

Study of the biological efficiency of insecticides against locusts.

I.P. Umurzaqov¹

1. Jizzakh region locust and mulberry pyralid control service.

F.A. Gapparov²

2. Scientific research institute of plant quarantine and protection

N.X. Tufliyev²

2. Scientific research institute of plant quarantine and protection

A.F.Xaitmurotov³

3. Termiz institute of agrotechnology and innovative development.

F.O. Nurjonov²

2. Scientific research institute of plant quarantine and protection

ABSTRACT

It is important to fully understand the content of the price in the market of goods and services and to study a number of factors affecting its level. The variety of production and marketing conditions in various sectors and sectors of the economy and differences in the level of development of market relations create the need to differentiate types of prices. All types of prices operating in the economy constitute a price system. In a market economy, this article discusses in detail several types of prices.

Keywords:

Price, dumping price, official price, national price, discount price, world price, hidden price, free price, standard price, contract (wholesale) price, retail price, variable price, marginal price, equilibrium price.

Introduction

The natural conditions of the Republic of Uzbekistan are favorable for the development and wide spreading of many species of locusts. As a result, there are significant issues with the requirement for chemical treatment in agriculture on a wide scale every year. Locusts are present across Uzbekistan, although the most extensive distribution centers are formed in specific soil-climatic zones that are chosen by the habitat of specific species. Controlling measures of locusts have been conducting in large areas and have certain effect on the change in their number. Nevertheless, locusts pose a real damage to pastures and crops, which requires the continuous development and improvement of active means and methods of control of them.

Materials and methods

From the middle of the twentieth century, the chemical method took the leading place among the methods of combating locusts. Until that

period, locusts have been fought with extremely laborious and ineffective methods. For example, in 1902, more than 6,000 workers were used to combat the Moroccan locust in Samarkand region, but the locust destroyed about 100,000 hectares of various crops there (Ivanov, 1946). Since the 1950s, calcium arsenate (3.5-4 kg/ha) and hexachlorane (15 kg/ha) have been widely used against locusts in Central Asia. However, since 1952, a decrease in the biological efficiency of older instar nymphs of grasshoppers was noted (Ler, 1962; Taranovich and Kurdyukov, 1976). In addition, 12% GCSG was found to be effective mainly against the first three instar nymphs (Gapparov, 1988). Nevertheless, in practice it was often used against older instar nymphs and even imagos. Therefore, the search for highly effective insecticides was intensively conducted. Organophosphorus preparations such as karbofos, metafos were tested and put into production (Kurdyukov et al. 1983). If earlier the main requirement in the fight against

locusts was the high efficiency of the drug, then the requirement to combine it with safety for people and the environment was put forward (Sazonov, 1972). Study of second-generation pyrethroids in Uzbekistan began in 1990. A distinctive feature of the second-generation synthetic pyrethroids (Karate, Talstar, danitol, sumi-alpha, etc.) is the completeness of their action against insects. Second generation pyrethroids have been tested against various pests by a number of researchers. In particular, pyrethroids - karate and sumi-alpha were tested against locusts in pastures of Surkhondarya region and their high efficiency was determined (Khaytmuratov, 1998).

From the agrotoxicological point of view, grasshoppers are determined by the sensitivity of individual species and the age of the nymphs are not the same, and therefore scientific research is required to develop rules for the use of grasshoppers against harmful species.

Experiments on studying the biological effectiveness of drugs were conducted in Nurota

district of Navoi region. Research work was carried out in accordance with the instructions of the State Chemical Commission of the Republic of Uzbekistan (2004) and the instructions of the Ministry of Health. (Kurdyukov, 1987). The species composition of locusts was determined by entomological net collection and quantitative analysis in the selected area. (Bei-Bienko and Mishchenko, 1951). Counting of locusts and collection of materials was carried out according to generally accepted methods (Syplenkov, 1979).

Results and discussion

Table 1 shows the results of the research conducted to determine the species composition of grasshoppers in the experimental areas. As can be seen from the given data, the oasis locust is superior to other locust species in terms of quantity and species composition and makes up 52.3% of the total number of pests.

Table 1.
Species and age composition of locusts in the experimental area.
(Navoi region, Nurota district, Nurota farm. (06.07.06.16.19)).

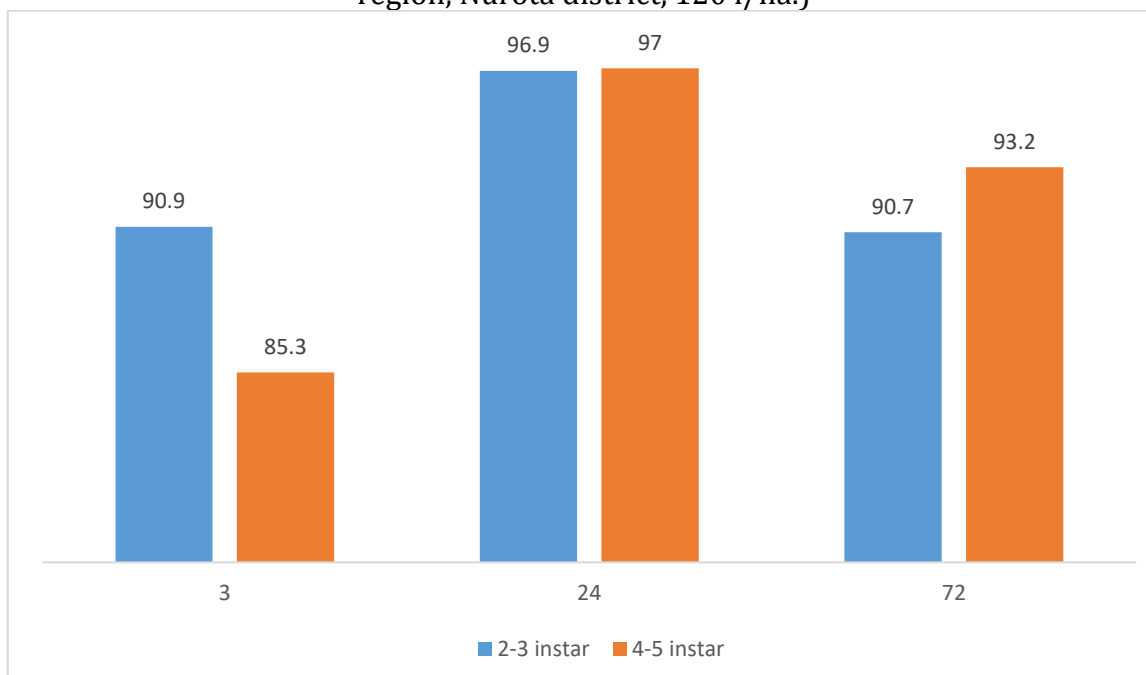
Species	Number of nymphs in ten nets.	By ages					Ratio %
		1	2	3	4	5	
<i>Calliptamus italicus</i> L.	112	-	9	43	60	-	52,3
<i>Calliptamus turanicus</i> Tarb.	18	-	3	5	10	-	8,4
<i>Dociostaurus maroccanus</i> Thunb.	76	-	-	-	20	56	35,5
<i>Dociostaurus tartarus</i> Stshelk.	8	-	-	-	3	5	3,8
Total	214		12	48	93	61	100,0

Table 2 shows the results of experiments conducted to study the biological effectiveness of "Killer super" 20% k.e. drug against grasshoppers of different ages. According to the given data, Killer Super is highly effective against young (2-3) nymphs of the Italian locust. At the same time, the biological efficiency at the

standard level of 0.0375-0.0625 l / ha is 96.3, respectively; It was 97.8%. The biological efficiency of this drug is much higher even for adult (4-5) nymphs, more than 97.5% of insects were killed at the consumption rate of 0.0625 l/ha. Up to 96.6% of locusts were killed in the variant using 10% k.e. Attila super as an etalon.

Figure 2.

Biological efficiency of the insecticide Killer super, 20% c.e. against nymphs of Italian locust (Navoiy region, Nurota district, 120 l/ha.)



The results of experiments on the study of the biological effectiveness of the drug "Neocloprid Ekstra" against the nymphs of the oasis locust of different ages are given. As can be seen from the given data, the biological efficiency of Neocloprid Ekstra drug in the amount of 0.025-0.04 kg/ha against small young nymphs of locusts was 98.5 and 99.3%, respectively. In relation to older instar nymphs, the biological efficiency was 97.5% at the consumption rate of 0.04 kg/ha. At the same time, in the version used as an etalon, Bagira is 20% k.e. efficiency was 97.2%. Obtaining such a high result allows us to consider that the application of the drug in the amount of 0.025-0.04 kg/ha provides a protective effect against locusts.

Fipronil Ekstra 20% c.s. The results of studies on determining the optimal consumption rates of

the drug which presented in Table 4, showed that the tested amount of the drug, 0.03-0.04 l/ha, had a much higher effect on the nymphs of the younger and older instar of the oasis locust, and after 4 days its biological efficiency was 98.6-98.8%, respectively.

It should be noted that after treatment with Fipronil Ekstra 20% c.s., the feeding and movement of locusts stopped dramatically, and this result is an important indicator in the control of harmful locusts. As an etalon, Atila super 10% k.s. drug, 0.125 l/ha. was used in the rate of expenditure. In these experiments, a high efficiency of the drug, approximately 96.6%, was noted even after 3 days.

It should be noted that no larval mortality was observed during the tests in all control variants.

Table 3.

Biological efficiency of the insecticide Neocloprid Extra, 70% w.s.g. against various instar of the Italian locust

(Navoiy region, Nurota district, 120 l/ha, 07.06.2019 y.).

№	Variants	Consumption rate l/ha	Amount of nymps per square meter after n hours									Biological efficiency %, after n hours		
			24			48			72			24	48	72
			Life	Dead	Total	Life	Dead	Total	Life	Dead	Total			
Treatment time for 2-3 instar nymphs 7.06.2019 y.														
1	Neocloprid Extra, 70% w.s.g.	0,025	4,9	32,2	37,1	1,0	35,3	36,3	0,5	33,2	33,7	86,7	97,2	98,5
2	Neocloprid Extra, 70% w.s.g.	0,04	3,6	36,2	39,8	0,3	34,9	35,2	0,2	31,5	31,7	90,9	99,1	99,3
3	Bagira, 20 % w.s.g.- (ethalon)	0,1	3,1	32,5	35,6	0,3	34,6	34,9	0,2	29,1	29,3	91,2	99,1	99,2
4	Control	-	36,9	0,4	37,3	34,6	0,5	35,1	33,0	0,4	33,4	0,0	0,0	0,0
Treatment time for 4-5 instar nymphs 16.06.2019 y.														
1	Neocloprid Extra, 70% w.s.g.	0,025	6,4	27,3	33,7	4,1	28,9	32,9	3,1	27,2	30,3	81,0	87,8	89,7
2	Neocloprid Extra, 70% w.s.g.	0,04	1,9	29,8	31,7	1,2	27,9	29,1	0,7	28,0	28,7	94,1	95,8	97,5
3	Bagira, 20 % w.s.g.- (ethalon)	0,1	1,8	28,7	30,5	1,3	28,7	30,0	0,8	28,3	29,1	94,0	95,6	97,2
4	Control	-	31,7	0,1	31,8	29,1	0,4	29,5	29,0	0,6	29,6	0,0	0,0	0,0

Table 4.

Biological efficiency of the insecticide Fipronil extra 20 % s.c. against various instar of the Italian locust
(Navoiy region, Nurota district, 120 l/ha, 07.06.2019 y.)

№	Variants	Consumption rate l/ha	Amount of nymphs per square meter after n hours									Biological efficiency %, after n hours		
			1			3			4			1	3	4
			Life	Dead	Total	Life	Dead	Total	Life	Dead	Total			
Treatment time for 2-3 instar nymphs 07.06.2019y.														
1	Fipronil extra 20 % s.c.	0,03	4,7	35,7	40,4	0,8	38,3	39,1	0,5	38,7	38,3	88,3	97,9	98,6
2	Fipronil extra 20 % s.c.	0,04	1,8	36,1	37,9	0,5	37,6	38,1	0,2	37,6	37,8	95,2	98,7	99,4
3	Atilla super 10% к.э (ethalon)	0,125	1,9	36,7	38,6	0,6	37,3	37,9	3,9	30,4	34,3	95,0	98,4	88,6
4	Control	-	38,8	0,2	39,0	38,4	0,3	38,7	38,1	0,2	38,3	0,0	0,0	0,0
Treatment time for 4-5 instar nymphs 16.06.2019y.														
1	Fipronil extra 20 % s.c.	0,03	5,9	28,3	34,2	4,0	29,1	33,1	2,2	30,5	32,7	82,7	87,9	93,2
2	Fipronil extra 20 % s.c.	0,04	4,0	31,2	35,2	1,0	33,0	34,0	0,4	33,2	33,6	88,6	97,0	98,8
3	Atilla super 10% e.c. (ethalon)	0,125	3,9	29,3	33,2	1,1	32,0	33,1	3,5	29,4	32,9	88,2	96,6	89,3
4	Control	-	31,3	0,1	31,4	30,7	0,2	30,9	30,3	0,1	30,4	0,0	0,0	0,0

Cruiser 20% s.e.g. compared to 0.05 l/ha to 2-3-year-old and 0.1 l/ha to 4-5-year-old nymphs of the oasis locust showed high biological efficiency at application rates of 97.4 and 99.7% after 72 hours, respectively.

Bagira 20% k.e. High biological efficiency was also achieved in the variant used at the consumption rate of 0.1 l/ha. Thus, according to the test results, Cruiser drug, 20% k.e. is a very effective tool in the fight against harmful locusts. Vefthor, 35% k.s. Table 6 shows the results of the use of the drug at the consumption rate of 0.08 l/ha for 2-3 and 4-5-year-old nymphs of the oasis locust. It is known from the obtained results that this drug showed high biological efficiency in the studied conditions and was 99.8 and 97.8%, respectively, after 72 hours.

Bagira 20% k.e. High biological efficiency was achieved even at the consumption rate of 0.1 l/ha. Thus, according to the results of

experiments, in general, Vefthor, 35% k.s. is a very effective tool in the fight against harmful locusts.

The results of the experiments on the study of the biological effectiveness of Videltamethrin against grasshoppers of different ages are shown in Table 7, where the oasis grasshopper was the main part.

From the given data, it can be seen that the drug Videltamethrin has a much higher biological efficiency compared to young (2-3) and older (4-5) years, where 97.5% of insects died when the drug Videltamethrin was used in cases of more than 0.1 l / ha it happened. At the same time, Atilla Super 10% k.e. 96.6% of locusts were killed in the variant used as an etalon. Thus, we can make a general conclusion that in terms of biological efficiency, the insecticide Videltamethrin, 10% k.e. can be recommended for use against harmful locusts.

Table 5.

Biological efficiency of the insecticide Kreyser, 20 % w.s.g. against various instar of the Italian locust (Navoiy region, Nurota district, 120 l/ha, 07.06.2019 y.)

№	Variants	Consumption rate l/ha	Amount of nymphs per square meter after n hours									Biological efficiency %, after n hours		
			3			24			72			3	24	72
			Life	Dead	Total	Life	Dead	Total	Life	Dead	Total			
Treatment time for 2-3 instar nymphs 07.06.2019 y.														
1	Kreyser, 20 % w.s.g.	0,05	2,8	36,6	39,4	1,5	37,5	39,3	1,0	38,4	39,4	92,8	96,1	97,4
2	Kreyser, 20 % w.s.g.	0,1	1,9	34,8	36,7	0,4	35,5	35,9	0,1	35,0	35,1	94,8	98,8	99,7
3	Багира, 20% e.c. (ethalon)	0,1	1,7	36,4	38,1	0,5	37,3	37,8	0,2	36,7	36,9	95,5	98,6	99,4
4	Control	-	36,4	0,2	36,6	35,6	0,2	35,8	34,8	0,1	34,9	0,0	0,0	0,0
Treatment time for 4-5 instar nymphs 16.06.2019 y.														
1	Kreyser, 20 % w.s.g.	0,05	3,1	33,2	36,3	2,1	34,2	36,3	1,6	34,2	35,8	91,4	94,2	95,5
2	Kreyser, 20 % w.s.g.	0,1	2,2	32,0	34,2	0,7	33,0	33,7	0,4	32,0	32,4	93,5	97,9	98,7
3	Багира, 20% e.c. (ethalon)	0,1	1,8	34,9	36,7	0,5	35,4	35,9	0,3	33,3	33,6	95,0	98,6	99,1
4	Control	-	35,6	0,1	35,7	34,6	0,2	34,8	33,8	0,1	33,9	0,0	0,0	0,0

Table 6.

Biological efficiency of the insecticide Vefthor, 35% c.s. against various instar of the Italian locust (Navoiy region, Nurota district, 120l/ha, 07.06.2019 y.)

№	Variants	Consumption rate l/ha	Amount of nymphs per square meter after n hours									Biological efficiency %, after n hours		
			24			48			72			24	48	72
			Life	Dead	Total	Life	Dead	Total	Life	Dead	Total			
Treatment time for 2-3 instar nymphs 07.06.2019 y.														
1	Vefthor, 35% c.s.	0,08	3,1	26,0	29,1	0,2	28,7	28,9	0,1	28,6	28,7	89,3	99,3	99,8
2	Bagira, 20 % w.s.g.- (ethalon)	0,1	3,2	25,8	29,0	0,4	28,4	28,8	0,2	28,0	28,2	88,9	98,1	99,2
3	Control	-	29,8	0,3	30,1	29,9	0,1	30,0	29,0	0,2	29,2	-	-	-
Treatment time for 4-5 instar nymphs 16.06.2019 y.														
1	Vefthor, 35% c.s.	0,08	1,8	23,1	24,9	0,9	22,3	23,2	0,5	22,4	22,9	92,7	96,1	97,8
2	Bagira, 20 % w.s.g.- (ethalon)	0,1	1,9	24,2	26,1	1,0	24,0	25,0	0,6	24,2	24,8	92,7	96,0	97,5
3	Control	-	23,8	0,1	23,9	22,8	0,2	23,0	22,5	0,3	22,8	-	-	-

Table 7.

Biological efficiency of the insecticide Videltametrin, 10% e.c. against various instars of Italian locust (*Navoiy region, Nurota district, 120 l/ha, 07.06.2019 y.*)

№	Variants	Consumption rate l/ha	Amount of nymphs per square meter after n hours									Biological efficiency %, after n hours		
			3			24			48			3	24	48
			Life	Dead	Total	Life	Dead	Total	Life	Dead	Total	3	24	48
Treatment time for 2-3 instar nymphs 7.06.2019 y.														
1	Videltametrin, 10% e.c.	0,1	3,4	27,1	30,5	0,7	29,2	29,9	0,4	29,4	29,8	88,8	97,6	98,6
2	Atila super, 10% e.c. (ethalon)	0,125	3,3	28,3	31,6	0,6	27,0	27,6	0,5	28,2	28,7	89,5	97,8	98,2
3	Control	-	29,8	0,1	29,9	28,3	0,3	28,3	29,2	0,4	29,6	0	0	0
Treatment time for 4-5 instar nymphs 16.06.2019 y.														
1	Videltametrin, 10% e.c.	0,1	4,1	27,5	31,6	1,6	28,9	30,5	0,7	30,8	31,5	87,0	94,7	97,7
2	Atila super, 10% e.c. (ethalon)	0,125	4,0	29,0	33,0	1,7	30,6	32,3	0,7	30,1	30,8	87,8	94,7	97,7
3	Control	-	30,4	0,0	30,4	31,5	0,1	31,6	29,0	0,3	29,3	0	0	0

Conclusion

1. Vefthor, developed on the basis of imidacloprid in field conditions, 35% k.s., Kreysler, 20% k.e.c., Neocloprid Ekstra, 70% w.s.g., Killer super based on lambda-cyhalothrin, 20% k.e. and Fipronil Ekstra 20% k.s. based on fipronil. Videltamethrin based on deltamethrin, 10% k.e. The biological effectiveness of insecticides against the nymphs of the oasis locust at different ages was studied.
2. It was found that the studied insecticides have high biological efficiency for nymphs in various instar of the oasis locust.
3. Killer super, 20% k.e. The biological efficiency of the drug at the consumption rate of 0.0375 l/ha and 0.0625 l/ha for 72 hours is (90.7% and 93.4%) and (93.2% and 94.0%), respectively. Did
4. Neocloprid Extra, 70% w.s.g. The biological efficiency of the drug at the consumption rate of 0.025 l/ha and 0.04 l/ha for 72 hours was (98.5% and 99.3%) and (89.7% and 97.5%), respectively.

5. Fipronil Extra 20% k.s. The tested dose of 0.03-0.04 l/ha of the drug had a high effect on younger and older nymphs of the oasis locust, and its biological efficiency after 4 days was 98.6-98.8%, respectively.
6. Cruiser, 20% s.e.c. At the rates of 0.05 and 0.1 l/ha, the efficiency during 72 hours was (97.4% and 99.7%) and (95.5% and 98.7%), respectively.
7. Vefthor 35% k.s. 0.08 l/ha of the drug. biological efficiency for younger and older instar nymphs after 48 hours is 99.3% and 96.1% respectively, Videltamethrin, 10% k.e. the effectiveness of the drug is 0.1 l/ha. it was 98.6% and 97.7%, respectively.

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