



*Original Contribution*

## ATTITUDE OF BULGARIAN DAIRY FARMERS TOWARDS THE EXTENSION SERVICES AND SPECIALIZED ASSISTANCE USED IN THEIR ACTIVITIES

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### ABSTRACT

The aim of this survey was to understand the attitudes about and satisfaction of dairy farmers in Bulgaria from the use and benefits of extension services and specialized assistance in their activities in the farms. A survey was conducted with 120 owners of dairy cattle farms from different regions of the country. The survey includes 152 questions related to various organizational, economic, production, socio-political, social, etc. problems concerning Bulgarian agriculture and, more specifically, dairy cattle breeding. Farmers use various consulting services, which shows that with the increasing capacity of farms, there is a rising interest and participation in various forms of consultations and in all areas of production. Farmers' satisfaction with training is high, with the greatest interest related to current problems in their own farms, or their future prospects. They are informed mainly by visits to fairs, exhibitions and demonstrations, and personal meetings/contacts with other farmers. The largest share of farmers use specialized services related to reproduction and animal nutrition. There is a clear trend for an increase in health problems related to the udder, limbs and hooves of animals in large farms. The main organizational factors that inspire trust in consulting services are reliability in adhering to contracts, good equipment, available laboratories and professional skills. Factors on site that lead to poor results from consulting services are poor professional qualification of the farm staff and the partial implementation of the prescriptions by the consulting specialists.

**Keywords:** dairy farmers, extension service, farmer's attitude

### INTRODUCTION

A need is an internal psychological state of insufficient physical and/or psychological conditions for the effective functioning, strive to maintain achievements, or a desire for self-development and fulfilment in an individual. The satisfaction of needs is a process that can lead to a significant change between the current state and a necessary future state (1). Therefore, the lack gives rise to the need (2).

In the process of satisfying needs (in personal or professional life) and the presence of objects

that can satisfy them, people exhibit motivated behaviour, and set goals that require efforts and actions. Thus, by mastering the real situation with all its conditions, individuals can achieve goals that are related to the satisfaction of basic needs, both lower-order (e.g. physiological needs and security needs) and higher-order ones (e.g. needs for knowledge, autonomy, competence or status) (3-6).

The intensity of needs is one of the main reasons for the strength of motivation, incl. the motivation for achievements, in each subject. Individual differences depend on both individual characteristics and other conditions of the environment or activity, such as one's life experience, actual professional achievements,

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ways of processing and analyzing existing current information, the economic situation in the country, incentives from the state for the specific activity, etc. (7-9). Achievements in the activity are explained and associated with the efforts, skills and knowledge acquired through training. Thus, ultimately, achievements are determined by the subjective significance of the activity, as well as by the assessment of the personal level of competence in situations of achieving success (10).

The need for achievement among farmers as representatives of entrepreneurs in the agricultural sector is manifested in the pursuit of success, prestige and status among their colleagues. The expectation is that 'successful' farmers possess management skills, financial discipline, adaptability to arising conditions, and foresight both for the prospects of the surrounding and rapidly changing economic environment, as well as for the climatic situation and periodically emerging opportunities for sustainable development (11). Other characteristics of those who consider themselves successful entrepreneurs are the pursuit of education, competence in developing a business plan for future sustainable development, ability to process information and tasks related to the management and improvement of technological equipment ensuring production activities on the farm (12, 13). When support and consulting for the activity is needed, a good choice to achieve the desired results is to hire and use consultants or other necessary specialists (14, 15).

Competence is perceived as knowledge and experience in organizing farm activities (16). Farmers consider flexibility, decision-making ability and the ability to plan, communicate and manage time effectively as important building blocks.

Modern sustainable and innovative farmers are those who regularly gather and gain knowledge from participation in seminars, demonstration activities, discussion panels, online presentations, etc. (17). This gives them the advantage of keeping up with the latest service innovations in the sector and the opportunity to use a variety of information sources to support their development. Farmers particularly appreciate the contacts with professors from universities and research institutes, commercial companies, industry organizations, non-governmental organizations (NGO) structures

(18), experts from the National Veterinary Service, specialists from the Social Welfare Centre, Veterinary Clinics, privately practicing veterinary specialists, zoo engineers, etc. (19). Having gained knowledge and experience, breeders around the country increasingly voice their own critical remarks about their participation in educational projects conducted in different forms.

According to the farmers in the dairy cattle breeding sector, the knowledge and professional advice provided are not always adapted to the realities of their daily production process. Lifelong learning is the right perspective for cattle farmers in the country, but only if it contributes to the acquisition of specific professional knowledge, skills and competencies, leading to the successful tackling of problems and creating a motivating environment for meeting their production, economic and social needs.

The aim of this survey was to understand the satisfaction and attitudes of dairy farmers in Bulgaria about the use and benefits from extension services and specialized assistance in their activities on the farms.

## MATERIALS AND METHODS

The survey was conducted in the period 2019 - 2022 and included a total of 120 owners of dairy cattle farms from different regions of the country. For the purposes of the analysis, the farms included in the survey were divided into three groups depending on their capacity at the time of the survey, respectively: 1st group – up to 49 cows; 2nd group – from 50 to 100 cows and 3rd group – over 101 cows. Forty farmers were surveyed in each group.

The survey included 152 questions related to various organizational, economic, production, socio-political, social, etc. problems concerning Bulgarian agriculture and, more specifically, dairy cattle breeding.

For the purposes of the analysis, the results of some indicators were grouped according to their specificity.

For basic statistical processing of the data and preparation of the graphs, the MS Excel program package and the relevant modules of STATISTICA by StatSoft (Copyright 1990-1995 Microsoft Corp.) were used.

The results of the processed responses from the survey have been summarized in separate sections, corresponding to the modules of the survey questions.

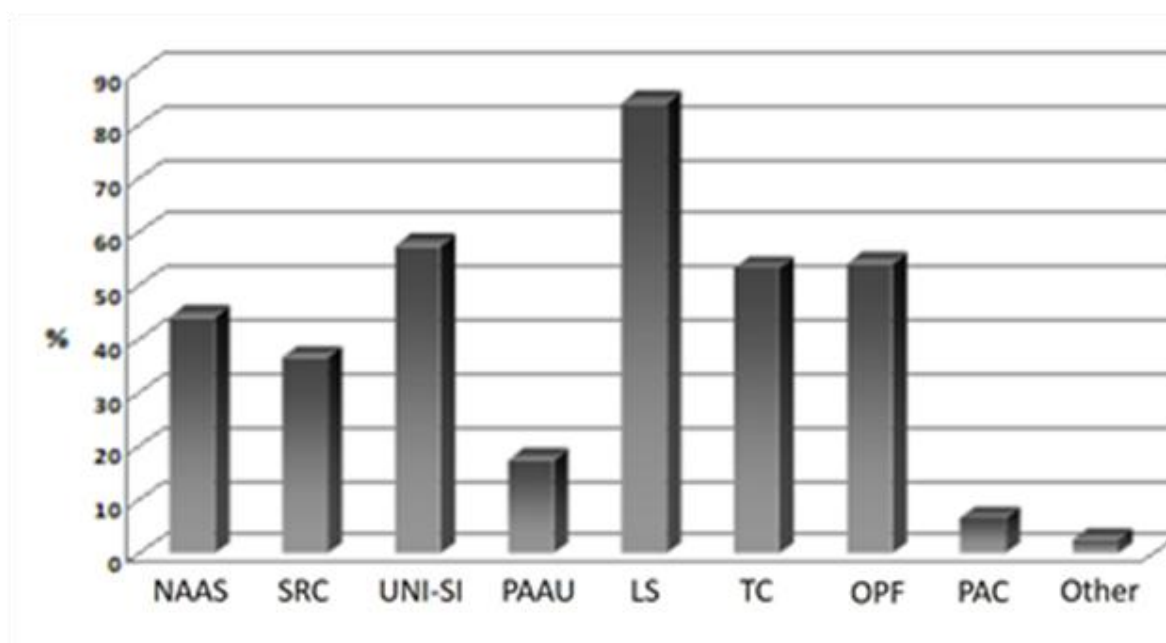
## RESULTS AND DISCUSSION

### *Sources of specialized assistance used by farmers*

The analysis of the responses of the farmers from the three groups of farms shows that almost all of them used specialized assistance in their activities.

The following abbreviations are used in the graphs: NAAS – national agricultural advisory

service, SRC – selection and reproduction centres, UNI-SI – universities and scientific institutes, PAAU – private agricultural advisory units, LS – local specialists, TC – trading companies, OPF – other private farmers, PAC – specialists from production agricultural cooperatives. **Figure 1** presents the percentage of farmers from the three groups who used the different sources of specialized assistance in their activities. The least frequently used sources of specialized assistance are specialists from PAC (specialists from production agricultural cooperatives) and other – 6.7% and 2.5% respectively.

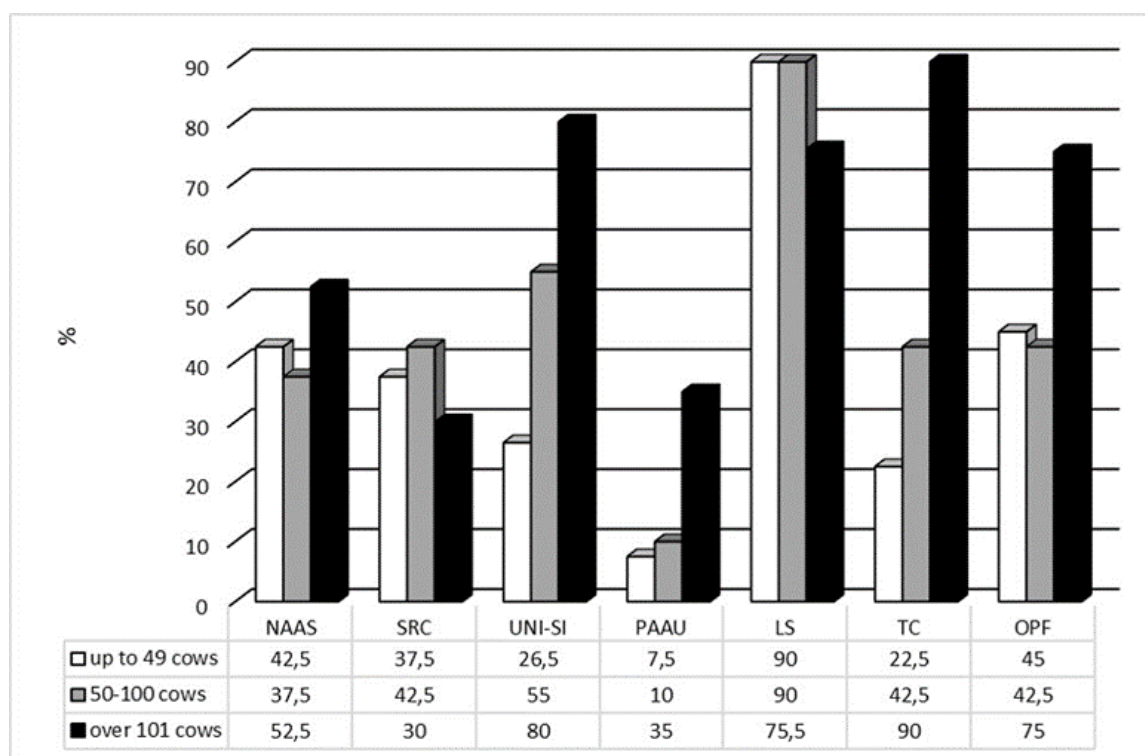


**Figure 1.** Distribution of farmers according to the sources of specialized assistance used

The most frequently used source for consultations and assistance are local specialists (veterinarians, zooengineers) – 84.2%. Over 50% of farmers have used specialized assistance from scientific specialists from universities and scientific institutes (57.5%), sales representatives of companies (53.3%) and other private farmers (54.2%). The presented percentages are total for farms from the three groups of farms by their size, with the sum of the percentages being more than 100%, since most farmers have used more than one source for specialized assistance, and some – all of the listed ones.

**Figure 2** presents the percentage distribution of sources of specialized assistance used by farmers, according to the different capacity of

farms. Local specialists were most often used for consultations, but mainly from small and medium-sized farms - 90% of them. In farms with large capacity, these specialists are also used for advice, but much less - 75.5%. The highest percentage of farmers from the group with the largest farms, with over 101 cows, are inclined to use specialized assistance from representatives of commercial companies - 90% and in second place from scientists from universities and scientific institutes (80%). The last two sources are used less frequently, with a decrease in the size of farms (respectively, the second group - 55% and the first - 26.5%). This is probably due to fewer registered problems and only with individual animals in small farms, as well as to the weak financial capabilities in these farms for the use of qualified specialized assistance.



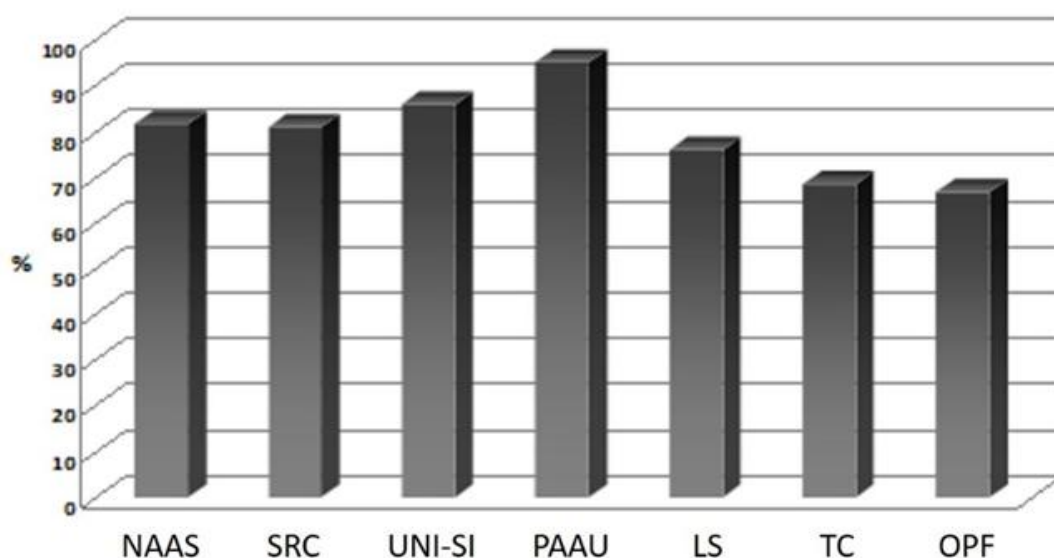
**Figure 2.** Distribution of interest in specialized sources of support for the activity, according to the size of the holdings

The significant difference in the percentage of advice and assistance used by other farmers in the farms of the three groups is also striking. The largest number of farmers from the third group – large farms (75%), have resorted to such an exchange of experience. This can be explained by the trust that large farmers have in each other, which is why they communicate more with each other, discuss common production problems characteristic of them and, if necessary, help each other by bartering with feed, equipment or good practices. A smaller number of farms from the first and second groups (the smallest and medium-sized farms) have resorted to this from other fellow farmers, respectively – 45% and 42.5%. This usually happens if these two groups unite at the regional level to receive specialized assistance in a timely manner and at affordable prices.

Another source of specialized assistance, for which a significant difference in preferences is observed among farmers from the three groups, are private agricultural advisory units. The largest number of farmers who used this assistance amounts to 35% from the third group (the largest farms). Only 7.5% of small farms with up to 49 cows and 10% of medium-sized farms with a capacity of 50 to 100 cows resorted

to assistance from private agricultural advisory units. Private advisory units in our country are still few in number and narrowly profiled, and only in some units can they provide assistance regarding the production process for cow's milk production. Using consultations from such units, when resolving some "immediately unrecognizable" problems, may prove to be a professional advantage over other providers of services for cattle breeding practice.

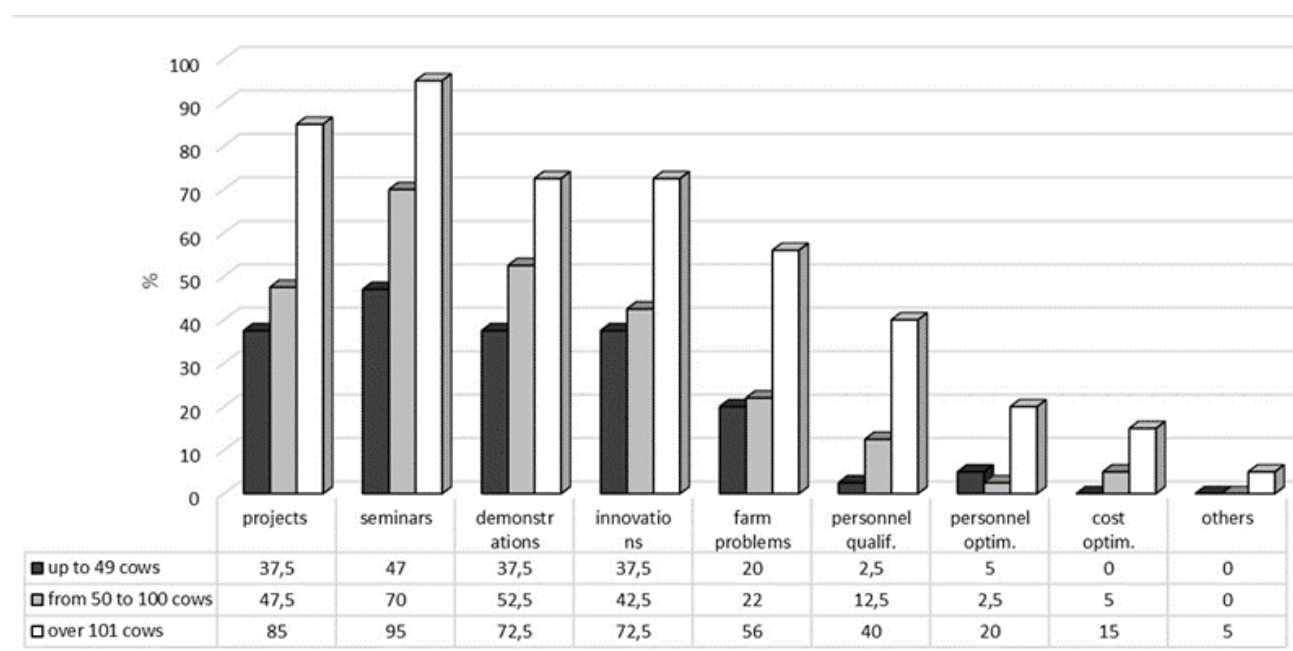
The distribution of farmers according to their satisfaction with the various sources used for specialized consultations for their activities are presented in **Figure 3**. The highest percentage of farmers is satisfied with the consultations of private consulting units – 95.2%, followed by university and scientific institutes – 86%, NSSA–80%. The smallest part of farmers is satisfied with the consulting services and advice from other farmers – 66.7% and commercial companies – 68.6%. It is likely that this advice is given only from their own experience, without in-depth insight and discussion of the real problems. The advice given in this way does not always lead to a positive result when applied in the production process. This raises doubts and changes the relations between previously good partners.



**Figure 3.** Distribution of farmers' responses according to their satisfaction with the consultations received from the different sources of specialized assistance

The analysis of the responses to the survey shows that the consulting services used at the time of the survey were in almost all areas necessary for the activity. There is a difference in the consulting services used between the three groups of farms (**Figure 4**). In all groups,

farmers used different consulting services, with only a few cases where a farmer indicated only one type of consultation, and this was only for farms with the smallest capacity – up to 49 cows.



**Figure 4.** Distribution of farmers' responses according to the direction of the consulting services (%)

In all types of consultations, an increase in interest and participation in various forms of consultations was observed with an increase in the capacity of the farms. The most preferred by all groups of farmers were training through seminars, followed by project development, where the interest was greatest in large farms,

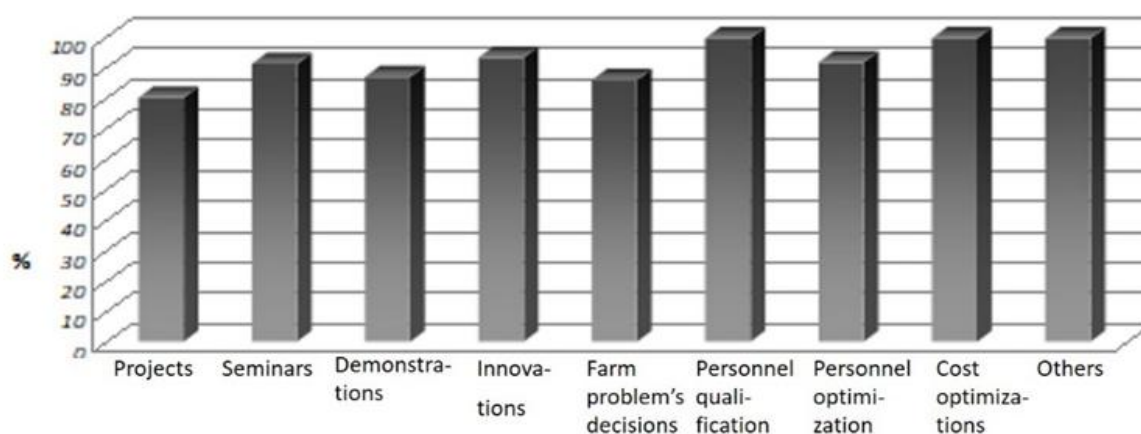
97 and 85% respectively. The following groups of forms of training and consultations were training through presentations and information about innovations. In these two groups, the indicated trend of higher interest with an increase in the capacity of the farms was maintained. In general, the least interest was



shown in training and consultations related to qualification and training of personnel and cost optimization. It is logical to expect that the smallest (or no) interest in these forms of training was shown by small farms, up to 49 cows, where not only is the staff small, but most often these are family members. In small family farms, the possibility of a family member being absent from the farm workplace during the day, especially before lunch, is an impossible mission if the farm is not well-technologically equipped and the older ones have a hesitant attitude towards the need for changes in the

technology of animal husbandry and the organization of the production process.

The percentage of farmers satisfied with the type of training or consultation was high in all cases, averaging 80% and above (**Figure 5**). It is striking that the percentage of those satisfied with the training in the areas of qualification and optimization of personnel and optimization of costs is very high – 91.7% and 100%. This shows that although few farmers have used these consultations, they have remained satisfied with the results.



**Figure 5.** Distribution of farmers' responses according to their satisfaction with advisory services, depending on the direction of activities

In the group designated as “others”, 80% reported a positive attitude towards this type of knowledge enhancement and acquisition of specific experience. This high percentage is the result of visits to high-tech dairy cattle farms in European countries and the USA.

#### **Extension services that farmers consider most useful**

**Table 1** presents the distribution of farmers' opinions depending on which topic is most useful by farm group and in total for all included in the study.

The presented survey data clearly shows that farmers from all groups show little interest in

advisory services on a general topic for the sector - from 5 to 10% of farmers.

There is greater interest in specific topics related to the general needs and future of the sector, and especially to the current problems and the future of their own farms. The greatest interest of farmers from all groups is in consultations related to current problems on their own farms – 90 to 97.5% of all groups formed according to the size of the farms. The following interests are related to the future of their own farms. On average, 63% of all farmers are interested in these problems.

**Table 1.** Distribution of farmers' opinions depending on which topic is most useful (%)

Farm capacity	General topics for the sector	Specific topic-oriented			
		The current needs of the sector	Future development of the sector	My farm needs now	The future development of my farm
Up to 49 cows	10	45	12,5	97,5	57,5
From 50 to 100 cows	5	52,5	27,5	90	45
Over 101 cows	10	62,5	57,5	97,5	87,5
Average	8,3	53,3	32,5	95	63,3

From the results obtained, it is clear that when organizing consultations, they should be targeted and specific to individual farms, and to a large extent the problems discussed should be differentiated and indicated for discussion by the different groups of farmers.

### *Specialized extension services used by farmers at the time of the survey*

The specific problems for which farmers need advice and assistance in solving them are largely common to all groups. Due to the extensive descriptions of specialized advisory services, only those that were most frequently asked questions and discussed are listed in **Table 2**.

**Table 2.** Distribution of the most frequently asked questions by farmers depending on the capacity of the farms (%)

Questions about:	Farm capacity			Average
	Up to 49 cows	From 50 to 100 cows	Over 101 cows	
Buildings	15	20	47,5	27,5
Nutrition	15	32,5	92,5	46,7
Pastures and meadows	20	10	15	15
Reproduction	37,5	45	72,5	51,7
Udder	20	10	40	23,3
Feet and hooves	10	20	70	33,3
Milk yield	20	10	35	21,7

The trend here is the same as in the other issues considered with the advisory services used by farmers. With the increase in the capacity of farms, the opportunities and the need for using specialized advisory services in all areas of production increase. The largest share of farmers from all groups use specialized advisory services related to reproduction - from 37.5 to 72.5% of the individual groups, or an average of 51.7%. The next in use are specialized consultations related to animal nutrition. The difference between farmers with a large capacity of farms is extremely large - 92.5% or almost all of this group use specialized assistance for nutrition, compared to the others - 15% and 32.5%, respectively. This is related not only to the possibilities for paying for advisory services, but also to maintaining high milk yield for 305 days of lactation and the possibility (financial and organizational) to implement the recommendations related to nutrition.

There is a clear trend towards an increase in the problems and, accordingly, the need for specialized assistance in connection with health problems related to the udder, limbs and hooves of animals in large farms. This is especially clearly expressed in the problems with limbs

and hooves, due to the breeding technologies on these farms. Over 70% of large farms (over 101 cows) use specialized services for prevention and treatment activities related to reducing the percentage of podologically affected animals.

In the case of specialized consultations on issues related to pastures and meadows, the trend is the opposite - smaller farms use more such consultations. Large farms do not have the practice and opportunities to take animals out to pasture, but they have modern machines for processing the available land, which they use for the production of grain and roughage and manage to obtain the necessary quantities for feeding dairy cows.

This once again shows the need for a specific focus of consulting services depending on the capacity of the farms and the animal husbandry technologies used in them.

### *Forms of advisory services considered more effective by farmers*

The specific form of implementation of advisory services is also of interest for the proper organization of advisory services. **Table 3** presents the distribution of farmers depending on the preferred forms of advisory services according to the size of the farms.

**Table 3.** Distribution of the preferred forms of advisory services depending on farmers by groups (%)

Preferred forms of services	Farm capacity			Average
	Up to 49 cows	From 50 to 100 cows	Over 101 cows	
Multipurpose	40	12,5	22,5	25
Single-purpose	42,5	57,5	77,5	59,2
Group	12,5	30	35	25,8
Personal	70	67,5	57,5	65
University extension	37,5	40	65	47,5
On the farm	75	90	100	88,3
Free of charge	75	60	50	61,7
Paid	20	32,5	67,5	40
Without contract	27,5	22,5	30	26,7
With contract	32,5	35	77,5	48,3

In the three groups of farms, the preference for single-purpose and personal consultations prevails, 59.2% and 65% of all farms, respectively. Preferences for consultations on the farm (88.3%), free (61.7%) and with a contract (48.3%) also prevail. It is noticeable that large farms predominantly prefer consultations and services on the farm (100%), paid consultations (67.5%) and those with a contract (77.5%). This practice leads to faster and more qualitative handling of problems on the farm. Some of the activities related to animal care are labour-intensive, and are characterized by greater and more intense physical and mental workload. The specialists appointed to the farm fail to find time to carry them out in a timely manner and are often not given the necessary attention, which is why the animals remain unattended. It is precisely in such types of activities that urgent consulting assistance and training in podology, reproduction and ultrasound diagnostics are sought.

#### **Organizational facts of the extension service that have won the trust of farmers**

**Table 4** presents the distribution of the characteristics of advisory services, leading to increased trust of farmers in the existing advisory services. The largest percentage of farmers insist on compliance with the clauses of the signed contracts for advisory activities – over 90%, and this applies to all three groups. The next most important organizational factors that farmers insist on are that the service is equipped with all the necessary tools and supplies – for all groups this condition is indicated by 85% to 87.7% of farmers. And the next requirement with almost the same importance is the possession of professional skills. On average, over 80% of farmers from the second group (medium-sized farms) indicated this indicator, while in the third group (with the largest capacity) this is important for 100% of farmers.

**Table 4.** Distribution of factors and characteristics that increase trust in advisory services (%)

Factors and characteristics of extension services	Farm capacity			Average
	Up to 49 cows	From 50 to 100 cows	Over 101 cows	
They respect contracts	97,5	85	92,5	91,7
Own equipment	85	87,5	85	85,8
They have laboratories	60	65	95	73,3
They have professional skills	67,5	85	100	84,2
They have permanent staff	42,5	37,5	67,5	49,2
Use personal protective equipment	37,5	10	57,5	35
They are active	32,5	10	7,5	16,7

The specified organizational factors are important, because the lack of their strict observance leads to improper organization and conduct of subsequent activities on the farm,

which must be carried out by the specialists appointed there.



The factors related to the presence of permanent staff of specialists, fulfilling the contracts signed by the consulting service, are of medium importance - 49.2% and the mandatory use of personal protective equipment - 35%. Of least importance is the factor of activity of the consultants, who themselves organize their work on the farm when servicing the animals - 16.7%.

### *Reasons for dissatisfaction with the results of extension services used*

**Table 5** presents the reasons for the poor results of the advisory services used according to farmers from the three groups. The largest share of farmers from all groups (on average 66.7%) identified the reasons for not achieving good results from advisory services as "Poor professional qualification of the staff".

**Table 5.** Factors on farms responsible for poor results from the provided advisory services (%)

Reasons for dissatisfaction	Farm capacity			Average
	Up to 49 cows	From 50 to 100 cows	Over 101 cows	
Poor organization of work on the farm	37,5	32,5	35	35
Weak professional qualifications of the staff	65	72,5	62,5	66,7
The received prescriptions are partially implemented	67,5	55	50	57,5
The received instructions are not implemented at all by the farm workers.	20	22,5	7,5	16,7
Farm workers compromise enforcement of regulations	20	2,5	15	12,5
Other	0	0	10	3,3

Such phenomena are common on farms regardless of their capacity. The next most frequently cited reason by farmers is "The instructions received are partially implemented" – 57.5%, with no significant variation in the percentage by group. Poor organization on farms is cited by a smaller percentage of farmers – an average of 35%, again with an almost equally distributed opinion in the three groups.

### *Preferred sources of information used for successful activities by farmers*

**Table 6** presents the preferred sources of information according to farmers from the three groups. The least interest is shown in information from radio, television and newspapers. A higher preference for all other sources of information is reported by the group of farmers with over 101 cows on the farm, compared to the owners of smaller farms.

**Table 6.** Preferred sources of information according to the distribution of farmers by groups (%)

Sources of information	Groups by farm capacity			Average
	Up to 49 cows	From 50 to 100 cows	Over 101 cows	
Journals, books	60	55	67,5	60,8
Fairs, exhibitions, demonstrations	85	87,5	97,5	90
Personal contacts and meetings	90	85	90	88,3
Experience exchange with other farmers	40	62,5	77,5	60
Radio, television	17,5	22,5	42,5	27,5
Newspapers	20	20	52,5	30,8
Catalogs, advertising materials	52,5	45	62,5	53,3
Others	0	2,5	30	10,8

Here too, farmers have indicated several answers. Most farmers have indicated that they are informed by visits to fairs, exhibitions and demonstrations – an average of 90%, with the variation between the three groups being from

85% to 97.5%. The next group of sources of information massively indicated by all farmers is personal meetings/contacts with other farmers – 88.3%, also without major differences by group.

The other two groups of sources of information used by a high percentage of all farmers are “Specialized magazines and books, television shows” – 60.8% and “Organized exchange of experience with colleagues” – 60%. The latter source shows a certain tendency to be used more with increasing farm capacity.

There is relatively less interest in specific sources such as television and radio – 27.8%, newspapers – 30%. This may also be due to the fact that these sources were already included in the first group of sources. Nevertheless, both sources are definitely more used by farmers with larger farm capacities, two or more times compared to smaller ones. “Directories, professionally prepared advertising and other materials (disks and flash drives of operating monitoring systems and production solutions)” are indicated as a source of information by a fairly high percentage, and by all groups of farmers – from 45% to 62.5%.

In addition, observations from the activities of advisory services in Bulgaria allow the following generalizations. Advisory teams that retain the interest of farmers for “active participation and discussion” are multidisciplinary, with participants from different institutions, who are reliable sources of information. A particularly valuable approach is the co-opting as lecturers of farmers with practical experience, who have achieved technological development of the production process on their farm. The information from them is always valuable and interesting.

From the responses of the farmers in the survey, it is clear that they have different needs. For some of them, the old traditional technologies of raising dairy cows are inherited from their parents and are not subject to change, due to the stereotype of the activity. Representatives of such livestock farms are usually absent even during information sessions on the development of livestock farming during the upcoming programming period and the possibilities for financial support in the country. For these and other reasons, according to the Ministry of Agriculture, the number of small farms in the country in 2022 will mainly decrease. Restructuring is also observed in medium-sized farms. Some farmers are increasing the number and productivity of the animals they raise and are striving to improve their technological equipment while complying with the requirements of the country's main regulatory

regulations (20). Therefore, they prefer to communicate individually with consultants. They are looking for information and solutions that are applicable and successful in their activities, with the most favourable financial conditions for technological equipment. Large farms in the country usually maintain or increase the number of their animals. What they are looking for when participating in organized consulting trainings or demonstration activities is appropriate information to optimize time and increase profits. They tend to think through each of their investments from the perspective of the achieved technological level, the development perspective and future social and financial benefits.

The consultancy activity is directly related to increasing the efficiency of agricultural production by popularizing professional knowledge among farmers. All structures, organized and financed in different ways, fulfil the same goals – assistance and service to farmers in order to increase production results, increase qualification, knowledge and improved standard of living for farmers (21, 22).

To this end, they must realize that agricultural production is changing. It follows that it is necessary to reformat and modernize the learning process and the methods used for teaching and learning. By applying information and communication technologies and using the possibilities of distance learning, the form of training farmers have received so far can be intensified in order to achieve better consolidation of the acquired theoretical and practical skills. Consultants must periodically update and modernize the educational content in their lectures. Practical classes from traditional must become a form of additional professional qualification. The implementation of the offered services, advice and technical assistance must be based on scientific achievements and proven practices. Taking into account the opinions of farmers in the research and development of dairy cattle breeding in the country, it can be assumed that in the future there will be a need for more knowledge, acquisition of experience and skills through the educational forms offered by the consulting services.

## CONCLUSIONS

Most often, local specialists are used for consultations by small and medium-sized farms, while farms with large capacity are

directed to using specialized assistance from representatives of commercial companies, universities and scientific institutes. Farmers use various consulting services, and with all types of consultations, it is observed that with increasing capacity of farms, interest and participation in various forms of consultations and in all areas of production increase. Farmers' satisfaction with training or consultations is high, with the greatest interest in consultations related to current problems in their own farms or their future. They are informed mainly by visits to fairs, exhibitions and demonstrations, personal meetings/contacts with other farmers. The most preferred are trainings through seminars, followed by project development, where the interest is the greatest from large farms, presentations and information about innovations. The interest is focused on trainings or consultations, which are mainly single-purpose, personal, conducted on the farm, free of charge, with a concluded contract of consulting services. The largest share of farmers from all groups use specialized consulting services related to reproduction and animal nutrition. There is a clear trend for an increase in health problems related to the udder, limbs and hooves of animals in large farms.

The main organizational factors that cause trust in consulting services are reliability in adhering to contracts, good equipment, available laboratories and professional skills. Factors in farms that lead to poor results from consulting services are the poor professional qualification of the farm staff and the partial implementation of the prescriptions by the consulting specialists.

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