

## **THE BEST BAIT PLACEMENT DISTANCE AND ATTRACTIVE ADDITIVES SUBSTANCE TO *MONACHA CARTUSIANA* SNAILS UNDER FIELD CONDITIONS.**

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### **ABSTRACT**

Field experiments had been conducted in field cultivated with Egyptian clover crop infested with *Monacha* sp. at Kolongeel village fields, El-Mansoura district, Dakahlia Governorate during 2011 season, to determine the best bait placement distance, the most preference substance carrier and substance attractive to *Monacha* Sp. land snails.

Data revealed that the fine wheat bran as a substance carrier is the highly number of snails 21.7 followed by rough wheat bran 9.58 snails. The black sugar cane syrup is the highly attractive additives on substance carrier as bait with 28.46 snails followed by sucrose 12.19 snails. The distance of 0.5 meter was the best distance between (clump) baits with highly numbers 39.36 snails followed by 0.75 meter treatment 23.64 snails.

### **INTRODUCTION**

Land snails have become considerably more abundant as result of agricultural and horticultural activities. Recently land snails had become one of economic serious pests in different Governorates in Egypt. Snails feed mostly on soft, succulent plants tissue and rasp large holes in foliage, stems, fruit and even bulbs. They can completely demolish seedling and severely damage young shoots and plants. *Monacha cartusiana* and *Monacha containa* considered the most predominant snails in all localities at Dakahlia Governorate and economic importance value was 46.85 (relative frequency of occurrence 20.18, (Mortada, 2004). Also, *Monacha* sp. was the most predominant snails in all localities at Sharkia Governorate (Ismail,1997 and Mahrous *et al* 2002).

Bait molluscicides methods have been proved much effective in killing the snails, the use of this method being encouraged nowadays due to environmental pollution. Land snails daily activity range is very short 15-20cm under laboratory conditions. ( Barnis and well, 1945 ). The movement of *M. cartusiana* between Egyptian clover cultivation and road sides vegetation was ( $4.3 \pm 0.37$  m/month) with ( $0.32 \pm 0.12$  m/daily) inside the plantation. While it was moved ( $23.45 \pm 0.32$  m/month) with ( $0.78 \pm 0.02$  m/daily) within roadside vegetation during spring season ( Daoud, 2004 ).

Carbohydrates in the form of wheat or rice bran which added to act as attractant and as carrier base (Ricou and Ferret, 1973). Sugar (sucrose) had often been added to bait to make it more attractive in metaldehyde (Godan,1983).

The aim of the present study is throw light on the best bait placement distance, attractive additives and substance carriers when bait method was applied in field condition against *M. cartusiana* land snails.

## MATERIALS AND METHODS

An area of about three feddans cultivated with Egyptian clover crop infested with *Monacha* sp. was selected at kolongeel village field, El-Mansoura district, Dakahlia Governorate during the period from early March to the end of April 2011 season. one feddan was selected for each treatment.

### **-Bait substance as a carrier.**

Eight substance were chosen as carrier, Gona, fine wheat bran, rough wheat bran, crushed maize, potatoes slice circle, potatoes fine, crushed wheat and oven ashes were used. Ten replicates were prepared for each substance.

The baits were prepared by mixing 5 parts of black sugarcane syrup, with each substance to be finally 100 parts. The baits were moistened with appropriate amount of water to form a crumbly mash mixture (gona, fine wheat bran, rough wheat bran). Crushed maize and crushed wheat were but in water for 2 hours before preparation to be soft. The baits were placed on 0.5 meter each other before sunset. Examination was done for a week during early morning before sunrise, the baits were rising after the examination. All snails were found on baits were counted and left in their initial places.

### **Bait substance attractive additives.**

The substance used to make the bait enticing is importance , if the bait contains a carrier substance that is not very attractive to most of the snails the control is bound to fail. The attractive of bait increased by the addition of plant substance or protein.

Six substances were chosen as attractive additives. potatoes fine, black sugarcane syrup, sucrose, dried blood, dried fish and dry milk were added with 5 parts to 95 parts of fine wheat bran, as an attractive additives. Ten replicates were prepared for each attractive substance, and the same manner in the mentioned treatment before.

### **Bait placement distance.**

Six treatments were used to determined the best distance between (clumps) baits. 25cm, 50cm, 75cm, 1m, 1.25m and 1.5m were used as treatments. Ten replicates (50gm each one) were used for each treatment. The replicate was prepared by mixing 5 parts of black sugarcane syrup with fine wheat bran 95 parts and moistened with appropriate amount of water to form a crumbly mash mixture. These distances between clumps were each other from all sides in the field.

All data statistically analysis by program ANOVA with methods of Little and Hills (1978).

## RESULTS AND DISCUSSION

### **The best substance carrier as a bait.**

The experimental was conducted to determine the best substance carrier in baits of *Monacha* Sp. land snails in the field cultivated with Egyptian clover during March 2011 season in El-Mansoura –Dakahlia Governorate.

Data in Table (1), showed that the bait that contain a fine wheat bran as a substance carrier is the highly numbers of snails with a main numbers of

21.7 snails followed by rough wheat bran 9.58 snails followed by potato fine, oven ash, gona, crushed maize, potato slice and crushed wheat with a main number of (7.41, 5.87, 4.28, 3.83, 2.65 and 2.44 ) snails respectively.

**Table (1): Daily catches of *Monacha Sp* land snails to certain substance carrier as a bait in fields in Egyptian clover at Dakahlia Governorate.**

Days	(Days.....)							Total	$\bar{x}$	± S.E	
	1	2	3	4	5	6	7				
Treatments											
Gona	8*	5.33	6	2.66	3.33	2.66	2	29.98	4.28	2.21 n.s	
Fine whaet bran	25.3	27.1	26.1	20.3	18.3	19	16.1	151.9	21.7	4.37 **	
Rough wheat bran	10.2	9	11.2	13.1	9.4	8	6.2	67.1	9.58	2.22 *	
Crushed maize	6	6.4	4.2	3.1	3.4	2.3	1.4	68.8	3.83	1.84 n.s	
Potato slice	3	3.1	2.3	3	3.2	2	2	18.6	2.65	0.53 n.s	
Potato fine	9	8.3	8.2	8	7.2	7	4.1	51.8	7.41	1.61 n.s	
Oven ashes	6	9.3	5	7.3	4	4.5	5	41.1	5.87	1.85 n.s	
Crushed wheat	1.6	4.3	2	3.1	2.4	1.7	2	17.1	2.44	0.96 n.s	
L.S.D <sub>05</sub>	4.36										

\*Each value is an average of 10 replicates.

Snails are preference fine wheat bran so, it is highly attractive substance carrier comparative with other carrier. Statistically fine wheat bran was the significant one followed by rough wheat bran (L.S.D<sub>05</sub> 4.87) while all other substance carriers were not significant. Also, noted that an oven ash treatment was killing the snails.

Also, data in Table (2), indicated that the effect of certain attractive additives on substance carrier as a bait. The attractive additives of black sugarcane syrup treatment is the highly attractive one to snails with a main numbers 28.46 individuals followed by a bait contain sucrose 12.19 individuals. All other attractive additive was non significant (L.S.D<sub>05</sub> 5.78 ) dried milk 9.17 , dried blood 3.33 , potato fine 2.56 and dried fish 2.52 snails.

**Table (2): Daily catches of *Monacha Sp* land snails to certain attractive additives on substance carrier as bait in field Egyptian clover at Dakahlia Governorate.**

Days	(Days.....)							Total	$\bar{x}$	± S.E	
	1	2	3	4	5	6	7				
Treatments											
Black sugarcane syrup	29.32*	40.66	36.66	34.66	30	16.66	11.32	199.28	28.46	8.36 **	
Potatoes fine	6.66	4.66	2.66	1.33	0.66	1.33	0.66	17.96	2.56	2.24 n.s	
sucrose	18.33	14.66	16.33	13	9.33	7.66	6	85.31	12.19	4.62 *	
Dried blood	9.66	6.33	2.66	1.33	0.66	1.33	1.33	23.3	3.33	3.38 n.s	
Dried milk	14.33	11.66	11	9.33	9	7.66	5	67.98	9.71	2.99 *	
Dried fish	6.33	4	2.66	0.66	2.66	0.66	0.66	17.63	2.52	2.12 n.s	
L.S.D <sub>05</sub>	5.78										

\*Each value is an average of 10 replicates

Regarding the bait placement distance between (clump) baits. Data in Table (3) revealed that 0.5 meter treatment was the best placement distance between baits for snails of *Monacha* Sp. with a highly numbers 39.36 individuals. While , other treatments were non significant (L.S.D<sub>05</sub> 4.36 ) 1 meter, 1.25 meter, 0.25 meter and 1.5 meter with main numbers of (18.5, 17.74, 17.13 and 16.08 individuals, respectively.

**Table (3): Daily catches of *Monacha* Sp land snails on certain bait placement distances in field Egyptian clover at Dakahlia Governorate.**

Days	(Days.....)							Total	$\bar{x}$	± S.E
	1	2	3	4	5	6	7			
Treatments										
0.25 meter	19.3*	20.1	18.2	17.1	16	15.3	14	120	17.13	2.2 n.s
0.5	39.1	43.2	43	41.1	38.1	36	35	275.5	39.36	3.23 **
0.75	27.3	26	27	25.1	23	19	18.1	165.5	23.64	3.76 *
1.00	20.1	22.2	19.3	18	16	16.8	17.1	129.5	18.5	2.17 n.s
1.25	18	19.1	18.4	19.1	16.5	17	16.1	124.2	17.74	1.22 n.s
1.5	17	18.1	17.2	16.1	16	15	13.2	112.6	16.08	1.61 n.s
L.S.D <sub>05</sub>	4.36									

\*Each value is an average of 10 replicates.

The present results are in agreement of (Godan, 1983) found that 12 cm was the upper limits for direction of *Limix* Sp slugs in laboratory experiments . Hunter and Symonds (1970) recommend that experiments 10 to 20 cm as optimal distance between pellets of bait for successful control of field slugs.

In general, filed trails indicated that the best distance between (clumps) baits 0.5 meter was the most preference. Bait substance carrier was fine wheat bran and the best substance attractive additives was black sugarcane syrup.

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### **أفضل مسافة لوضع الطعم والمادة الجاذبة لقواقع البرسيم الزجاجي *Monacha cartusiana* تحت الظروف الحقلية.**

**محمد محمد مرتضى**

**معهد بحوث وقاية النباتات – مركز البحوث الزراعية – الدقى – الجيزة – مصر.**

أجريت تجارب حقلية في مركز المنصورة محافظة الدقهلية على محصول البرسيم موسم 2011 لتحديد أفضل مسافة للطعم المستخدم كطريقة مكافحة لقواقع البرسيم الزجاجي وكذلك أفضل مادة حاملة ومادة جاذبة للقواقع .

أوضحت النتائج أن أفضل مادة حاملة كانت الردة الناعمة ( النخالة الناعمة) حيث كانت أعلى نتائج بمتوسط 21,7 قوقع يليها الردة الخشنة بمتوسط 9,58 قوقع ثم باق المواد المستخدمة كانت غير معنوية وكانت البطاطس المهروسة ثم تراب الفرن والذي كان له أثر قاتل على الأفراد ثم ربيع الكون (الجونة) ثم الذرة المجروش ثم البطاطس الشرائح وأخيرا القمح المجروش . كما أوضحت النتائج أن أفضل مادة جاذبة كانت عسل القصب (العسل الأسود) ثم السكر وبقى نتائج المواد الأخرى كانت غير معنوية وترتبت كالتالى اللبن المجفف ثم الدم المجفف ثم السمك المجفف . كذلك أكدت النتائج ان افضل مسافة لوضع الطعم كانت على مسافة 50 سم من المحطة التالية لها مباشرة حيث كانت أعلى عدد من الأفراد، ثم مسافة 75 سم ثم 1 متر ثم 1,25 متر ثم 00,25 سم وأخيرا كانت مسافة 1,5 متر .

**قام بتحكيم البحث**

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