

STRENGTHENING OF VETERINARY ATTENTION AND INFORMATION AND SURVEILLANCE SYSTEMS AT THE LOCAL LEVEL

VICENTE M. ASTUDILLO

Pan American Foot-and-Mouth Disease Center (PAHO/WHO)
P.O. BOX 589, 20001-970 Rio de Janeiro, RJ, Brazil

Summary. The modifications in veterinary attention systems have a decisive impact on the design and implementation of systems for information and epidemiologic surveillance. Greater knowledge is required of the specific livestock space, particularly at the local level. The spatial organization of animal production has been structured by forming areas of influence linked by flows, of distinct nature and intensity, that circulate through specific networks. The space should be considered as a field of forces and conflicts among objectives and actions. The way animal health may be developed is in the sphere of negotiation and adjustments. To prepare the epidemiologic surveillance work at the local sphere, it is necessary to have a database that includes the following: the profile of livestock and local infrastructure of the livestock industry; diseases; activities of veterinary attention; and the social structure of the area in question.

In order to approach the problems that the models of veterinary attention face today in relation to animal health in South American and Caribbean countries, it is essential to understand their relationship with the national current economic models and the way these economies are inserted in the world economic order.

As to the internal plan of each country, there are two main determinants that condition the existence and the characteristics of the type of veterinary attention, including the veterinary services. On the one hand, there are the basic rules of the socio-economic organization of society and on the other hand, as a private space, the specific forms that the "livestock block" (i.e., the set of agents significantly linked to the livestock production) assumes in each country (1).

As to the external plane, particularly in the case of countries with exportable balance of livestock products, health restrictions in the international markets of greater per capita income, impose demands, translated as needs for specific veterinary attention that have given a characteristic profile to these modalities of veterinary attention.

The economic crisis, aggravated in the eighties, has made evident the structural insufficiencies of the economies of the countries of the Region to maintain the rhythms of socio-economic growth, to regain the process of expansion of the productive bases and comply with the growing social demand. This situation has sharpened due to the magnitude of the external debt and to the world economic situation. In order to face it, the countries have established adjustment policies in their economies, adopting measures with the purpose of contracting the internal market, reducing imports, increasing exports and therefore, generating an exceeding foreign exchange surplus to serve as payment abroad (9).

This set of measures has produced socially unfavorable effects, restrictions in the ability to purchase food such as meat and milk, limitations in technical investments for development of livestock, deterioration of services and programs of animal health, less accessibility to veterinary attention services. On the other hand, as a consequence of these measures of adjustment of the economies, tremendous challenges have arisen in the field of animal health, along the lines that favor a better

response to the demands for health quality of livestock products by world markets and also by the option made by several groups of countries in the Region, to establish economic-commercial agreements of subregional nature (MERCOSUR, JUNAC, CARICOM, Central American Common Market) with the purpose of stimulating their socio-economic development. As a consequence of these agreements, it is necessary on a mid-term basis to open borders with elimination of the so-called health barriers, favoring exchanges of animals, products, and subproducts of animal origin and supplies for livestock development (7). In this context, it is necessary to eliminate several health restrictions, in the animal health field, as it is the case of foot-and-mouth disease.

The political decision taken during RIMS V (5) in 1987 to eradicate foot-and-mouth disease from the Americas, coincides with the moment in which the epidemiological situation was static, the programs eroded, and the veterinary services deteriorated in their functioning. The limitations of the capital investments had caused deficiencies in the maintenance and conservation of physical resources, as well as an acute lack of training and development of human resources. The limitations of current expenses jeopardize the functioning of foot-and-mouth disease programs, presenting a clear deterioration of the administrative development and management of programs and services, affecting their effectiveness, efficacy, and efficiency (6).

Within this less favorable scenery, it is important to observe the role of state veterinary services, with technical-administrative models of attention in which centralization in the decision-making process and management of resources still prevails. This excessive centralization reduced to very weak expressions the capacity of middle and local levels to cope adequately and properly with the health needs, of each place or region, and imposed severe limitations to the participation of several important social actors interested in livestock, interfering with mobilization of resources derived from several sources, particularly private.

In short, the problem of the administrative systems of veterinary services continued to aggravate and has hindered the rational, opportune,

and efficient use of the scarce available resources, diminishing significantly their operating capacity (1).

In recent years, proposals for revision and reorientation of the technical-administrative organization of veterinary attention systems have appeared in South American and Caribbean countries more in agreement with the challenges and postulates of socio-economic development. In this change, decentralization and strengthening of local mechanisms of veterinary attention figure as focal points.

FRAMEWORK: STRENGTHENING OF THE LOCAL VETERINARY ATTENTION

In the last decade it has become evident that, while veterinary attention services deteriorated, their degree of centralization was enhanced, making them bureaucratic and setting them apart even more from the effective capacity to introduce, in the livestock environment significant modifications on animal health and production.

As a derivation of this situation, there has been an erosion which has affected not only the work of providers of veterinary attention services, but also the motivation of the social segments linked to livestock breeding. These have accommodated passively to receive services rendered without their participation, leading to their deficient utilization.

Today, proposals have begun to appear in several countries of the continent through a new conception that creates an environment of reciprocal responsibilities between providers and beneficiaries at local levels, capable to materialize this cooperative work by mobilizing all local resources so that health operations become more effective, efficient, and timely to cope with the real needs of local livestock raising.

As the capacity for analysis and comprehension of the livestock reality and the animal health situation are developed at the local level, and the existing resources to produce veterinary attention services are identified and coordinated, the possibility to offer a better response to problems of animal production follows.

Proposals for the technical-administrative reorientation of veterinary attention have been formulated. The strengthening of health operations at

the local level and the consequent development of social participation and intersectoral coordination at this level have been considered as instruments to obtain a greater effectiveness of the assistance actions and a greater efficiency in administrative management. In this way, the development of local modalities of veterinary attention may be seen as a global proposal for rearranging the assistance model of animal health within the agricultural sector.

The idea of what should be a veterinary attention model at the local level is constructed from several perspectives that tend to meet in the materialization of a system at this level. From the governmental viewpoint, it complies with decentralization requirements of the official apparatus, in search of a greater social participation and effectiveness of action. The sense of belonging to administrative-geographical divisions allow these local veterinary attention systems to refer to municipalities, districts or other subdivisions, neither so small that they seem inefficient, nor too large to render difficult the control and coordination of resources (8).

With this reorientation of the organization, the aim is to obtain a greater capacity of response to the changing and specific demands of livestock breeder groups under a geographic-population criterion, affected by more or less common epidemiological problems. In this way, defined population spaces are recognized within the local sphere, which present characteristic damages and risks, and which enable the reorientation of veterinary attention in a specific way.

To carry out this reorientation, there should exist in the local mechanisms of veterinary attention, the capacity for articulating all available resources towards a better animal health assistance within a given population space.

There are a series of aspects that are considered basic for the strengthening of veterinary attention at the local level:

The need to improve knowledge on the local livestock space

The private livestock space in a given local sphere has been adjusted through a process of successive transformations of nature. Depending

on the socio-economic form of predominant production, a diversified range of differentiated sectors closely linked to livestock was constituted. Livestock exploitations are still developed within each country in dissimilar technological, social and economic conditions. In addition, as the degree of technological complexity evolves, other sectors appear which integrate into the space of livestock breeders' interests, resulting in alliances and conflicts as per the different perspectives of the interests involved.

The geographical distribution of agricultural animals is highly associated with the insertion of livestock raising in the development policies, in particular at the historic moment of said development. As far as the productive differences are manifested over this space, due to the specialization and intensification of the livestock exploitation, it is possible to observe a spatial organization of the structures of animal production.

The spatial organization of animal production has been structured by forming a set of centers and their corresponding areas of influence, linked by flows of distinct nature and intensity, that circulate through specific nets. Each one of them, whose number is in accordance with the size, development, and complexity of the country, has in its center a market to be covered, flows of animals, products, people, and financial resources, whose direction and intensity are indicators of how the spatial organization turns dynamic in terms of the prevailing productive process.

At each one of these space organizations of livestock production, there are economic agents (companies) that due to their dominant position in the structure of animal production, control an important link in the sequence "production, transformation, distribution, export, financing" to establish an order of dependence of the subspaces of production, which is related to the generated benefits, setting up prices, etc. This control normally corresponds to the companies or groups of companies with a higher degree of technical and financial development.

The political content of the space is manifested in the structures of local power, expressed

through networks of solidarity, alliances, and conflicts among the several actors, (individual breeders, groups, producers of supplies, livestock product processors, class institutions or state institutions) that play a role in said space structure.

To obtain good results in the solution of animal health problems in Latin America and the Caribbean, it is necessary to have an adequate knowledge of this reality in the field, and to associate territorially the capacity to decide and mobilize resources with the specific problems of the subspaces.

Decentralization and microregionalization of veterinary attention at the local level.

The concept of decentralization and microregionalization of veterinary assistance models should necessarily be linked to the territorial or space dimension. The main criterion that should guide this decentralization should be epidemiological. It should enable a local organization of veterinary attention to identify the animal health needs of the livestock population at the land-owner level, facilitating the utilization of local resources to reach or satisfy such needs (10).

This strengthening at the local level implies living in harmony with some degree of centralization since, if it were absolute, it would be equivalent to the fragmentation or anarchy of the system of veterinary attention in the country. Therefore, the decentralization is administrative-territorial and not institutional (7).

To strengthen veterinary attention at the local level, the decision capacity concerning the health operation should be transferred, and not simply carry out dispersion of the activities. Among the benefits to be achieved are the following (10):

- a) to increase the capacity to solve problems concerning the decision-making process, at the place where problems occur;
- b) to return to the community the capacity to influence problem solving;
- c) to improve the service coverage;
- d) to improve the knowledge of the local reality and the timely utilization of information on behalf of the effectiveness of health actions;

e) to adequate the local program making national policies more compatible with the proper needs of the local sphere (7).

f) to provide more stability and continuity to the veterinary attention model and its respective programs; and

g) to obtain a greater administrative efficiency of veterinary attention.

Social participation at the local level

The set of social actors (groups that have the capacity to develop interests and needs, accumulate strength and to act producing events) should be represented at the time of selecting priorities, establishing courses of action, mobilizing resources, and evaluating the actions of health management.

Social participation should be materialized through the conformation of a network of relationships of reciprocal responsibilities with other social actors, including among them the official (state) veterinary attention service. This is fundamental not only to obtain a greater effectiveness of the actions but also to provide support and administrative continuity to animal health programs.

Social participation is expressed by all representation and action played by the group of social actors that may have some effect over the attention of animal health. This implies self-responsibility, self-sufficiency, and the establishment of goals of a progressive nature (7).

The articulation of formal and informal social groups and institutions for the programing, execution, and evaluation of health operations, should be achieved through the deliberation on the problems and their attention, and through the negotiation among the various social actors, on what should be done to improve the operations.

The intersectorial action in veterinary attention at the local level

The intersectorial action in animal health may be conceived as the coordinated intervention of institutions representative of more than one social sector, in actions intended to approach wholly or partially, problems more closely related to animal health.

The purpose is to promote and develop

veterinary attention through an intersectorial coordination which should imply, at the local level, the articulation of financial or other resources, to support animal health programs.

The efforts made at the local level should be oriented towards producing effects favorable to the society that lives and develops in this context. Therefore, all efforts in the field of animal health, and particularly in its attention, should count on an intersectorial criterion, i.e., of all sectors involved.

Strengthening administrative capacity at the local level

The objectives of veterinary attention management are to support the achievement of a complete coverage of veterinary attention services under effective and efficient conditions.

The greater administrative capacity of the local units of veterinary attention should occur when minimum conditions are achieved, as follows:

- a) to count on an adequate unit of technical-administrative management with human resources appropriately trained to develop the procedures of decentralization of the actions;
- b) to maintain an information and surveillance system that, relying on the epidemiological and administrative analysis, guides the actions towards the attainment of the goals;
- c) to prepare an adequate endowment of physical and financial resources to support the activities;
- d) to have the capacity to mobilize and coordinate resources.

CURRENT PROFILE OF THE PRODUCTION AND UTILIZATION OF INFORMATION IN VETERINARY ATTENTION

The profile that characterizes information and surveillance systems today is the following:

- a) the strength and opportunity of decisions are not always located in the administrative instance near where the events occur;
- b) the definition of information needs has derived from the central levels of the services, in a design of the descending type systems that tend to

accentuate with the information at the central level only;

c) concern on how to use the information at local instances in the field to improve veterinary attention has been scarce. The field staff "is for" the gathering and vertical communication of data, and they have to consider this work as somewhat bureaucratic, useless;

d) the reducing tendencies of specialists have caused fragmentations in the flows of information from the field, laboratory, slaughterhouse, and socio-economic sectors, placing the needs of each sector above those of veterinary attention of the livestock population, missing the opportunity to rely on an integrating mechanism of information;

e) lack of an adequate and precise hierarchy of the decision-making process at distinct levels within the administration of veterinary attention services, and consequently, the lack of hierarchy of afferent information that leads to each step. The epidemiologic surveillance system should be coherent with the hierarchy of the decision-making process and the mechanisms of action in all health-administrative instances;

f) in some cases, the surveillance system, identified administratively in the veterinary services as a department or unit, produces and deals with information as it were for itself. This should not be done, as it has occurred, for use of the bureaucratic apparatus of the service or to present reports at the political level. The information is only valuable if it enables the guidance of health actions and if it is a product of these actions;

g) a generalized deficiency of the surveillance systems is the non-consideration of the participation of the livestock community (several social actors interested in livestock) as real users of the information. Consequently, this prevents acquiring a more consistent information; the diagnoses of the situation are incomplete or deficient; disarrangements in the program are presented; execution with failures, omissions, and non-compliance and "inside" evaluation, without corrective impact.

INFORMATION AND EPIDEMIOLOGICAL SURVEILLANCE SYSTEMS OF VETERINARY ATTENTION

Today, in Latin America and in the Caribbean, the development of the mechanisms of information to guide veterinary attention is variable, as well as the perspectives under which there has been an attempt to organize them. An information system in the field of veterinary attention is defined as a set of components (manpower, equipment, resources, and procedures) which have the purpose of producing, in an adequate and timely way, information for users of veterinary attention systems.

Its objective is to cooperate in the rationalization of specific decisive processes. The increased complexity and the more and more diversified consequences of political decisions in the fields of animal health and its attention, have also led to the growth of the needs for reliable information, and its utilization to guide health actions.

There are three horizons in the field of animal health which are the subject of concern of the specific information systems:

a) Epidemiological horizon, related to the orientation of the decisions that may modify the behavior of animal diseases and particularly, their determinant factors. The particular information systems for this purpose are the so-called systems of veterinary epidemiological surveillance.

b) Administrative horizon, which refers to the planning, organization, management, control, and evaluation of the services and programs in the field of veterinary attention. The systems that furnish said information are generally called systems of administrative information.

c) External horizon, related to the economic, social, political, and ecological surroundings of the livestock and animal health activity, on which the results and actions of animal health make an impact, and from which stimuli and measures affecting it may come out.

Each one of these three specific information systems has its own purpose regarding the focus of information about what it refers to. However, methodologically speaking, each one of them is a

subsystem of a system of a higher hierarchy that constitutes the animal health information system.

The actions that permit the development of information should be implemented by the technical-administrative components existing in the veterinary services, without adding new structures to the institution.

Regarding the epidemiological surveillance system, its evolution was associated to that of vertical health programs, which in the beginning, established their own surveillance subsystems. That was the case of foot-and-mouth disease in South America. In the seventies, when the national programs of the South American countries started to develop, a surveillance system based on the geographical quadrants was created and achieved considerable development. This system was organized in the South American countries and subsequently, in those of Central America for vesicular stomatitis and its differential diagnosis with foot-and-mouth disease. Later, it was organized in Mexico with emphasis on hog cholera and its differentiation with African swine fever. In Cuba, the surveillance system by quadrants was extended to all the animal health field, including the bio-productive aspects.

Starting from the specific health programs in several areas of the continent, systems of information and surveillance of limited coverage have been organized to cover diseases such as: tick infestations, urban rabies, hog cholera, and the binomial tuberculosis-brucellosis.

In most vertical programs, the prevailing tendency was to centralize the decision-making process and the management of resources. On the other hand, it was held that only the official veterinary attention services were capable of planning specific health programs.

To date, little importance has been given to the use of information at the local veterinary services, to improve veterinary attention. One of the mechanisms for improving the capacity to prevent, control, and eliminate the problems affecting the capacity of herds to produce and reproduce, is to reduce the load of decisions of the central levels of those services that centralize it today, distributing

this duty in the peripheral levels and sharing it with other main social actors.

Operating mechanism

The actions that enable the development of information should be monitored by operational components that consider the existing technical administrative units in veterinary services, without adding new structures to the institution. The main components are the following:

Information sources. Among the main sources the following are highlighted: premises, veterinary diagnostic and control laboratories, veterinary services, quarantine stations, private veterinarians, livestock cooperatives, slaughterhouses, storage houses, milk plants, manufacturers of meat and milk products, serum, semen and embryo banks, universities, technical-scientific agencies.

Sensorial collecting mechanism. It is formed by local or field veterinary units. Its task is to gather information and transmit it to users of information. The sensorial collecting mechanism is mainly formed by local veterinary units, so that they cover all the space related to the programs for the control of animal diseases. Each local veterinary unit is responsible for a well delimited area which should be identified through a detailed map. Each office of the local unit has an updated inventory of the establishments within its area, its location, animal dotation, and characteristics of local livestock. A cross-section tracing of numerically identified quadrants is outlined in the map, which is useful to locate the episodes through the coordinates.

The system furnishes means so that this information, collected in the most peripheral levels of the service, is transmitted through simple mechanisms (phone, telegrams, radiograms or telex).

Group of users of information. Each local or regional group uses the information according to its responsibilities, the type of decisions that will have to be made and its hierarchical level in veterinary service. At the operational level, the veterinarian and the local community should be the users, at the same time they are the informants. At the strategic level (central unit of the veterinary ser-

vices), the user of the information is an interdisciplinary and multisectoral group that processes, analyses, and interprets the information and prepares the recommendations and options to solve the problems detected. In the case of operational decisions concerning the measures to be taken to avoid dissemination of communicable diseases, the field sensorial unit (collection) and the unit of the decision-making process are the same (short period of time for successive steps: collection-analysis-decision-action). The multidisciplinary and multisectoral group of the central unit should select strategic alternatives for control, analyze and interpret the results systematically, and advise program executives on the adequate decision-making process. Once the decision is made, its implementation and corresponding action (minor circuitry: collection of information-analysis-efferent information-action) will be communicated to all field units.

Communications network that links the sensorial-collecting mechanism to the group of users. Among the several channels of communication that form the network of epidemiological information flows in a veterinary health service, the channel that conveys the information on the occurrence of animal disease is of great importance. The structure and dynamics of this communication channel depends on the administrative steps of the veterinary services, and on the situation of epidemiological dependence of a determined region on others, by complementarity with livestock cycles. Thus, there are vertical information flows and also horizontal flows with other local veterinary units, located in areas associated by complementarity in livestock raising cycles.

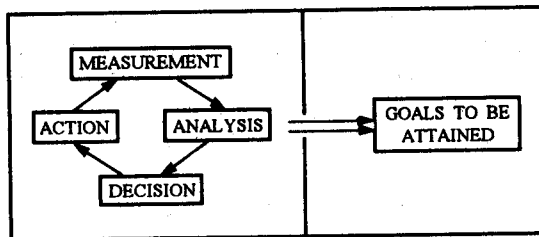
Decision-making process

Its existence becomes valid when implemented to supply a rational decision-making process, which seeks to adjust the results in terms of animal health to the expected goals (Figure 1). There are three levels of decision: political-strategical, tactical and, operational. In general, information flows among these three levels. When the decisive levels are clearly assigned to administrative steps of the veterinary attention service, it is

possible to recognize information needs specifically, thus enabling the availability of adequate information.

The information is only valid as a source or product of the action. The mistake of considering information more valuable than the action cannot be made. In the field of veterinary care, the information process (collection, processing, and analysis) does not have an end in itself. We are facing a problem that today affects many service institutions, a conflict between the so-called "revolution of information" and the "explosion of information",

FIGURE 1. Feed-back process with information.



the latter in a greater proportion. A question arises whether the larger collection and analysis of data served to improve the animal health.

One of the distinguishing characteristics of modern society is the management of information. Animal health cannot escape from this cultural feature, which has been accompanied by the sweeping technological advance of electronic computing. On account of it, there has been an access to the use of microcomputers at the field level which is priceless for veterinary attention. However, this has produced an enormous accumulation of information - which enables acquisition of prestige-, but there is a lack of interpretation and utilization to modify reality, through guided actions. Information is not an end in itself, and is justified when it is at man's service.

In the disorderly information explosion several dangers arose, expressed by the law of Finagle (3); the existing information is not the desired one; the information desired is not the needed one; the information needed is not the one obtainable; the obtainable information costs more than what one wishes to pay. This reflects a problem

related to the unceasing accumulation of information, a process not always duly rationalized. If the process of producing information is organized in terms of clear and precise objectives for its utilization, the problem raised by the Finagle law is not true.

On the other hand, the lack of utilization of information is partly due to the information systems organized to meet the needs of administrative tasks of the services, in a non-coherent way with the needs of the population. The information produced many times is oriented towards a bureaucratic justification of the service institution and therefore, flows up to the central instances (2). A fundamental challenge today that is clearly verified in veterinary attention of the livestock population is as Toffler said: "to undo the decision-making knot and place the decisions where they should be", where the problems that preoccupy occur (1).

SURVEILLANCE AT THE LOCAL LEVEL AS AN OPERATIONAL TACTIC TO STRENGTHEN LOCAL MECHANISMS OF VETERINARY ATTENTION

In the place where animals are raised and are in contact with the veterinary attention services, a great deal of information is generated. That is the place where information is obtained on the service coverage and the socio-economic, political, environmental, and cultural conditions associated with the actions of veterinary attention. A way to improve the quality of the decision-making process is the use of the information in the local area.

Veterinary attention at the local level purports to find answers, (i.e., to produce information) to questions such as: what are the local problems in terms of diseases, health-production profile, nutritional conditions, and management?; who needs assistance, in what problems?; how a veterinary attention service of wide coverage can be provided?; what are the local sources of knowledge and action?

Veterinary attention strengthened at the local sphere requires information. In all places where veterinary attention is important, information is generated which is used with great advantage.

The epidemiologic surveillance system in local areas should be oriented towards a good level of knowledge about the reality of the local livestock; the conduct of the main problems (diseases) that interfere with animal health and production; the determinant factors of managing these problems; the monitoring, evaluation, and orientation of veterinary attention actions.

The epidemiologic surveillance should have the ability to be the intelligence component that guides the activities of veterinary attention in a given direction, and in accordance with the epidemiologic information received. The surveillance system centered at the local level should gather the participation and contribution of the different segments of the livestock breeding community, so as to become more consistent and effective. The objectives of epidemiologic surveillance at the local level are the following:

- a) To maintain updated the knowledge of the conduct of the structure and other socio-economic dynamics of the livestock product (determinants in the local area). This corresponds to a micro-characterization of the local livestock.
- b) To maintain a situational diagnosis of the different specific problems (diseases), identifying the population, structures, time, and space according to risk.
- c) To obtain an animal health profile of the main species of agricultural animals.
- d) To precise criteria for risk, endemicity, alarm, appearance of emerging problems in the geographical area attended.
- e) To establish health procedures synchronized with other regions having livestock complementary
- f) To formulate health measures (prevention, control, and eradication) in agreement with the epidemiological-administrative interpretation and in accordance with local restrictions.
- g) To evaluate the effects and the health measures applied.

ELEMENTS OF THE SURVEILLANCE SYSTEMS

Surveillance Agents at the local level

- Veterinarians responsible for the technical-administrative part of the local unit of veterinary attention.
- Other employees of the service.
- Representatives of the main segments of the livestock community, particularly: large, middle and small breeders; private veterinarians acting in the locality; representatives of universities and local and/or regional technical-scientific organizations; professionals from slaughterhouses and local and/or regional laboratories.

Surveillance stages at the local level

Collection of data: Careful, consistent, complete, and timely concerning that part of information which is of interest for surveillance.

Processing: Simple with direct products (tabulations, graphs, and indicators) and of easy comprehension.

Analysis and interpretation: Comparison, and listing of local health epidemiologic information in an accessible way to all segments.

Disclosure: Distribution of results in a simple and synthesized way to all segments and sectors interested.

Evaluation of situations: To verify the epidemiologic results obtained and the effects and impacts of health measures, jointly with community segments.

Proposal of corrective measures: In a joint way with community segments in possession of evaluations, propose feasible and systematic health measures to improve the effectiveness of veterinary attention in the locality, within a framework of efficiency in the management of resources.

Database for surveillance at the local level

To carry out these specific activities of epidemiologic surveillance in the local sphere, it is necessary to have an available, accessible, complete, and updated information base where the work is systematically developed. To serve this purpose, it

is necessary to prepare a data file, organized in accordance with the distinct variables or attributes identified, referred to the units of observation. This enables through the programs of data management to integrate, relate, and compare them, without the need to duplicate the file. This type of file is known as Database.

To prepare this work of epidemiologic surveillance at the local sphere it is necessary to count on several Databases as follows: profile of livestock and local infrastructure of livestock industry; profile of animal health; presentation of diseases; activities of veterinary attention; social structure.

Database for the livestock profile in the local area

Orientation/Support: Surface in hectares -total; agrolivestock; pastures (cultivated and natural), cereals (winter and summer), crops with livestock complementation (cane), woods and bushes.

Animal density (hectares): population per species and structure (heads); gross and livestock density per species and UAH.

Size of herd (heads per property): population per species, number of production units (property, farms).

Movement of animals (heads per species): exit as per objective (breeding, continuation of cycle), destination (municipality), and period (month); entrance as per objective, origin, and period.

Orientation of production (per species): in cattle - breeding (relation calf/breeding cow), repasturing, fattening, dairy (milking/breeding cow), small producer.

Livestock infrastructure: pasture grounds, cattle shutes, ranch, corrals, bathing facilities, light, watering station.

Animal industry infrastructure: slaughterhouses, meat processors, dairy product processors, laboratories, cold storage houses, food industry, veterinary pharmacies; auctions, fairs.

This information, summarized in indicators, may be presented in cross-section maps by

geographic coordinates that are placed in the walls of the headquarters of the local veterinary unit, giving a quick and simple characterization of the local livestock.

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