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"An investment in knowledge always pays the best interest." Benjamin Franklin

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FEATURES OF THE DEVELOPMENT OF THE PHYSICAL PROPERTIES OF MUSIC COLLEGE STUDENTS KARATE-DO SHOTOKAN

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ABSTRACT

Purpose: to develop and experimentally substantiate the method of developing the physical qualities of female students of musical college by means of karate-do Shotokan in the system of optional classes.

Material and methods: theoretical analysis and generalization of data of scientific and methodological literature, pedagogical observation, pedagogical experiment, pedagogical testing, methods of mathematical statistics. The research was attended by 30 students of 16-17 years old who studied at the Krivoy Rog regional musical college. The method of training in the experimental and control groups had the same and distinctive features.

The same features: training in both groups were aimed at developing such physical qualities as: flexibility, power and speed-power qualities and coordination abilities.

The distinctive features: in the experimental group complexes of general development exercises were carried out using elements of karate-do Shotokan: mawashi-geri, kamayete-dachi, chudan, maya-geri, dzenkutsu-dachi, jodan-tsuki, tsuki.

Results: Karate-do Shotokan positively affects the physical development of man, in particular, with the help of his means, harmoniously can promote the development of physical qualities and functional capabilities. The experimental technique involved the use of karate-to-shotokan elements for the development of the physical qualities of girls aged 16-17 years.

Conclusions: analysis of the level of physical fitness showed that the use of experimental techniques in almost all indicators ensured achieve higher standards of physical preparedness

Keywords: physical fitness, girls 16-17 years old, karate-do Shotokan.

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INFLUENCE OF STRIP-PLASTIC TRAINING TO THE FLEXIBILITY DEVELOPMENT OF FIRST MATURE AGE WOMEN

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ABSTRACT

According to various studies, only about 10% of young people have a normal level of physical state. Life expectancy has decreased by an average of 7- 9 years.

As a result, the production potential of society is also decreasing. Bad ecology, toxins, infections and unbalanced nutrition lead to a violation of the human body and a variety of diseases. Scientific research suggests: cardiovascular diseases arise due to hypokinesia (lack of motor activity), malnutrition and nerve tension.

The close connection between the state of physical fitness with the way of life, the volume and nature of daily motor activity is proved by numerous studies. So, In our time, physical education has become an integral part of the business and energetic people image. Sports style is gaining more and more fans. One of the most popular dance aerobics types is strip-plastic. This type of dance aerobics is extremely popular among young people. In the lessons of strip-plastics, dance moves are used for musical accompaniment with the addition of specific movements simulating striptease. These aerobics tools contribute to the development of flexibility and help to reveal yourself in the bright sensual dance. In the lessons of strip-plastics, dance moves are used for musical accompaniment with the addition of specific movements simulating striptease. These aerobics tools contribute to the development of flexibility and help to reveal yourself in the bright sensual dance.

The article presents the results of a study of flexibility in the first mature age women engaged in strip-plastic dance training. Also, given the simple structure of strip-plastic training lesson.

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RESEARCH OF PHYSICAL DEVELOPMENT AND MORFO-FUNCTIONAL INDEXES FOR STUDENTS OF DIFFERENT HEALTH GROUPS

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ABSTRACT

Knowledge of the peculiarities of age-related development of children, taking into account their state of health, makes it possible to correctly ground, organize, plan and to conduct physical education of children at school.

A research purpose is a study of physical development and morfo- of functional indexes for children 7-9 years with the different state of health.

Researches were conducted in a gymnasium № 11 from Zaporizhzhya is with the children of midchildhood, with the different state of health: the main group of 30 people, including boys 14, girls 16; a preparatory group of 25 people, of which 13 boys and 12 girls; A special medical group of 28 people, including 13 boys and 15 girls. In all, 83 schoolchildren have been investigated. Morphofunctional indices in children were determined at the end of the school year. The results were statistically analyzed.

Results. The average physical development (length, body weight, chest circumference) varied with a decrease in the level of health of both boys and girls, especially among the students of the 1st and 3rd health care groups. Compares the indicators: body mass index (BMI), Pinje index, the living index and the Robinson index. The deterioration of the studied indicators with a decrease in the health of children was revealed. They were on average, below average and low levels.

Robinson's index for boys of the 1st group of health was average level, in the 2nd group - below the average level and in the 3rd group of health - the low level; in girls - the Robinson's index corresponded to the same levels as the boys.

The reliability of the differences in the values of heart rate (HR) was recorded in girls only among the 1 st and 3 rd health care groups; in boys - of the main, preparatory and special health groups.

Keywords: physical development, state of health, health status indices, young age.

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ANALYSIS OF COMPETITIVE ACTIVITY IN SPORTS AEROBICS

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ABSTRACT

According to the analysis of literary sources, it was determined that the system of competitive activity in the theory of sports is not developed enough. Further improvement of the whole system of training of athletes should be carried out in the direction of studying and improving the competitive activity of the athlete.

Purpose of work – to conduct the comparative analysis of constituents of contention activity in a sporting aerobics. Such methods of research were in-process used: analysis of scientific and methodical literature; method of expert estimations; pedagogical supervision; methods of mathematical statistics. For the analysis of contention activity by us were the studied results of championships of Ukraine (2016 and in 2017) from a sporting aerobics and aerobics of fitness of different Olympic cycles – 2012-2016 and 2017-2020.

157 reports of sportsmen and 14 summary protocols of results of competitions were analyzed.

To characterize the loads of a competitive microcycle, we examined the load factors at 3 levels: competitive exercise; competitive day; competitive microcycle.

As can be seen from the results of the study, the total time of one competitive exercise in the previous Olympic cycle (2012-2016 years) in all categories of competitions was 90 + 1.36 seconds, the next season, the time of the competitive exercise was reduced to 80 seconds. For athletes who compete in several types of competitions, the "number of approaches" parameter in the Championship of Ukraine (2016) varies from 2.1 ± 0.3 and up to 3.3 ± 0.7 times. Since 2017, one athlete has the right to participate in no more than three categories, so the "Number of Approaches" parameter averaged 2.2 + 0.4.

The most important indicators that characterize the amount of competitor loads of athletes are "duration of competitive actions", "number of approaches" and "duration of competitive exercise" was determined.

Changes in the rules of the competition in the 2017-2020 Olympic cycle allowed to reduce the time of the competitive exercise and competitive action, reduce the number of mandatory complexity items, and in the categories "Aerodance" and "Aerostep", there is no criterion "Difficulty".

Keywords: sports aerobics, competition, element, complexity.

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DEFINITION OF INDICATORS OF THE LEVEL OF DEVELOPMENT OF STRENGTH AND SPEED-POWER PROPERTIES OF QUALIFIED SAMBO-WRESTLERS

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ABSTRACT

Purpose: to determine the level of development of the strength and speed-strength properties of qualified sambo-wrestlers.

Material and methods: the study used a theoretical analysis of scientific and methodological literature, pedagogical testing and methods of mathematical statistics. 12 athletes of 17-18 years old took part in the pedagogical testing.

Results: research materials indicate that the growth of sports qualifications from the "Candidate Master of Sports" to the "Master of Sports" is accompanied by a significant increase in the level of development of the strength properties of athletes, as well as a slight increase in the level of development of speed-strength properties.

Conclusions: analysis of experimental data suggests that the leading are the power properties that affect the growth of sportsmanship among sambo-wrestlers from the qualification "Candidate Master of Sports" to "Master of Sports".

The obtained indicators can be applied at construction and control of the training process of qualified athletes specializing in sambo and other kinds of sports martial arts.

Key words: struggle, performance, strength, speed-strength properties.

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A LEVEL OF POPULARITY OF NON-OLYMPIC TYPES OF SPORT IS AMONG STUDENTS OF UNIVERSITY SPORTS PROFILE

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ABSTRACT

The analysis of scientific and methodological literature revealed that there is insufficient information about the non-Olympic sports, their development in different regions of the country and the results of competitions in some non-Olympic sports.

This article presents the results of the surveying of 360 students of five universities of Ukraine who train specialists in physical culture and sports (Prydniprovsk State Academy of Physical Culture and Sports, Zaporizhzhya National University, Lviv State University of Physical Culture, Kharkiv State Academy of Physical Culture, Zaporizhzhya National Technical University) regarding the level of popularity of the non-Olympic sports that are officially recognized in Ukraine.

The questionnaire presented 103 non-Olympic sports with a scale from 1 to 10. It was identified in 3 categories of sports - known (7-10 points), little known (4-6) and not known (0-3).

Professional boxing and bodybuilding were included in the category of well-known non-Olympic sports. The category of little-known sports included 45 non-Olympic sports. In the category of unknown non-Olympic sports included 56 non-Olympic sports.

The analysis of the results of the surveying showed that the neolympic sport at this stage is not known among the students and is not popular. This indicates that there is a problem of lack of knowledge about non-Olympic sports among students, there is little advertisement and information on these sports in information sources, little information is provided in the training of specialists in the field of physical culture and sports, these sports are not distributed in the country.

The solution to this problem must begin with the training of specialists in non-Olympic sports. For this purpose, it is necessary to raise the students' informality about non-Olympic sports, to open new specialties in higher educational establishments of sports and to distribute non-Olympic sports in the country.

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THE INFLUENCE OF LESSONS HAND-TO-HAND FIGHT «SPAS» ON THE DEVELOPMENT SPEED-POWER QUALITIES OF YOUTH

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ABSTRACT

The literary analysis has shown that a significant place in the process of physical education should be given to the development of speed-strength qualities. Speed-power abilities can also be developed with the use of exercises Ukrainian national fight - hand-to-hand fight «Spas».

The aim of this reseach - to determine the influence of occupations of the Ukrainian national hand-to-hand fight «Spas» on the level of development of speed-strength abilities of boys.

The main methods of research were: analysis of modern scientific and methodological literature on the topic of research; pedagogical observation of the training process of young men who attend classes hand-to-hand fight «Spas» to determine the means and methods of developing speed-power abilities, for determining the explosive strength of the leg extensors: 30m flying start test, long jump (cm), vertical jump height, triple jump on the right leg (cm), 1 kg Med Ball Sit-up Throw (cm), crunch, index of speed and speed-strength index; methods of mathematical statistics.

The research was conducted in the educational complex «Zaporizhska Sich».

It was comparable to the physical preparedness of 11 boys aged 15-16 who attended lessons from the hand-to-hand fight «Spas» and 14 pupils attending physical education lessons with the inclusion of elements «Spas». A pedagogical experiment was conducted.

At the end of the experiment, in the experimental group, there were noted differences in the five tests compared to the control group, with the exception of the vertical jump height test, where there was only a tendency to improve the performance.

Positive influence on the indicators of speed-power abilities of boys of the Ukrainian hand-to-hand fight «Spas» has been determined according to the speed index and speed-force index.

Key words: Ukrainian national fight hand-to-hand fight «Spas», speed-power abilities, indexes, training process, youths.

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INFLUENCE OF DEVELOPMENT OF SPECIAL FLEXIBILITY ON A SPORT RESULT OF SLALOM-KAYAKERS 13-14 YEARS OLD

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ABSTRACT

The article deals with the issues of the relationship between the level of special flexibility and the competitive result of the 13-14 year-old anglers, identifies the direction of research, formulates the purpose and objectives, reveals the methods and organization of the research.

The purpose of the work is to develop and experimentally test a set of exercises for the development of special flexibility of slalom- kayakers 13-14 years.

For this purpose, in the real conditions of the educational process of the young slalom- kayakers, a study was conducted, the total duration of which covered seven months (the first four months - a stage of development of flexibility, and then three months - a stage of support for flexibility).

It was determined that the indicators of special flexibility are more closely interconnected with athletic skill ($p < 0,05$). Meanwhile, the growth of experience does not significantly affect the structure of special flexibility: the greatest factors of weight (34.7% -38.9%) in the slalom-kayakers of this qualification in the joints of the upper extremities. The dynamics of flexibility in young athletes is determined not only by processes of natural age development of an organism. The change in the mobility of the joints by 47% -48% is due to the influence of training activities.

The results of the experimental and control group in specially simulated competitions indicate that the difference between the personal results of the passage of the distance to the experiment between these groups is negligible and is not more than 2.4% and 0.81% in the standard type competitions. These data prove that the development of other physical qualities is relatively similar between experimental and control groups.

The experimental group has been offered a special developed training method, which envisaged the introduction of specially simulated competitions in the training process.

An assessment of the effectiveness of this implementation has made it possible to determine that the concentrated impact of specially directed actions in slalom- kayakers 13-14 years allows not only to effectively use periods of maximum rates of flexibility, but also to prevent the deceleration of the rates of growth of this quality in subcritical periods.

Keywords: special flexibility, competitive result, system of training, competitive activity, slalom- kayakers.

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DEVELOPMENT OF POWER QUALITIES FOR BOYS 6 – 7 YEARS ENGAGED IN HEALTH ORIENTATION ACROBATICS

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ABSTRACT

Formulation of the problem: The development of power qualities in acrobatics is considered as one of the types of motor activity, which determines the level of technical skill of those involved, the health of boys, their appearance, physical and mental ability.

The search for innovative approaches to the organization of out-school physical education with children should take into account the special importance and attractiveness of acrobatics for them. Implementation of the technique of most acrobatics exercises is impossible without a certain level of development of physical qualities.

The purpose of the research: to experimentally substantiate and give a comparative description of the system of training sessions, which contribute to the development of force in boys 6-7 years engaged in health-improving orientation acrobatics.

The following research methods were used to solve the set tasks: analysis of references, pedagogical observation, pedagogical testing, and methods of mathematical statistics.

Presentation of the main material: The research was conducted on the basis of the out-school communal institution of the City Youth Children Sport School in sport gymnastics in Dnipro. The study was attended by 12 boys aged 6-7 engaged in health-orientation acrobatics. Trainings in the group were conducted three times a week for 90 minutes according to the traditional, adapted methods. A comparative analysis of the results of pedagogical testing showed that in the group of boys 6-7 years engaged in acrobatics in tests for determining the level of development of power, there is a significant increase in the indicators ($p < 0,05$) in all tests, except for dynamometry ($p > 0,05$). Comparing the indicators, it should be noted that: in test № 1 (Pull-up) the result has improved from low to below average; in test № 2 (Push up) the result has improved from below the average to the average; in test № 3 (Dynamometry) the level remained low; in test № 4 (Hanging Double Straight Leg Lift) the indicators have increased from low to average; in test № 5 (Long jump) the result has improved from low to medium level.

Conclusions: Based on the results of the pedagogical testing of boys aged 6-7 engaged in acrobatics, we conclude that in the group indicators of the level of development of power qualities have increased. Comparing test results of the testing of the development of power qualities after the experiment, we proved the reliability of the difference between the results in most tests, which is confirmed by comparing the values of the Student t-criterion ($t > T_{gr}$, $p < 0.05$). This can be explained by the fact that power orientation exercises are performed at acrobatics trainings.

Keywords: strength qualities, development, acrobatics, training.

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THE PHYTOSANITARY CONDITION OF FRUIT GARDENS IN THE WESTERN REGIONS OF AZERBAIJAN ON NEW THRIFT SITUATION

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ABSTRACT

As a result of entomological studies of stone fruit and pome fruit conducted in orchards in the western regions of Azerbaijan in 2013–2017, 4 species of moths were identified (Codling moth - *Cydia pomonella* Linnaeus, Pear fruit moth - *Cydia pyrivora* Danilevsky, Plum moth - *Grapholita funebrana* Treitschke and the Oriental moth-*Grapholita molesta* Busck). The indicators of their distribution were studied taking into account the climatic characteristics of the region (air temperature, humidity, rainfall) in Gazakh, Tovuz and Shamkir regions, population density in the lowland zone compared with the mountainous and foothill zones, high damage to fruits and shoots, studied the possibility of producing of 3-4 generations by moths, taking into account bioecological features, the level of infection of fruit trees, estimated damage, yield losses, determined the threshold of economic harmfulness. It was found that there is a direct correlation between the flight of butterflies and the average daily temperature, as well as the number of fat bodies of the first and second generations of pupae and the productivity of egg-laying of the second and third generations of butterflies. It was graphically shown the development of the phenology of moths, regardless of climate, as well as a phenological calendar. The biological efficacy of microbiological and chemical preparations applied against the fruit moths is presented, the natural enemies of parasites and predators (entomophages) are indicated, and the economic efficiency of the integrated methods carried out is calculated. Thus, all economic indicators for yield, additional crop, price of additional crop, costs of protection measures and other costs, profitability and percentage of profitability of an insecticide were clarified, an environmentally and economically sound system of integrated protection against insects as result of use of Aceplan SP was prepared and calculated based on field and production tests.

Keywords: apple, pear, oriental fruit, plum, identifikasion, indicator, signs, butterfly, egg, adult, caterpillar.

INTRIDUCTION

The development of the agrarian economy of our republic, as well as the improvement of the population's food supply and intensive grazing, are among the most important issues of the state importance, and require the creation of high quality fruits in agriculture and increase productivity. At present, the intensively growing fruit gardens of 700-800 centners per hectare are created in the country. According to the reports of Ministry of Agriculture of Azerbaijan, the area of cultivation of fruit gardens in our country currently makes up 130467 hectares. More than 765818 tonnes of fruits were harvested from fruit gardens, with productivity higher than 71.7 centners per hectare. The product is stored in the built-in refrigerator-storage complexes, providing the whole domestic market with fresh fruits every year, and exported to neighboring countries.

PROBLEMS

As fruit-growing is intensively developing and integration processes are widespread efficient protection of fruit trees from harmful organisms, their protection against internal and external quarantine objects are one of the key issues in fruit cultivation. However, the level of development of timely and harmful organisms in farming businesses, which engages in fruit growing, increases the number of medications as a result of the struggle against the economic damages, and increases the environmental burden of the environment by increasing the pesticide burden on plants, soil and air. Therefore, it is of utmost importance to discover harmful organisms in fruit trees, to clarify their bioecological properties in the region and to develop scientific research on new effective methods of combating them.

MATERIALS AND METHODS

Collection and processing of materials on the study of fruit trees damaging the gardens of the Western region of Azerbaijan are carried out with the commonly accepted entomological methods in summer and autumn seasons of 2013-2017 in individual farms of Govlar settlement, Alakol, Asagi Gushcu villages of Tovuz region, Duyerli, Qapanli and Mahmudlu villages of Shamkir region, Ashaghi Salahli, Second Shikhli and Yukhari Salahli villages of Gazakh region and at the Plant Crop and Plant Protection Department of Agronomy Faculty of the ASAU in lowland, foothills and mountainous areas by taking into account the characteristics of the climate (air temperature, humidity, rainfall), short and long-term routes, semi-stationary and stationary desert studies.

Specific literature and systematic sources were used to identify and name fruit-eaters [13]. During the course of the work 181 samples were collected and processed. The phenology, biology and ecology of fruit-eaters have been studied in more detail when they are in the natural environment.

The composition of the fruit-eaters was determined according to I.Z.Livshich and N.I.Petrusheva (1977-1982), on the base of spread rate formula $Y = n/N \cdot 100$, and the density formula $S = (\sum(a_i \cdot n_i)) / (\sum n_i)$, assessment of harmful activity by M.I.Boldiryev (1981-1991) according to methodical recommendations, quantitative and qualitative indicators, the loss in the analyzed fruits was determined due to the formula $M_i = (A - B) \cdot x$ and the number of descendants was investigated according to the method of L.N.Zochenko (1955-1958). The economic harmfulness of the fruiting species has been determined in accordance with the recommendations of V.A.Zakharenko and others (1998-2001), biological efficacy of microbiological and chemicals, as well as other combat measures in accordance with the methodology of E.A.Gar (1963), the formula $B_s = 100 - ((T_2 \cdot N_1) / (T_1 \cdot N_2)) \cdot 100$ was used in the calculation. The natural enemies of fruit-eaters was determined by A.A.Evlakhova and others (1961), V.A.Tryapich and others(1965), V.A.Shapiro and others' (1976) methodology. The economical effectiveness of the struggle against pests was calculated on the basis of methodologies recommended by V.A.Zakharenko (1979) and V.A.Cherkasov (1976). By using the methodology of V.A.Zaharenko (2005), all the economic indicators of the Aceplan SP insecticide against the fruit-eaters were determined on the base of product test for fertility, supplementary crops, value of added product, fighting and other costs, profit and profitability rates. The calculation was carried out by the following formulas: cost efficiency of the drug on field tests $\dot{I}S = A - B$, the cost of the struggle $P_q = P_q - P_s$, $EX = (X_m(1 + D_n + \theta_z) \times S_x) / W_r$, Amortization expense $A = (B \times a) / (100 - T \times W_r)$, net income $Xg = Amd - Mx$, profitability rate of struggle measures $R = (Ms : M) \times 100$, economic efficiency of the product $Am = Mt - Mn$; $EMI = E Q \times Mt - E Q \times Mn$. The mathematical processing of the data obtained during the research (biometric calculations) was carried out according to the recommendations of B.A.Dospekhov (1985) and Q.N.Zaychev (1973). The loss of product among the options was calculated according to De-Millon's (1980) $P = (A-a) / A$ formula and the economic-damaged limit of the pest after the loss of the product according to V.I.Tansky's (1988) formula $\dot{I}ZH = (M \cdot \theta \cdot R \cdot SD \cdot FD \cdot SE\theta) / (FM \cdot Q \cdot MI \cdot TE \cdot SF) \cdot (1 - YX/Q)$ [7, 8, 9, 1, 11, 12, 14, 15, 16].

RESULTS

The purpose of the research is to determine the composition of the fruit-eaters in the Western region of Azerbaijan, identify their intra-regional distribution, population density, learn their bioecological features, evaluate malicious activities, and develop an ecological and economically motivated integrated system of fighting against them.

The fruit-eaters found in the orchards of the western region of the Republic of Azerbaijan have not been specifically studied until recently. However, as a result of the study of the organisms in the fruit gardens in different parts of the region, besides other pests, fruit-eaters were also noted. In order to analyze the results of the researches data from both national and international literatures have been studied on the calendar plan and the dissertation subject [3, 4].

In the western region of Azerbaijan there are four types of fruits (apple fruit - *Cydia pomonella* L., pearl fruit - *Cydia pyrivora* Danilevsky, *Gavali* fruits - *Grapholita funebrana* Treitschke and East berries - *Grapholita molesta* Busck). Their widespread in Shamkir, Tovuz and Gazakh regions (Table 1), relative to mountainous and foothill regions the intensity of the population density in the lowland zones, the extent of the rate of injury (slaughtering) of fruits and vegetables, the caterpillars of apple fruit-eater are fed with the fruits and seeds of the fruit, pear fruit-eaters with the seeds, and the oriental fruit-eaters with the spun and in few cases with the seeds and pods. They cause serious damages in crops: apple (27.9-33.7%), pear (17.4-20.0%), quince (17.6-19.8%), apricot (2.2-2.5%), peach (1.2-1.8%) and plum (1.0-1.5%) (table 2) [5, 6].

Table 1

The distribution of fruit-eaters in the seedy and stony fruit gardens of the western region

Regions	Carried out observations		Seen		The number of trees spread by %			
	The number of farms	The number of gardens	Fruit sorts	The number of trees	Apple fruit-eater	Pear fruit-eater	Oriental fruit-eater	Prune fruit-eater
Gazakh	3	3	Apple	100	100	-	12	-
			Pear	100	100	62	9	-
			Quince	100	100	-	100	-
			Prune	100	57	-	68	89
			Apricot	100	59	-	74	47
			Peach	100	32	-	100	-
Tovuz	3	3	Apple	100	100	-	15	-
			Pear	100	100	71	9	-
			Quince	100	100	-	100	-
			Prune	100	49	-	67	95
			Apricot	100	54	-	76	52
			Peach	100	27	-	100	-
Shamkir	3	3	Apple	100	100	-	12	-
			Pear	100	100	65	8	-
			Quince	100	100	-	100	-
			Prune	100	52	-	72	92
			Apricot	100	61	-	78	49
			Peach	100	33	-	100	-

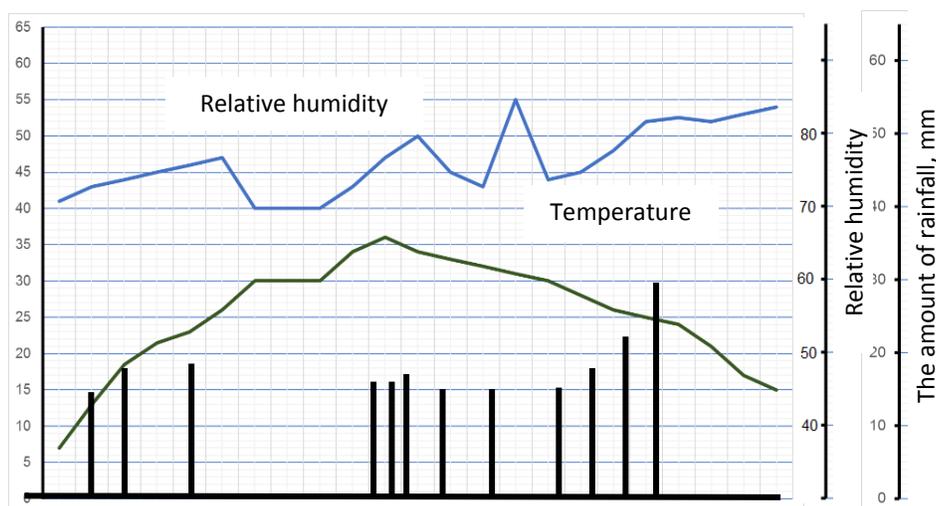
Table2

Population density and spread rate of fruit-eaters in the seedy and stony orchards located at different altitudes

Regions	Geographical zones	Fruit plant sorts	Damage to fruits and herd by the 1st Generation of Fruit-eaters, by%				
			Apple fruit-eater	Pear fruit-eater	Prune fruit-eater	Oriental fruit-eater	
			Fruit	fruit	fruit	fruit	sprout
Shamkir	Mountainous	apple	27,9	-	-	0,3	0,1
		pear	17,4	17,2	-	2,1	0,9
		quince	17,6	-	-	2,5	1,2
		apricot	2,2	-	12,4	4,2	3,8
		peach	1,2	-	-	4,8	16,2
		prune	1,0	-	12,6	0,9	1,6
	Foothills	apple	31,7	-	-	0,6	0,3
		pear	18,3	18,9	-	3,0	1,0
		quince	19,4	-	-	3,3	1,5
		apricot	2,5	-	16,9	6,2	4,1
		peach	1,5	-	-	6,0	23,9
		prune	1,2	-	18,4	1,2	3,2
	Lowland	alma	33,7	-	-	0,8	0,4
		pear	20,0	22,1	-	5,4	1,1
		quince	19,8	-	-	3,5	1,9
		apricot	2,2	-	17,8	8,0	3,9
		peach	1,8	-	-	5,9	19,1
		prune	1,5	-	18,9	1,6	3,2

According to specializing in nutrition, apple and oriental fruit-eaters are the most dangerous polyphaid pests that are widely spread and have major economic damage, the apple (52.2-67.7; 0.3-0.8), pear (37.4-56.1; (1-19.2), quince (90.1-96.0; 23.1-33.2), peach (1.5-6.2; 27.2-41.3), apricot (1.1-2.2; 16.3-18.9) and plum (0.2-1.2; 1.5- 4.7) fruit-eaters have great economic damage to the fruit productivity. Monofague pear fruit-eater and oliophagus prune fruit-eater, as an average pest has more deal of economic damage to late varieties of pear fruit (17.0-23.2) than in fast-growing sorts, prune fruit-eater in its turn damages plum (37.9-47.5) and apricot (23.4-36.7) fruits, resulting in significant economic damage to productivity. Apple fruit-eater damages mainly sparse umbrella-trees and gardens, pear fruit-eater makes harm for cultivated and wild pear trees in mountainous and foothill zones, oriental fruit-eater causes great damage to the glands of apple (0.1-0.4%), pear (0.9-1.1%), quince (1.2-1.9%), apricot (3.8-4.1%), peach (16.2-33.9%) and plum (1.6-3.2%) trees.

The number and the development of the generations were specified in fruit-eaters (Pic.1).



There has been determined a straight correlation between the average daily temperature and the fly of apple fruit-eater butterflies' fertilization of the first and second generation pups and the egg production of the second and third generation butterflies.

A phenological calendar of phenology observations was developed on all phases of the phytophagous - egg (4-8 days), caterpillar (9-12 days), pup (8-10 days) and adult individual (imago). The whole cycle of development has lasted for 21 to 30 days, developed in five generations. Generations fall into one another, so all the developmental stages are observed simultaneously in nature.

Route observations have been monitored to determine the dynamics of apple fruit-eaters and the damage of Renét Simirenko, Golden Delicious and Saffron sorts of apple varieties in the various garden areas. Along with the dynamics of apple fruit-eater, some measures have been taken to determine the extent of fruits' degradation. As a result of observations, the rate of degradation of accepted fruits was 27.9-33.7%.

In the fruit gardens, where the population dense of the pests differs an ecological and economically justified system of integrated fighter systems has been developed and their biological and economic efficiency has been determined [1,2].

Quarantine against the fruit-eaters (overexpensation of foreign substances, disinfection of used medicinal products), agrotechnical (removal of old hulls, hulls and flakes, destruction of fruits and plant residues) and mechanical (use of deceptive strings, collection of fruits and removal of grapes, methods of combating plant residues (bark, leaf, fruit, etc.) have been tested.

The correlation dependence between the dynamics of the males of the apple fruit-eaters and the degree of damage of the fruit on the control variant has been determined. It has been discovered that there is a close correlation between the number of males of the apple fruit-eater caught with pheromone traps and the degree of damage to the fruits.

As a result of research carried out in the fruit gardens of the Western region, 3 biodiversity species and 12 species of predators have been found in biotechnology of the number of fruit-eaters. In the fight against pests the use of Entomophagus is recommended.

During the study period, microbiological preparations of bitoxibacillin and boverin were tested against apple fruit-eaters (Table 3).

Table 3

Biological efficiency of microbiological preparates against apple fruit-eaters

Preparate name	Variants	Profitability of preparate	The number of larvae after spraying			The biological efficiency of preparate %		
			5	10	15	5	10	15
BTB	I	0,5	8	9	10	-	10	16
BTB	II	1,0	5	4	8	37,5	60	33
BTB	III	1,5	5	4	6	37,5	60	50
Boverin	IV	0,5	8	10	11	-	-	8
Boverin	V	1,0	7	5	8	12	50	33
Boverin	VI	1,5	6	5	7	25	50	41,6
Karate zeon	VII	0,1 l / ha	1	2	4	87,5	80	66,6
Control	VIII	-	8	10	12	-	-	-

As can be seen in Table 3, 1.0% and 1.5% of BTB preparation showed 60% biological efficacy 10 days after spraying. 50% biological efficacy was detected 10 days after spraying with 1.0% and 1.5% solution of Bover's microbiological preparation. Etalon variant (Karate zeon) biodiversity is celebrated 87.5% on the fifth day. The phytoside properties of the preparations were not found.

The number of pests (lures) and the rate of damage to plants have been compared to the cost of chemical attack to determine the economically exposed population of fruit-eaters. For this purpose, during the development of the first generation, the second, third and fourth (control) variants, the first, third and fourth (control) variants of the second generation, and the first, second and fourth (control) variants of Aceplan SP (0.09 l / 800 liters of water) was sprayed. For the apple fruit-eater, the zones of the economic-harmful area are divided into three areas: strong, moderate and poorly damaged.

At the end of the season, each of the experimental and control options was damaged with different scores and the productivity of healthy plants was determined. The loss of crop and its value were mainly found in the planting scheme (4 m x 2 m) (Table 4).

Table 4

Economic-damaged level of apple fruit-eater on generations

Variants (Generations)	The number of larvae in 100 fruit	Productivity, kg/ha	Product loss by control, kg	Product loss per larva, kg	Product loss from hectare		The number of larvae in hectare
					kg	manat	
I generation	1-2 larvae	37900	0,100	0,024	100	50	4145,8
	2-3 larvae	37780	0,220	0,025	220	110	8568,0
	3-4 larvae	34490	33510	0,215	3510	175,5	16307,0
	4-5 larvae	32670	5330	0,154	5330	266,5	34548,7
II generation	1-2 larvae	37960	0,072	0,009	40	20	4145,8
	2-3 larvae	37930	0,70	0,008	70	35	8568,0
	3-4 larvae	37800	0,200	0,012	200	100	16307,0
	4-5 larvae	34200	3800	0,109	3800	190	34548,7
III generation	1-2 larvae	37980	0,020	0,004	20	10	4145,8
	2-3 larvae	37960	0,040	0,009	40	20	8568,0
	3-4 larvae	37810	0,190	0,055	190	95	16307,0
	4-5 larvae	34800	3200	0,092	3200	160	34548,7
Control	-	38000	-	-	-	-	-

Costs pertaining to chemical attack of one generation are 47 manats (the cost of the drug is 0.09 liters 0.5 manats, water transportation is 800 liters 15 manats, preparation of solution and jaw filling 10 manats, spraying costs 20 manats, pesticide transportation 0.80 manats, the price of milk and milk products is 0.70 manats, the average sale price is 0,50 manats). Performed calculations showed that when 1-2 damaged fruit in first generation or 1-2 larvae out of 100 fruit are consumed, the value of the lost product (50 manats) was 2.3 times more than the cost of the chemical attack (47 manats). In the second and third generations this figure (lost value) was found when damaged 2-3 fruit or 2-3 larvae out of 100 fruits are consumed and the cost due to the generations was 35 (2nd generation) and 20 manats (generation III).

Apple fruit-eaters damage fruit especially at the first stages of the fruit development. Therefore, it is very important that the measures included in the system of integrative measures be implemented in the optimal time. Otherwise, the fruits that have been damaged by the pest in the beginning of the season will have difficulty forming the product during the subsequent development.

Along with other measures against fruit-eaters, chemicals have also been used. When using pesticides, the Aceplan SP insecticide was tested, which is an effective pyrethroid class, has an environmentally safe and complex impact. Aceplan SP insecticide contains 20% acetamipride capable of toxic effects on the pest. In order to determine the rate of efficiency of the drug it was put into practice in fruit gardens, and the drug was sprayed with the amount of 0.03;0,06;0,09 kg (Aceplan SP) and 0.06 kg (etalon) per hectare (Table 5).

Five days after the spraying based on these norms, the biological efficacy of the drug was 76.1; 83.8; 93.5%. The biological efficacy of the drug 10 days after the spraying was 72.7; 81.8; 90.9%, after 15 days, the biological efficacy of the drug was 65.7; 77.1; 85.7%, and 20 days later the biological efficacy of the drug was 63.8%; 72.2; 83.3% have been identified. The Ramplan preparation was tested for days and showed 93.5; 84.8; 80.0 and 75.0% biological efficacy. The biological effectiveness of the Etalon variance on the reporting dates was compared with the biological efficacy (93.5,

90.9, 85.7 and 83.3%) of Aceplan SP insecticide tested during field testing at days, when it was found that Aceplan SP The same efficacy on the fifth day compared with the standard dose of 0.09 kg / ha showed significant biological efficacy on the tenth, fifteenth and twentieth day, and the number of fatalities within 20 days after the drug had not reached the cost-effective level.

It is expedient to determine the economic effectiveness of the Aceplan SP insecticide test and production experiments on the tested norms (Table 6).

Table 5

Biological efficiency of Aceplan SP insecticide on field test against apple fruit-eater

(Time of medication - 22.04.2016, Shamkir region, fruit gardens of private farms)

S. s.	Option and dimension norm	Number of pests before medication	Number of pests after medication				Biological efficiency, %				The period of the preservation of the preparate, day	Effects on useful entomophore
			For days				For days					
			5	10	15	20	5	10	15	20		
1	Aceplan SP 0,03 kg/ha	28	7,0	9,0	12,0	13,0	76,1	72,7	65,7	63,8	12-15	-
2	Aceplan SP 0,06 kg/ha	35	5,0	6,0	8,0	10,0	83,8	81,8	77,1	72,2	18-20	-
3	Aceplan SP 0,09 kg/ha	29	2,0	3,0	5,0	6,0	93,5	90,9	85,7	83,3	20-25	-
4	Ramplan 0,06 kg/ha (etalon)	31	2,0	5,0	7,0	9,0	93,5	84,8	80,0	75,0	20-25	-
5	Control	29	31	33	35	36	-	-	-	-	-	-

Table 6

Economic efficiency of Aceplan SP insecticide on field test against apple fruit-eater

Option and dimension norm, kg/ha	Product produced per hectare, t/ha	Extra product, t/ha	Average market price of one ton of the product, man/ton	Cost of extra product, man/ha	Preservation costs in a hectare, man/ha	Profitt, man/ha	Profitability, %
Aceplan SP 0,03 kg/ha	28	13	500	6500	47	6453	138
Aceplan SP 0,06 kg/ha	30	15	500	7500	51	7449	146
Aceplan SP 0,09 kg/ha	34	19	500	9500	55	9445	171
Ramplan 0,06 kg/ha (etalon)	33	18	500	9000	53	8947	168
Control	15	-	500	-	-	-	-

Application of Aceplan SP insecticide to hectare 0.09 kg per hectare was found to be economically effective, ie 9445 manats profit and higher profitability (171%) compared to other norms and standards. Therefore, it was deemed necessary to carry out a production experiment at 0.09 kg per hectare of Aceplan SP insecticide to further clarify that the drug was economically and economically viable. The results of the experiments on manufacturing experiments were mainly based on Aceplan SP at 0.09 kg / ha for 100 days; 96.9; 96.9 and 90.9% of biodiversity efficiency. Ramplan preparation was used as the etalon at day production trial and showed 93.7; 87.8; 85.2 and 83.3%. biological efficacy. The drug was also economically efficient, with 10445 manats profits and high profits (189).

Aceplan SP has not benefited from beneficial flora, plant phytotoxicity in the tested doses, and there is no toxicity in the product.

After the spraying of Aceplan SP, vegetative, bar and organs of the plant did not have any effect on phytotoxic effects. At the same time, after the spraying, insecticide was found to be ineffective against the useful entomophagna, including the bees, in the agrochemical. The residual amount of Aceplan SP in leaves, rats and fruits was zero after 30 days after spraying. The effect of the Aceplan SP prepayment on the apple fruit-eater s was found to be 20-25 days. During the observations, it was found that Aceplan SP insecticide does not produce any resistance to adipos and adrenals.

Aceplan SP experimental study showed that the drug had a high environmental and economic effect in the dose of 0.09 kg / ha. Therefore, it is advisable to use the Aceplan SP insecticide in the production of fruits in farming and in the production of ecologically clean products.

Thus, quarantine (fertilizers imported from abroad), agrotechnical (dams around the hull, cleaning of old shells in hulls and branches, flooding of cavities and flakes, destruction of fruits and plant residues), biological (use of pheromone, microbiological preparations, use of tuffaceous and predatory species) and chemical fights (winter sprinkling with ABC or VOLK preparation, the use of algal sprouts, the collection and removal of damaged fruits, burning of plant residues and germs) are worked out against fruit-eaters damaging the fruit gardens of the Western region of Azerbaijan.

CONCLUSION

Route surveys, field experiments, stationary experiments and laboratory analyzes carried out in 2013-2017 in the context of fruit-eaters damaging fruit gardens in Western region of Azerbaijan show that in the mentioned area, four types of seedy and stony fruit crops are damaged: the apple fruit-eater (*Cydia pomonella* Linnaeus), pear fruit-eater (*Cydia pyrivora* Danilevsky), prune fruit-eater (*Grapholita funebrana* Treitschke) and oriental fruit-eater (*Grapholita molesta* Busck).

It was detected that the widespread distribution of fruit-eaters exist in Shamkir, Tovuz and Gazakh regions, high rates of population density, fruits and herds are mainly in the lowland areas in comparison with the mountainous and foothills. It was also determined that caterpillars in apple fruit-eater nourish with the fruit and the seeds, in pear fruit-eaters with the seeds, in oriental fruit-eaters with the fruit in few cases with the seed and as a result cause great damage to apple (27.9-33.7%), pear (17.4-20.0%), quince (17.6-19.8%), apricots (2.2-2, 5%), peach (1.2-1.8%) and plum fruit gardens (1.0-1.5%).

According to specializing in nutrition, apple and oriental fruit-eaters are the most dangerous polyphagid pests that are widely spread and have major economic damage, the apple (52.2-67.7; 0.3-0.8), pear (37.4-56.1; (1-19.2), quince (90.1-96.0; 23.1-33.2), peach (1.5-6.2; 27.2-41.3), apricot (1.1-2.2; 16.3-18.9) and plum (0.2-1.2; 1.5- 4.7) fruit-eaters have great economic damage to the fruit productivity. Monofague pear fruit-eater and oliophagus prune fruit-eater, as an average pest has more deal of economic damage to late varieties of pear fruit (17.0-23.2) than in fast-growing sorts, prune fruit-eater in its turn damages plum (37.9-47.5) and apricot (23.4-36.7) fruits, resulting in significant economic damage to productivity. Apple fruit-eater damages mainly sparse umbrella-trees and gardens, pear fruit-eater makes harm for cultivated and wild pear trees in mountainous and foothill zones, oriental fruit-eater causes great damage to the glands of apple (0.1-0.4%), pear (0.9-1.1%), quince (1.2-1.9%), apricot (3.8-4.1%), peach (16.2-33.9%) and plum (1.6-3.2%) trees.

Route observations have been monitored to determine the dynamics of apple fruit-eaters and the damage of Renét Simirenko, Golden Delicious and Saffron sorts of apple varieties in the various garden areas. Along with the dynamics of apple fruit-eater, some measures have been taken to determine the extent of fruits' degradation. As a result of observations, the rate of degradation of accepted fruits was 27.9-33.7%.

The correlation dependence between the dynamics of the males of the apple fruit-eaters and the degree of damage of the fruit on the control variant has been determined. It has been discovered that there is a close correlation between the number of males of the apple fruit-eater caught with pheromone traps and the degree of damage to the fruits.

During the experimental period, the microbiological preparations of bitoxibacil and boverin were tested against apple fertilizer, and 1.0% and 1.5% of BTB preparation showed 60% biological efficacy 10 days after spraying. 50% biological efficacy was detected 10 days after spraying with 1.0% and 1.5% solution of Bover's microbiological preparation.

The number of pests (lures) and the rate of damage to plants have been compared to the cost of chemical attack to determine the economically exposed population of fruit-eaters. For this purpose, during the development of the first generation, the second, third and fourth (control) variants, the first, third and fourth (control) variants of the second generation, and the first, second and fourth (control) variants of Aceplan SP (0.09 l / 800 liters of water) was sprayed. For the apple fruit-eater, the zones of the economic-harmful area are divided into three areas: strong, moderate and poorly damaged.

Application of Aceplan SP insecticide to hectare 0.09 kg per hectare was found to be economically effective, ie 9445 manats profit and higher profitability (171%) compared to other norms and standards. Therefore, it was deemed necessary to carry out a production experiment at 0.09 kg per hectare of Aceplan SP insecticide to further clarify that the drug was economically and economically viable. The results of the experiments on manufacturing experiments were mainly based on Aceplan SP at 0.09 kg / ha for 100 days; 96.9; 96.9 and 90.9% of biodiversity efficiency. Ramplan preparation was used as the etalon at day production trial and showed 93.7; 87.8; 85.2 and 83.3% biological efficacy. The drug was also economically efficient, with 10445 manats profits and high profits (189).

RECOMMENDATIONS FOR PRODUCTION

Studies conducted in 2013-2017 show that fruit-eaters damaging the seedy and stony fruit gardens in the western region of Azerbaijan cause serious losses even in the high-altitude. Therefore, it is recommended to introduce a system of integrated countermeasures against fruit-eaters, taking into account soil and climatic conditions in the fruit gardens.

For quarantine seizures, the expertise of the seeding of foreign investment and disinfection of the means used in the gardens is recommended. Optimum timely and correct implementation of agrotechnical measures, such as festering areas in fruit gardens, removal of old shells in hulls and branches, filling of cavities and fractures, destruction of fruits and plant residues, application of deceptive strings for mechanical measures of fighting, collection of fruits and grapes, burning the residues and the catching gear it is advisable.

At the end of March and end of April, attractant pheromone traps are established in the gardens to determine the high effectiveness of the phyto-sanitary situation in fruit gardens, the massive flight times of various butterflies, and the biological and chemical struggle against them. They determine the number of male butterflies. It enhances the efficiency of biological and chemical spraying.

When fruit-eater reaches the economically damaged level, it is recommended to use pyrimidone pesticides (Aceplan SP 0.09 kg / ha 93.5%, 90.9%, 85.7% and 83.3% biological efficacy) with complex effects.

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WORLD EXPERIENCE AND THE THEORETICAL BASES OF GOVERNMENT SUPPORT IN CREATION AND DEVELOPMENT OF COOPERATIVES IN AZERBAIJAN

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ABSTRACT

Agricultural cooperation is one of the most important forms of labor organization. On the other hand, it plays a major role in addressing other important issues in market relations system. Agricultural production cooperatives have an impact in the production and sales growth of agricultural products, primary and food products. It facilitates to the organization and stabilization of food markets as well as employment issues in rural areas. Which in its turn, have a significant impact in solving social problems of the country. These cooperatives can become one of the most important tools in formation of an effective economic relations in agricultural sphere. From these perspectives, learning cooperation theory, history, its development and state support programs from world experience is very necessary in the modern world.

Key words: Cooperation, production cooperative, consumption cooperative, credit cooperative, state support, subsidy, subsidence, dotation, preferential tax, tax exemption

Introduction

Agricultural cooperation is one of the most important forms of organization of labor, as well as plays a key role in solving other important issues in the market relations system. Cooperatives are known as civil society organizations that supplements the independence and economic democracy. They are also used as a means of social policy implementation, along with being a large public movement. Co-operatives are an economic tool of civil society and are used as a means of self-defense of the peasant, tradesman and employee. That is, cooperatives are a non-governmental organization engaged in economic activity. [2] At the same time, the 200-year-old cooperative ideology and experience can become one of the most important tools for shaping efficient economic relations in Azerbaijan in the 21st century. With regard to this issue, Order No. 3099 paragraph 2.2. of the President of the Republic of Azerbaijan on Approval of the "State Program for the Development of Agricultural Cooperation in the Republic of Azerbaijan for 2017-2022" says the experience of countries that have achieved successful results in the development of agricultural cooperatives should be considered.

The agricultural cooperation can be a key tool in increasing the social role of the market economy, when market relations and social justice do not come along. Agricultural cooperations is base on such principles as: voluntary membership of cooperations in agriculture; democratic control by members; co-operative members in economic activities; autonomy and independence; support for employment; cooperation between cooperatives and participation in community development. Furthermore, agricultural cooperatives are divided into production and consumption cooperatives, depending on the type of activity. It can also be referred to the processing, sales, service, supply and universal co-operatives. Moreover, credit cooperatives and insurance cooperatives can serve agricultural cooperatives. Agricultural production cooperatives have a considerable impact on the production and sales of agricultural products, primary and food products. As a result, it facilitates to the organization and stabilizing of local food markets as well as employment issues in rural areas. Which in its turn, have a significant impact in solving social problems of the country

All these make it necessary to research and study the history of cooperation theories as well as the history of cooperation development, in modern world

METHODOLOGY

The economic life of society is very complicated. If its study is not a systematic then we would have gathered facts and events that are not related to one another. It is necessary to use scientific methods for obtaining systematic information about the economic process for enhancement appropriate legislation.

The study of the economy as an economic system primarily involves the existence of a certain technology that is the sequence of this research. Economic theory studies are being carried out in four stages. At the first stage, the facts

characterizing certain economic events are collected. We have collected facts describing the cooperation while exploring the theoretical foundations and the current state of the cooperatives. Besides, information about its causes and historical development as well as information about theoretical views also gathered. At the second stage obtained information was analyzed and summarized. At this stage, we estimate the common features of the cooperative and selected the most important of them. At the third stage the interaction between the facts and events had been defined and some concepts are formed. Also we have formed the key principles which is crucial in the development of cooperation and can be applied in the promotion of the cooperation in Azerbaijan. The accuracy of the key principles checked by comparing with the realities of life at the last fourth stages. We also have watched the key principles of cooperation observed in practice of different countries.

We explored the theoretical aspects of cooperatives and the world experience. During the researches, we have analyzed the reasons for the establishment of the cooperatives and detected significant traits and relationships between them. The synthesis of these traits helped to shape a common view to the cooperation.

The economic life of society is a constantly changing process that occurs at a certain time and place. Therefore, their researches at this area should be carried out in a historical sequence. By examining the history of the cooperative's development, we have seen changes that had been taken place in the formation of the cooperation in the different periods.

The processes in the economy have both quantitative and qualitative parameters. Therefore, statistical methods are also used to make the logical conclusions. We have used this method for analysis of current status of cooperation in Azerbaijan and the world as well.

The history of cooperation development and its current state

Cooperative means to work together. "Cooperative" is a Latin word and "co" means working together "operatively". Cooperative is an institution that is created and administered in a democratic way to meet economic, social and cultural needs. People voluntarily makes the community. [3] The initial forms of the cooperative can be found in ancient Babylon that include co-ownerships of lands. Ancient Russian fishing and hunting artifacts can also be pointed to the existence of co-operatives long time ago. Such institutions existed in Western Europe as well.

The first cooperative initiative in modern definition has been proposed by Robert Owen, despite the fact that the cooperative-like collaboration and partnership have an old historical track. [4] Human masses have been taught to use their skills efficiently by consumer societies. An English scientist King V. is considered to be the founder of consumer cooperatives. He emphasized the importance of consumer organizations for the first time in history. William King (1786-1865), who lived along with Robert Owen at the same time, is considered to be one of the leaders in the cooperative movements. He is believed to be the first person to use the term co-operative in public that has been published in his "Cooperative" magazine. He says that the economic and social system is responsible for the social issues facing the UK in an industrial era. The reason why society lives in poverty he sees in working class being unpaid and investors getting all the benefits.

Working class needs to be brought back to the position where they would have been worked without exploitation in order to get them rid of capital pressure. It will be achieved if they be self-employed rather than being employed by someone. They need to have an access to the capital and production flow in order to be free from the capital pressure For this, they should work for themselves and not for others, and the workers should have capital and production to rescue them from it. King King founded the first Consumer Cooperative in the UK. William King planned to make profits in cooperatives mostly for themselves and therefore, could not achieve the desired results.

Robert Owen with 28 other investors under the direction of Charles Howard have established a consumer cooperative that was the modern version of cooperative in 21 December 1844 in England. Charles Howard was an owner of textile manufacture in a small Rochdale village near Manchester. They are known as a Rochdalian in the history of cooperation. The principles of selling goods to the community that have been made by Rochdelian weavers are still known as the main principles of consumer cooperatives. These principles are the followings:

- To earn more profit by allocating small amount of money to the strengthening of cooperative members' main assets. It further increases the economic power of the cooperative.
- All profits earned by the consumer cooperative are distributed among the members of the cooperative in proportion to the amount of commodities it receives, not by the shares they have

- It is necessary to refuse the credit sale of commodities for the purpose of protecting and strengthening the integrity of the consumer cooperative, because it will non-profitable to do without interest rate in long-term. Moreover, each co-operative member is required to be an employee of the cooperative in order to maintain material assets of a cooperative.

Nowadays, co-operatives play an important role in the European economy. Thus, the number of cooperatives increased by 20% in 2010-2015. The annual turnover of 300 largest cooperatives is around \$ 2.4 trillion, 40% of these cooperatives operate in insurance, 32% in agriculture and food industry, 17% in retail trade, 5% in banking and finance, and 3% in industrial spheres. [11] Geographically cooperatives covers the whole world. However, in Europe and South America these institutions have more success. High attention to the cooperations is the main characteristics of an agrarian industry in these countries. United States, the Netherlands, Poland, Denmark and France covers all domestic needs in agricultural production as well as became the world's largest food exporters. On the other hand, only 2-3% of the employed people are working in agrarian production in these countries. Experts note two important factors for the creation of such a productive agrarian sector: the perfect construction of the material and technical basis of agriculture and the availability of large-scale cooperative relations. There are very few farmers almost excluded from the cooperative sector in the mentioned countries. For example, in France and Germany, at least 80% of agricultural producers are represented in cooperatives. At least 50% of food industry products in Denmark, the Netherlands, Finland, France and Sweden fall into cooperatives. In addition, Netherlands – that is the third largest producer of starch production, 75 % of these products is produced and processed by the cooperatives. Cooperatives produces 70% grapes products and 98% of flax products in France and Denmark, respectively. Furthermore, around 50-65% of farmers' mineral fertilizers, seeds and feed supplies are made up by the cooperative sectors. Currently about half of the trade turnover in Europe falls on the share of agrarian cooperatives.

The amount of cooperatives operated in Europe's agricultural sector was around 51,400 and consumer cooperatives was made 11,500 of them in 2015. The number of agricultural cooperatives members was around 9.6 million (including 37.4 thousands members of consumer cooperatives), 675.6 thousands employees (including 619 thousands employees in consumer cooperatives). The turnover was around 347 billion euros (including 102,6 billion euros in consumer cooperatives) in 2015. 36,6% of cooperatives operating in Europe, 7% of all cooperative members, 14% of all employees and 39,3% of annual turnover were made up agricultural cooperatives.

An analysis of the annual turnover of the 35 largest European cooperatives shows that the largest companies operating in the agricultural sector are: Germany's Bayva's annual turnover of \$ 15.9 billion, Netherlands' Frisland Campina - 11.4 billion, Arla Foods - 9.8 billion , France's Astera - 8.4 billion, DLG - 7.9 billion, Danish Crown - 7.8 billion, Agravis of Germany - 7.4 billion.

Theoretical views on the state support for co-operative and its development

Charles Fourier (1772-1837) is an economist who contributed to the co-operation movement. He criticized the French public opinion and pointed out that a new social system could be established based on co-operatives and with the new system people's welfare would rise making them more happy. Furthermore, Fourier proposed his ideas in various works. The "Business and Cooperation" book is the most important work in terms of the cooperative movement. In this work, he plans to establish a society called "phalanxes". [5] This community is based on production and consumption cooperatives. That is, the "phalanxes" is both production and consumer co-operative. It was created as a complex project, but has not been used in practice. Instead, it has been accepted as a basis of cooperation in the world.

Creation of various cooperatives is conditioned by the necessity of economic and social progress of the natural, underdeveloped agriculture in the context of the commodity-monetary relations development and its inclusion in the regional and international markets in the mid-nineteenth century. A weak economic potential of the small commodity producers sector is the main reason that inhibits its development. The necessity of ensuring that small and medium peasant farms have strong links with agricultural products, food, production facilities and credit markets led to the creation of cooperatives of their own enterprises. According to A.V. Chayanov, the agricultural cooperative is a continuation of the peasant's farming. Co-operative - can never be an enterprise with its own interests, which is different from the interests of its members. It is an enterprise that serves its customers. Those customers are also its owners and they build the cooperative in a way that it is being responsible only for them not anyone else [6].

It is believed that F.Buchez is the creator of production cooperation . Production cooperatives were firstly involved in the sales of milk, butter and cheese producers, and their partners. Here production cooperatives give the farmers power to build up supply on the market and allow them to get real economic power by promoting them to the final consumer through various channels in the "production-processing-selling" system. It served as a market instrument for anti-government actions for the peasants and ensured the protection of economic interests by creating an alternative channel for their

production. The cooperative adheres to the following principles: members should be responsible and co-operate with the cooperative; each member of the income body should be divided in proportion to the amount of labor activity per year; the work of the governing communities should be free; the nature of the entity's participants and non-participant relationships should be clearly defined as a tool to strengthen agricultural producers' market positions. Nowadays, these principles can be seen as the basis of the cooperation in Azerbaijan.

F.Buchez was a supporter of the state's assistance to agricultural cooperatives. He believed that state co-operatives should provide loans and that these loans would facilitate its development. However, this should not interfere with the state's governance or control of the cooperative.

Some types of cooperatives have an impact on the structure of the peasant farming, as well as includes its simplest processes under cooperative's control. For instance, butter production partnership significantly changes the essence of milk production. Milk is taken from separate farms, however the quality of raw materials is very essential in the production of high quality butter. Therefore, a number of other co-operatives are getting created around the cooperative to improve the production process (breeding animals co-operative, cooperatives that control the various stages of milking, conservation and production). That is, butter production remains the main occupation of peasant however, at the same time, all the important parts of the processes are regulated by the cooperative.

A peasant credit cooperative has been established to provide villagers with funds. Its founder is known as F.W.Raiffeisen. The classic principles of credit cooperatives are: voluntary membership based on the benefits of the combination; liabilities of the members are not limited to the obligations of the cooperative, which in turn increases the credibility of the cooperative's creditworthiness; concentrating of cooperative activity in the territory of one or several villages; responsibility for becoming a member of a credit cooperative; unpaid work of governing; Preferring the benefit of the co-operative to form a special social development fund mainly to spend on production. These principles can be taken as the basis for the establishment of credit cooperatives in Azerbaijan.

The credit cooperative is generally considered the first stage of peasants organization. K.Marks said: "Credit creates the basis for the gradual transformation of the capitalist enterprise into a capitalist society, and in the same way, it is a means of expanding cooperative enterprises to the size of public institutions." [7]

Consumer cooperatives, production cooperatives and credit cooperatives have been established respectively in England, France and Germany. The foundation of credit cooperatives in Germany is considered to be English and French theoretical concepts. However during the utilizing processes additional strong applicable models and new cooperative schools have been developed and applied. In the theory, such well-known co-operative owners as HL Lambert (1791-1863), W..A Schmidt, G. Liedtke and W.A.Huber have played a great role in bringing the cooperative idea from England and France to Germany and developing cooperation in Germany. Nowadays, Germany is the leader country in credit cooperation.

Israel also played a significant role in the development of cooperation. Cooperatives are called kibbutz in Israel. Kibbutzs were created by Jews community who moved to the lands of Israel in the early 20th century. On their basis, there are principles of collective property, work, consumption and social services on land and production means. The first kibbutz, established in 1909 was Degania. From the beginning of the third repatriation of Jews to Israel, the kibbutz movement began intensively developing, and the larger kibbutzis emerged. At the beginning of the 20th century, the number of kibbutzes reached 267 and the number of people living here was about 120. The Kibbutzians leased the land from the Jewish National Fund for a long-term conditions. Co-operative and periodically elected co-operative councils, established by members of Kibbutz, control all of Kibbutz's activities. Expenditures for social, educational, cultural and other services beyond Kibbutz's production activities are calculated at the end of the year and are deducted from Kibbutz's revenues. Community revenues are deposited of Kibbutz current balance, after deducting all production costs, debts, amortization expenses, and stocks. Consumption needs are solved by the collective decision. Accordingly, every year a member of the Kibbutz can receive a pocket charge of 150 Israeli liras. The number of Kibbutzis in Israel has been dropping in the last decade. Kibbutzu family is a collective farming, where the land and production facilities are in the hands of the collective. The collective make a labor assignation every evening. Furthermore, budget is prepared depending on the number of family members after deducting expenses for each family, and household items are given to the family keeping households as the property of cooperative. The overall expenses on education, culture, entertainment, et cetera increase the budget as the cooperative family grows and reduces as the family lessen. All agricultural family businesses use cooperative services in their production and consumption activities. Kibbutz is a classic family business and cooperative farm, utilizing the capabilities of all modern technical tools required by a cooperative. Here, ownership and labor follow a public character. Moreover consumption has the principles of individual consumption which is different in the case with Kibbutz community.

Economist scientists have been investigating economic function of cooperation along with its social function. MI Tugan-Baranovsky is regarded as an imprudent theoretician of the cooperative. He paid great attention to human being, his needs and abilities. Thus, the article titled "Social Fundamentals of Cooperative" by M. Tuqan-Baranovskiy interests us. In the article, Baranovskiy identifies the ways of development of the cooperation. "The main role of the co-operation is that the peasant will be able to use the advantages of large farming. The cooperation increases the productivity of the peasant farming. Technically, they also have advantages in the field of production of peasant farms. However, during this kind of exchange peasants are better off: they have the opportunity to use a peasant-villager's credit, sell their product at a high price, and get cheaper products, and with help of the unions can go further than any other big farmer." [8]

According to M. Tuqan-Baranovsky the main condition for the formation of the co-operative process is that the members should be interested in achieving high economic and social results. In this case, the personal interest of a cooperative member must coincide with cooperative interests. "The peasant's farm loses its previous individual character. Its inner nature is complicated. In a certain area where the villager feels his own strength, he maintains his personality and at the same time closer ties with his fellow villager". [8] As a result of the cooperation, a new type of farming evolves where farming is the only area for individual activity. All the other farming operations are carried out with the help of cooperation. Thus, cooperation increases economic and social level of the peasant, it also changes roots of the system. He educates the peasant, teaches him to be creative and helps himself, develops his social feelings and instills a mental culture.

However, the experience of market reforms shows that co-operative enterprises and their structures can not independently solve a number of issues which stands in the roots of fulfilling the national market with cheap and high-quality food products and ensuring food security. They can provide the agrarian sector with national interests and goals, as the main subject of macroeconomics can be settled at the time when the co-operative farming coordinator, supervisor and encouraging roles are ruled by the government.

The development of multinational economy is a matter of the most important issue in determining the role and functions of the state in the market economy and the interaction of state and agricultural commodity producers. Nowadays, the knowledge in the basics and legality of the state regulation of the market economy is quiet extensive. The most important works in this area can be seen as researches conducted by such scientists as A.Smith, J.M. Keynes, D.Ricardo and other economists. These four main concepts were united in schools: classical economic theory, mercantilism, Keynesians and neoclassicals.

The supporters of mercantilism (T. Mun and A. Montchrestien) considered that state interference in economic activity should be mainly in the form of protectionism. That is, high import duties must be imposed, and national producers should be given subsidies. However, as market relations develop, entrepreneurs have begun to accept this state intervention as a barrier to their activities. And mercantilism was replaced by the ideology of economic liberalism. This ideology was against state interference in the free market conditions and was in favor of free competition. The Austrian-American economist Ludwig von Mises (1881-1973) in his book Liberalism wrote: "Government should protect people's lives, health, freedom and their private property from violence. Everything that goes farther away is evil and damaging" [9].

The theory supporting the need for state regulation of the market economy is related to the name of J.M. Keynes. This school welcomes the active intervention of the state into the economic life. J.M. Keynes wrote: "I welcome the extension of the functions of the government as the only means to prevent the full collapse of existing economic systems and the functioning of a private initiative." Some other experts in agrarian sphere supported the state interference. For example, K.Marx also noted that, while labor productivity in agriculture was increasing significantly than other sectors of the economy, the life quality of agricultural commodity producers remained steady rise. [10] In order to change the system, it is necessary to develop state regulation mechanism for agriculture sphere, and include all measures of state influence to economic relations system.

Competitiveness of agricultural producers in Azerbaijan is much lower than in developed countries. One of the main reasons for that are technical and technological backlogs Therefore, to protect domestic producers, it is necessary to implement state support measures into the agrarian sector. Some people need state support for the agrarian sector with restrictions on the physical ability of the land to increase labor productivity in agriculture; because scientific and technological progress take longer time, and, as a result, agriculture becomes in unfavorable situation compared to other areas and requires a state support.

There are four main ways of state support to the development of cooperation: to provide direct services when public authorities are fulfilling public and regional functions; regulatory and legal regulation of the cooperation; regulation of production volume, price and price ratio; economic (financial) support.

In this article, we focus on financial support. The state's financial support consists of various types of economic assistance to cooperative enterprises and their unions, participants, through the state budget and the various off-budget funds. These various investment projects, primarily for subsidies and targeted subsidies for technical modernization of the agrarian sector; enterprises and organizations that are in the interest of the society, but are objectively non-profitable, and are subsidized for the sanction of insolvent co-operatives interested in the state for their activities. It includes tax and credit privileges, leasing of agricultural machinery, financial and credit support in the form of substitute allocations, except for the preferential prices and tariffs for energy carriers for agriculture, railway transportation of agricultural products and necessary material and technical resources for its production, comprehensive development of sales and credit cooperatives, provision of financial assistance to the unemployed and those transferred to rural areas.

Government regulation of the agrarian sector has begun in the United States. F. Roosevelt's initiative gave impetus to finance the debts farmers and the restoration of agriculture in the country has begun. In developed countries, where cooperatives are widely used, 5-6% of the budget goes to support them. Cooperation in our country is under development, and it needs both regulatory impact and stimulation. This, of course, increases the total amount of resources allocated to the supporting state. Studies in economics show that it should be up to 10% of the total gross agricultural product. There are two methods of direct economic support to the co-operation: direct and indirect. Direct are subsidies and subventions, donation for an item of a product, final and discounted prices, loan repayments, leasing of agricultural machinery and indispensable allocations, unemployed, rendering financial aid to displaced persons, and establishing a state fund for cooperative support. Indirect methods include tax incentives and tax stimulus. The state's economic support includes insurance, mortgage, government order, leasing, bank loans, and so on.

Stimulation of cooperation through tax and credit policy and the use of subsidies to stimulate co-operation are the main directions of the development of cooperation in the State Program for the Development of Agricultural Cooperation in the Republic of Azerbaijan for 2017-2022. Funds from state budget, extra-budgetary sources of funding, and co-operation assets may be attracted to finance the programs for the development of cooperations. One of the main sources that are used to finance these kind of programs in Azerbaijan are Budget of Azerbaijan Republic, extra-budgetary government fundings, local and foreign investments, multinational corporations and foreign countries funds, other sources that are not illegal in Azerbaijan. Separate agreements and contracts are used for the involvement of these funds. The volume of financial resources will depend on the application of developed technologies into the programme. Funds for the cooperation needs may be collected from non-profit commercial funds as well.

State regulation should be complemented by a market mechanism, however should coincide with the cooperative interests and these relations should not be administrated. The regulation envisages the independence of both cooperatives and other commodity producers, as well as the release of their actions. At the same time, they are able to create production programs themselves and organize their implementation by taking into account market conjuncture.

The policy cooperation support in the agrarian sector envisages the measures of credit, insurance, taxation, customs mechanism. For this purpose, specific periods of support to credit and insurance cooperatives should be determined, the targetedness and transparency of the financing should be unambiguously provided. As it is seen from external practice, it is possible to involve financial and credit organizations as well as insurance companies operating within the cooperative structures. Thus, the privileged business environment for these companies increases their interest in credit and insurance cooperatives to serve agriculture. The creation of the main tools for the production and implementation of agricultural cooperatives, partial conveying of machinery and equipment can serve as an important stimulus for innovation activity. The compensation mechanism is complex and involves the use of various means.

The stabilization of regional financial policy can play a significant role in stimulating agricultural cooperatives. The stimulation of agriculture cooperation is not possible without state financial and credit support. For this purpose, many countries have been developing and implementing state programs for the development of agricultural cooperations.

Furthermore, bank lending mechanism should adequately meet the characteristics of the area which is one of the most important areas for stimulating agriculture cooperation. Agricultural cooperatives are provided with the opportunity to obtain a loan by pledging their lands.

The subsidization mechanism is tested and widely used tool for stimulation of agrarian sector. There are different ways of subsidizing grants to the agricultural credit cooperatives, including subsidies for the production and insurance of individual types of products (indirect and direct), material, technical and financial resources. In this regard, subsidies to regulate the agricultural products market should be emphasized. Azerbaijan has been subsidizing the production of some crop products (wheat, paddy, clover, etc.) almost four years by now. The effect of such subsidization shows a great progress in

stimulating the agrarian sector. At the same time, the issue of granting subsidies for different types of planting is also a subject to discussion. Some economists believe that it is advisable to consider the potential productivity of subsidies to stimulate the intensification of agricultural production. Given all other objective and subjective factors, the existing system is acceptable. However, it must be admitted that it is also necessary to investigate the possibilities for improvement of the system. Especially, in the case of the large agricultural cooperatives, the possibility of closer coordination of subsidies in productivity is increasing as compared to family-peasant farms.

As the cooperation develops more and more people are involved, especially the rural population so, state authorities have begun better understand the role of the cooperative in the development of national economies. Many countries have consistently started implementing a policy of expanding cooperative activities. The co-operative movement is important for the Azerbaijani economy in modern times. So, let us have a look at the experience of developing agricultural cooperatives in different countries. This process involves the development and implementation of compact measures for the purpose of adoption legislative acts regulating the activities of cooperative organizations and the creation of favorable conditions for the development of cooperatives.

World experience in stimulating the development of co-operatives

Nowadays, states view agrarian cooperatives as an important mechanism of the their economy and implement policies promoting their development. Farmer cooperatives receive tax concessions, subsidies, monopolist status on imports and exports of some food products. One of the most important elements of the co-operative movement in Europe is the taxation system. Co-operatives and their members pay taxes and license fees from corporate tax, fuel tax, and hired labor. Cooperatives producing ecologically clean products, using alternative energy sources, et cetera co-operatives are excluded from paying taxes. State co-operatives can stimulate additional subsidies, and encourage the production of separate products, they also can be excluded from paying taxes.

The Farmers Lending system was initiated by the Congress to secure agricultural loans in the United States in 1916. As a part of the system, long-term loans were given to co-operatives in all stages of its development on special conditions. In the United States, cooperatives receive tax concessions from the state. In accordance with the Federal Tax Law, taxes are paid on the same level, either in co-operative or in its participant's level. Funds that are attracted to a business venture are not considered as an income of a cooperative and are not subject to taxation. [13]

In Germany, the activities of cooperatives are regulated by the legislation on consumer and production cooperatives. The German Federal Government is providing financial assistance and tax concessions to co-operatives in order to stimulate the development of cooperation in the country. Here, the economic transactions are not included in the taxable amount that are carried out by farmer cooperatives with their members, engaged in the production, processing and sale of agricultural products. In addition, co-operatives are indirectly stimulated. [14] In the Law on Cooperative in France, the main purpose of cooperatives is to reduce the cost or sales price of commodities and services, as well as to improve the quality of products and services provided to customers [13] The legal base of the cooperative in Italy is Constitution of Italy 1947 article 45. It says that the Republic accepts that cooperatives have social functions that are based on mutual help and do not have speculative goals. [15]

Co-operatives are fully exempt from taxes for the first ten years of their activity. In addition, commodities and services carried out within a cooperative are not included in the value-added tax. State consumer cooperatives are free to trade in remote regions of the country where the trading is non-profitable. Tax rate for cooperatives is about 18%, while for all other companies is around 35%. Furthermore, the social security system has also been developed. The country's Finance Ministry compensates the commercial banks with preferential lending terms, and compensates for the difference between the cost of a favorable loan and interest rate for commercial banks issued to a free market. [15]

In contrast to the majority of European banks, the state's involvement in the promotion of cooperation in the UK is limited. Therefore, cooperatives in the UK are not as widely spread as in other European countries. Here, 35% of farmers participate in cooperatives and are considered as commercial organizations. They do not get any tax incentives, however cooperatives have certain state support. Thus, the Cooperative Development Agency operates in the country. The representatives of the co-operative movement of the Agency's management apparatus are appointed by the government. The budget of this organization is shaped by the government's subsidies. The agency's mission is to stimulate the cooperative movement in the country. [13] Thus, in most countries, the overall number of taxpayers decreases altogether. In order to stimulate the investment, the tax is deducted only from part of the net income only if the other part remains in the investment fund of the corporation. Nowadays, Europe is facing a problem of excessive production of agrarian products, and it is believed that state subsidies will only be received by co-operatives producing products with high demand in the market. Public lending of farm cooperatives will be carried out on equal terms with the new system on the basis of special firms. Loans that go to building warehouses or small-scale processing facilities in rural areas will be

excluded from this list. Co-operatives of cleaner crops and young farmers' associations will benefit from a preferential loan.

The financial system of Japan's agricultural cooperative consists of five financial institutions established by the Law on the Central Cooperative Bank for Agricultural and Forestry and the Law on Agricultural Co-operatives. The initial co-operatives are based on this system. The main thing is the Central Cooperative Bank of Japan for agriculture, forestry and water economy. This is a joint stock company. Subsequently, the revenues include the Credit Union of Agricultural Cooperatives, the National Insurance Association of Agricultural Cooperatives and the Federation of Mutual Insurance of Agricultural Cooperatives. The functions of these organizations are limited to kinds of prefectures and activities. The practice shows, the financial system of the agricultural cooperative is a powerful tool for the state regulation of the agrarian sector. Thus, 75% of paddy producers receive subsidies from the state through this system. Long-term credit and government subsidies make it possible to the state's agrarian policy be efficiently implemented.

One of the most important tools to influence the sphere is the price mechanism. The basis of Japan's agrarian policy is protectionism. One of the peculiarities of this policy is that there is a system that is strictly defined for each product: paddy - a policy of state-approved government procurement; for wheat, potatoes, sugar beet and sugarcane - minimally guaranteed prices; support system for beef, pork and silk – changing the buy and sell in order to support the market; soy beans and raps - subsidy using the difference between current market prices and fixed government prices.

In the EU, state subsidies are allocated for the construction of cooperative warehouses and processing facilities. These subsidies can be provided not only at the expense of their own funds, but also from the EU Integration Funds. In order to form the export of agricultural products, states allocate export subsidies to cooperatives. Sales cooperatives have developed much more in the Scandinavian countries among the European countries. So, in Denmark, Norway and Sweden, 80% of the agricultural product is sold through their means. In the Scandinavian countries, the formation of these cooperatives was due to state loans and subsidies.

Milk and egg production in Israel is fully dependent on imports of feeding products, and this sector needs subsidizing. Therefore, dairy industry is one of the leading industries in Israel, and almost fully meets the demand for this product in domestic market. The main tools of government support for this field are government regulation and quotation system. Milk subsidies account for 50% of the cost of milk production, and 2/3 of the funds spent on the support of agriculture. Apart from price support, dairy producers receive state funding for compensation of up to 50% of their investment expenditure on infrastructure and environment protection. [16]

DISCUSSION AND RESULTS

Nowadays, although there is an initial legal basis for the activities of agricultural cooperatives in Azerbaijan the cooperation in the agrarian sector has been poorly developed. The following factors has slowed down the development of agriculture cooperatives: farmers prefer individualism; non-entrepreneurship of producers for cooperative action; lack of adequate stimulus for economic co-operation; non-implementation of pilot projects in this area; fragmentation of lands, lack of knowledge about cooperative and non-propagation of its advantages, weak agrarian information system. Cooperative performance indicators also show that the co-operation trends are not satisfactory. According to official statistics, the number of agricultural cooperatives established in Azerbaijan was around 250 in 2000 and it decreased to 55 by 2016. At the same time, the corresponding activities of existing agricultural cooperatives (production volumes, sales turnover, number of workers) are considerably lower than the potential ones.

These days, the dominance position of small farms is one of the main problems in the agrarian sector in Azerbaijan. Most of these households do not have more than of 1.5-2 hectares of lands. The less land farmers have the less profitable they become, on the other hands it leads to such problems as: farmers can not afford the usage of modern agricultural techniques, building efficient melioration and irrigation systems, they have limited access to credit on affordable conditions, manufacturers face serious difficulties in selling and exporting products [1].

The State Program for the Development of Agricultural Cooperation in the Republic of Azerbaijan for 2017-2022 has been accepted among the development of cooperation in Azerbaijan and relevant measures has been implemented. Furthermore, creating and developing large-scale cooperative is very crucial for the development of agriculture sphere and to increase its profitability in Azerbaijan. Theoretical foundations should be studied and the world experience in agricultural sphere should be researched. So, progressive experience can be applied in the development of cooperation and the achievements of better results in Azerbaijan.

In our opinion, it would be beneficial to use the Israeli Kibbutz experience in establishing cooperatives in Azerbaijan. For example, the experience of the Jewish National Fund, which has long leased lands to kibbutzes, can also be used in Azerbaijan. But national mentality should be taken into account in the income distribution of cooperatives. The followings are used in the production cooperatives created by F. Buhez: members should be responsible and cooperate with cooperatives; income should be divided between members proportionally to the amount of labor activity per year; the principles of management should be free of charge. Nowadays, these principles can be taken as the basis of co-operative formation in Azerbaijan.

The following credit cooperatives principles can be taken as a basis of credit cooperatives in Azerbaijan: voluntary membership based on goodwill; the liability of the members are not limited to the obligations of the cooperative; cooperative activities in the territory of one or several villages; principles of taking credits and spending them for the production purposes.

It would be good to use the experience of the financial system of the Japanese agricultural cooperative in crediting cooperatives in Azerbaijan. For example, setting up a central co-operative bank for co-operative lendings. Subsidizing agricultural products can also be used to subsidize 75% of paddy producers' revenues in Japan. In the EU, state subsidies are allocated for the construction of cooperative warehouses and processing facilities. It would be expedient to apply this practice in Azerbaijan. The main instruments of state support for the production of milk and eggs in Israel are state regulation and price quotation. Besides price support, dairy producers receive state funding for compensation of up to 50% of their investment expenditure on infrastructure and environment protection. It would also be expedient to use these mechanisms in Azerbaijan.

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POTENTIAL AND POSSIBILITIES OF WIDE APPLICATION OF AIRPONICS IN AZERBAIJAN

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ABSTRACT

The article provides information about the possibilities and advantages of using aeroponic systems in the conditions of Azerbaijan Republic. Considering the ever-increasing role and potential for the development of agricultural production, it is proposed to put into operation with the use of new technologies in particular, the aerial method of growing plants, in a modern farms and also as a result of the extensive use of new technologies to conduct additional research in this area with an aim of deeper and detailed study of this activity. Detailed information is given on the advantages of the proposed method and its capabilities.

Keywords: aeroponics, method, pressure, air, water, nutrient environment.

INTRODUCTION

The process of growing agricultural plants in greenhouses and the application of new technologies is developing at a high rate all over the world. For a reason, from year to year more and more private farms and companies are switching to advanced technologies and aeroponics, as one of the promising areas, is gaining more and more attention. It should be noted that the growing role of agricultural products in the export of Azerbaijan is a good incentive for producers. Tomato exports in 2017 increased by 60% compared with 2016. According to the Center for Analysis of Economic Reforms, in January 2018, income from tomato exports alone amounted to \$ 152 million.

Aeroponica is the process of growing plants in an atmosphere of air or fog without using soil. Aeroponic culture differs from traditional hydroponics, aquaponic and in-vitro (plant tissue culture). In contrast to hydroponics, which use liquid nutrient solution as a growing medium and essential minerals to support plant growth; or aquaponics, which uses water and fish waste, aeroponics is conducted without a growing environment. Since water is used in aeroponics to transfer nutrients, it is sometimes considered a type of hydroponics. Aeroponika is one of the technologies, designed to accelerate the cultivation of plants and increase yields, while simplifying human life. Aeroponics allow growing vegetables and herbs all year round without using chemical fertilizers or other growth promoters harmful to the human body. Aeroponica is a product of the theory, which assumes that oxygen is the most necessary factor for the rapid development and growth of any plants. In this regard, in plants built on the principle of "aeroponics", plants are grown by the method of active oxygen saturation of the roots.

Soon after its development, aeroponics assumed the role of a valuable research tool. Aeroponica offers researchers a non-invasive way of exploring the roots during the development process. This new technology allows researchers to increase the number and wider range of experimental parameters for use in their work.

The ability to accurately control the moisture levels of the root zone and the amount of water supplied makes aeroponics ideal for studying water stress. Aeroponika is a means for creating consistent, minimally waterproof plants for use in drought or flood experiments.

Aeroponics is an ideal tool for studying the morphology of roots. The lack of aggregates offers researchers easy access to an entire, intact root structure without damage that may be caused by removing roots from soils or aggregates.

Research methods

The basic principle of aeroponics is the cultivation of plants suspended in a closed or semi-closed medium by spraying the dangling roots of a plant and the lower stem with a spray of nutrient-rich aqueous solution. The roots of the plant are separated by the supporting structure of the plant. Often foam with closed cells is compressed around the lower stem and inserted into the hole in the aeroponic chamber, which reduces labor costs; for large plants, the grid is used to suspend the weight of vegetation and fruit.

Ideally, the environment does not contain pests and diseases, so plants can grow healthier and faster than plants grown in the environment. However, since most aeroponic environments are not completely closed outside, pests and diseases can still cause a threat. Controlled environments helps to develop plant health, growth, flowering and fruiting for all types of plants and varieties. Because of the sensitivity of root systems, aeroponics is often combined with conventional hydroponics, which is used as an emergency "rescuer" - backup power and water supply - if the aeroponic apparatus does not work.

Aerodynamics of high pressure is defined as the supply of nutrients to the roots through 20-50 micrometers of mist heads using high pressure. Air cultures optimize air access for successful plant growth. Materials and devices that retain and support aeropone plants should be free from disease or pathogens. The distinction of true aeroponic culture and apparatus is that it provides minimal plant support. Long-term aeroponic cultivation requires that root systems are free from restrictions associated with stem and root systems. Physical contact is minimized so that it does not interfere with natural growth and root expansion or access to clean water, air exchange, and carefree conditions.

Aeroponika can limit the transmission of the disease, as the contact of plants with plants is reduced pulse can be sterile. In the case of soil, aggregate or other environments, the disease can spread throughout the all growing beds, infecting many plants. In most greenhouses, these solid media require sterilization after each harvest, and in many cases they are simply discarded and replaced with fresh, sterile media.

Aeroponic equipment includes the use of sprayers, mists or other devices to create a thin mist, a solution for delivering nutrients to the roots of plants. Aeroponic systems are usually closed systems that provide macro and micro environments suitable for maintaining a reliable, constant air culture. Numerous inventions have been developed to facilitate aeroponic spraying and misting. The key to root development in an aeroponic environment is the size of a drop of water. In commercial applications, a 360 ° spraying sprayers are used to cover large areas of roots using air injection misting.

The world practiced the use of different types of aeroponic systems.

Low pressure units

In most low-pressure aeroponic greenhouses, plant roots are suspended above the reservoir of the nutrient solution or inside the channel connected to the reservoir. The low pressure pump feeds the nutrient solution through jets or ultrasonic transducers, which then drip or drain back into the tank. As plants grow to maturity in these units, they tend to suffer from dry parts of the root systems, which prevent adequate absorption of nutrients.

High Pressure Devices

Airborne high pressure methods, where mist is generated by a high pressure pump, are commonly used to grow high value crops and plant samples that can offset the high installation costs associated with this method.

Commercial Systems

Commercial aeroponic systems include high pressure hardware and biological systems. The matrix of biological systems includes improvements to extend the life of plants and the maturation of crops. Biological subsystems and hardware components include wastewater monitoring systems, disease prevention, pathogen resistance properties, accurate timing and pressure in nutrient solutions, heating and cooling sensors, thermal solution management, efficient photon flux light grids, spectral filters, fail-safe sensors and protection, reduction of operational and labor-intensive functions, as well as ergonomics and durability.

Commercial aeroponic systems, such as high-pressure devices, are used to grow high-value crops, where numerous cultural rotations are achieved on an ongoing commercial basis.

Extended commercial systems include data collection, monitoring, analytical feedback and Internet connections to various subsystems.

Potential and opportunities for use

Plants grown using aeroponics spend 99.98% of their time on air and 0.02% in direct contact with a hydroacoustic nutrient solution. Time spent without water allows the roots to capture oxygen more efficiently. In addition, hydroacoustic mist also contributes significantly to the effective oxygenation of the roots. For example, an NFT has a nutrient throughput of 1 liter per minute compared with a 1.5 million milliliter per minute aeroponics. Reduced nutrient throughput reduces the amount of nutrients needed for plant development.

Another advantage of reduced throughput, which is of great importance for use in outer space, is a reduction in the amount of water used. This reduction in water throughput corresponds to a reduced volume of buffer, which greatly facilitates the weight needed to support plant growth. In addition, the volume of eluent from plants is also reduced by aeroponics, reducing the amount of water that needs to be treated before reuse.

The relatively low volumes of the solution used in aeroponics, combined with the minimum time during which the roots are exposed to fog, minimize the contact between the root and the spread of pathogens between plants.

Higher control over plant environment

Aeroponica allows more control over the environment around the root zone, since unlike other plant growth systems, plant roots are not always surrounded by some environment (for example, with hydroponics, where roots are constantly immersed in water).

Improved nutrition

Many different nutrient solutions can be introduced into the root zone using aeroponics without the need to flush out any solution or matrix in which the roots were previously immersed. This increased level of control would be useful in studying the effect of a diverse range of nutrient applications on the roots of a plant of interest. Similarly, aeroponics provides a wider range of growth conditions than other nutrient delivery systems. For example, the spacing and duration of spraying of nutrients can be very precisely tuned to the needs of particular plant species. Aerial tissue can be subjected to a completely different environment than the roots.

More convenient design

The design of the aeroponic system makes it easy to work with plants. This is due to the separation of plants from each other and the fact that the plants are suspended in air and the roots are not captured in any matrix. Therefore, the collection of individual plants is quite simple. Similarly, the removal of any plant that may be infected with a pathogen is easily accomplished without the risk of uprooting or infecting nearby plants.

Cost Effective

Aeroponic systems are more economical than other systems. Due to the reduced volume of solution throughput (discussed above), less water and fewer nutrients are required in comparison with other nutrient delivery systems. It also eliminates the need for substrates, as well as the need for many moving parts.

Use of seed stocks

By using aeroponics, the harmful effects of seeds stock that are infected with pathogens can be minimized. As discussed above, this is due to the separation of plants and the lack of a common growth matrix. In addition, thanks to a closed and controlled environment, aeroponics can be an ideal growth system in which stocks of seeds that do not contain pathogens are grown. Placing a growth chamber in addition to isolating plants from each other, helps both to prevent initial contamination from pathogens introduced from the external environment and to minimize the spread from one plant to another of any pathogens that may exist.

CONCLUSION

Taking into account the increasing role of protected soil as one of the elements of an alternative source of income for Azerbaijan agriculture, based on the above advantages and opportunities, we believe that the start of the use of aeroponic systems with the aim of improving the quality of products produced is appropriate. With that in mind, an integrated approach is needed to bring to the attention of entrepreneurs the opportunities and benefits of this method of growing crops in our Republic. It should be noted that the widespread use of aeroponic systems will create good opportunities for carrying out large-scale scientific research in this area and will provide a basis for building a good basis for a deeper study of this agricultural sector.

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