالي بينما أعلي قيم للمواد الصلبة الذائبة الكلية والنقاوة كانت نتيجة التفاعل بين سماد الدواجن x المبيد التريسر 24%.

قام بتحكيم البحث

أ.د / سعد احمد المرسى — كلية الزراعة – جامعة المنصورة

أ.د / محمد فتحى السيد معارج — مركز البحوث الزراعية

Table 1: Characters of the tested insecticides used.

Trade name	Chemical group	Common name	Molecular Form	Application rate	Chemical structure
Nudrin 90% sp	carbamate	*N*-methyl-*N*-phenylacetamide	$C_{12}H_{17}O_4PS_2$	75cm^3/100 liters water	
Selecron 72% EC	Organophosphate	profenofos	$C_{11}H_{15}BrClO_3PS$	300 cm^3 /100 liters water	
Tracer 24% SC	Spinosad	(BSI, pa ISO, ANSI)	$C_{41}H_{65}NO_{10}$	80 cm^3 /fedda**n**	 spinosyn A, R = H- spinosyn D, R = CH_3-
Vertmik 1.8% EC	Pyrethroid	abamectin	$C_{48}H_{72}O_{14}$ (avermectin B_{1a}) $C_{47}H_{70}O_{14}$ (avermectin B_{1b})	350 cm^3 /100 liters water	 (i) R = $-CH_2CH_3$ (avermectin B_{1a}) (ii) R = $-CH_3$ (avermectin B_{1b})