

Discussion

Chairman : B. K. Soni
Y. Yamada

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Chairman (Soni): Up to this time we have been listening to the various reports from the honourable delegates from the countries in Southeast Asia and detailed reports from the scientific and research workers from Japan. Each delegate has presented the status of livestock in his country and the set-up of research. Some of the delegates have even given some information on the training facilities, the research set-up in the country and the importance of the livestock industry in the national productivity as such. At this session if we all could consider collectively rather than individually, or consider for the whole of this region rather than for a country by itself, I think the benefits which are expected to be acquired from this Symposium would be achieved.

I would now request each delegate to give his general comments, highlight the points which he might think to be required for the development of livestock in this area and the lines on which further action should be taken. We didn't make any special recommendation but if we all highlight the problems and indicate the line of action in which we could have some sort of regional cooperation, regional get-together, regional exchange, I think some of the advantages which are supposed to come out of the Symposium, will be there.

Now, there are a few points which some of you might like to bring out in the discussions. That is training facilities on a regional basis for the research workers and the scientific staff. Most of us have had training in the western countries either in Europe or the United States, but there is a possibility of developing self-sufficiency in training in the regional area. So, I would request some of you to highlight this point. Another point could be on the exchange of information. The delegate from the Philippines highlighted this very clearly that even though the literature is available sometimes it becomes difficult to understand because the terminology may be difficult. So, some of us could suggest the ways and means of developing regional cooperation in the exchange of information and literature so that duplication and the waste of scarce resources could be avoided.

In theory, most of the germ plasm in this area has come from the United States and Europe but I am sure some of our countries are in a position to benefit by mutual exchange, by mutual availability of the germ plasm which may be suitable for our own countries. By germ plasm I mean the availability of the cattle, availability of the semen, the fertilized eggs and other materials as such.

Masintan: I have the opinion that training of staff has the first priority in every development plan because it is a fact that even though you have many of the resources, the personnel is of first priority. We have the same ecology particular for Asia, especially for Southeast Asia, so I think it will be possible to cooperate in carrying out the same research. For example, I will mention here that in my country, the egg production of duck will be of importance. Then a research will be conducted with cooperative basis with other countries, so that other countries can make profit of the achievements done in Indonesia. Anyhow it is a waste of time and funds when all Asian countries will do the same research experiment of this duck problem. So I am of the opinion that in the future there will be such dairy institutes on animal production. I don't know which country, or which area but there should be an example in cattle production or something like that.

Khim: At present time, Khmer Republic suffers from an aggression of war. Thus the animal resources are decreasing and all animal research works already done have been destroyed.

After the war, we hope for helps from friendly nations such as the United States, Japan, England, France etc. for reconstructing the country and developing agriculture and animal production.

Kassim: We have just started organized research in Malaysia, therefore, we are looking forward to very close collaboration with our neighbouring countries including Japan in the development programs ahead. I think this is the general opinion of our neighbouring countries that we are very short of trained research personnel and this, being coupled with inadequacies of facilities, has made, or has slowed down research programmes of animals, the main sources for food in this region. In the light of real food shortage and as to our duty to the livestock industry, I think more coordinated efforts and close cooperation should be encouraged among all of us within this region so that there may not be so much duplication as could be avoided.

I mention the lack of training facilities of research personnel because I think this is one of the main drawbacks in the research that can be carried out by all of us. So, I implore those countries which have more facilities and trained research personnel, that opportunities be given to some of these developing countries to make available those facilities.

Another point, which I want to elaborate on is that the training should be at the post graduate levels whether for degrees or specialized short-term programmes in specified fields of research to research personnel. The training of technicians who will support research personnel is also important.

I think it is our great responsibility to introduce different temperate zone animals in view of the duplicating some of our resources, and I think the stress should be put also on conservation of the genetic resources or genetic germ plasm of the local animals that have been bred for years within those environments. I think we have heard that environment plays a great part in the eventual performance of the animal. Therefore more stress should be put on environment physiology and the utilization of the available ingredients that are grown within the region and to reduce the pollution problems. We have to use the by-products of these ingredients or these processing enterprises within the region. Besides the domesticated livestock we should also endeavour to increase the production of other livestock that we have inherited or have lived in this region since time immemorial. I hope that we will put as much effort into the production, the production capacities of all species of livestock and also fisheries within this region.

Mensalvas: We in the Philippines recognize that the Japanese Government should be the leader in the field of animal production and research. I also gather that every country in South East Asia has so many common problems in this field. Of course there are problems that are entirely unique for individual country but on the whole most of the problems that were presented during this Symposium are quite similar. For instance feed problem is not only true in my own country but in all the countries of the region. Now this feed problem of course is not limited to the cereal grains, it is more on the protein supplements. For a number of years the Philippine Government had been depending on imports particularly from Peru on its fish meal requirements and partly from Japan. Then something happened in South America, now Peru has stopped entirely the exportation of fish meal. So we have no source of fish meal except from Japan, but the fish meal coming from Japan is also very limited in quantity. The supply of soybean oil meal, as I mentioned in my paper, is also the number one problem of livestock production in the Philippines today. It was so important that even our President has given an order to all institutions related or connected with the development of animal industry to conduct

research to try to find out substitutes for fish meal and soybean meal. In the case of soybean meal we have already started planting soybeans but in the case of fish meal it is still a problem. I don't know whether we can replace this with something else. These are the main problems of my country and I hope that the other countries, especially Japan could help us in this very important problem.

Now, the other problems are management problems such as low productivity, low fertility and high mortality and of course there are other problems in breeding and in the various aspects of meat processing.

During the Symposium, I learnt that the problems that we are facing are being worked out also in other countries. Now, I hope that our activity should not be limited only to holding of symposiums but we should go as far as exchanging experts or technical people in various fields of animal production, so that we can really help one another. I hope also that this Symposium should not be the last one held on the initiative of the Japanese Government, but there will be some more in the years to come.

Siew: It is very difficult to review the very wide subjects of this Symposium, of which we have been discussing over the last three days. But some common factors, at least in two or three countries, arise out of the discussions. Now, I could very briefly pick up some of these common factors. We have countries which have expressed the lack of research capabilities in their own settings because of political or financial reasons and because of lack of technical experts or geographical situations.

I would like to especially touch upon the topic of exchanging research information and findings. We have seen that in all the countries represented here, research has been limited because of various factors. Here in Japan we have seen that there is a large number of research personnel in various fields. Here you have the ability and the means to go in depth into the various fields of research but I think that there is lacking the opportunity for a wider application of some of these findings and I see the possibility for greater cooperation in the application of the basic findings perhaps in Japan. In some of the other countries there has also been the problem of the question of communication. I think language is a barrier but it should not be a barrier that constrains us for too long a time. I feel very sure that in the very near future this small barrier will be easily overcome.

The other thing I wish to raise is that in the field of animal research, the subject itself is so wide and complex that it is really beyond the capabilities of the means of any particular person to deepen any subject. There is a need in the future for greater cooperation for specific subjects, such as poultry and pig production, animal nutrition and reproduction. I see also there is a possibility for greater exchange of the information on the status and in particular the trends of development, and I think that this Symposium has achieved a great deal in giving us the understanding. I think that it is up to us to further amplify on this information which we have gathered, and perhaps with proper direction and proper guidance we may be able to take advantage of specific issues. I may just say that perhaps the Tropical Agriculture Research Center which I know is already very active in this field of going out and initiating various research projects in various countries, could perhaps widen its scope of operation to other specific fields of animal research.

Dhanapala: I understand that in the past they have organized similar symposiums mainly on different aspects of crops and that this is the first time that they have organized a symposium on certain aspects of animal production. A symposium of this type apart from the fact that you come to know and get information on these topics, brings us into personal contact with scientists of similar interests and this is a very valuable purpose of this international symposium. I think a symposium

like this should be held on a regular basis and it is not necessary to have it in Japan always and we could go around to all these countries which are participating here today. Certainly I would think that my country Sri Lanka would be more than happy to be the host for the next Symposium.

You mentioned about the exchange of scientists, Mr. Chairman, I must mention that the Tropical Agriculture Research Center has a scheme for sending out scientists to developing countries to work on problems of mutual interest. This is a very useful scheme and I am very happy that my institute in Ceylon was able to bring about this link with the Tropical Agriculture Research Center and we have one scientist working on cattle research in Ceylon. Apart from the fact that he helps to solve some of the problems, he is also able to train his counterpart officer. I think the Tropical Agriculture Research Center should spread this scheme to other developing countries.

Some of my colleagues have also mentioned about the exchange of information. As you know, there is now a literature explosion, it is almost impossible to try and keep track of the various bits and pieces of information that appear in the widely scattered journals. I would therefore suggest that Japan Agricultural Research Quarterly (JARQ), one of the publications of the Tropical Agriculture Research Center, devotes one section to animal production including pastures. Each country interested could have an official correspondent who would communicate with the editor and give out certain information which would be useful to the other persons in the area. I think this is a scheme that we should think about, there is no need to make a suggestion today but maybe the Tropical Agriculture Research Center could think on these lines whether it is possible to have a section where we could have abstracts of information of practical nature. I am not referring to the highly technical articles which are appearing in journals devoted to those, but I am referring to some practical hints which we have gathered from this type of symposium.

Tim: Concerning about the topic of training that the Chairman has mentioned, I think I fully agree with the delegates from Indonesia and from Singapore. I duly accept that it is very badly needed by the developing countries, especially Thailand. We do have several things that we would like to do, but directing the personnel is one of the most serious problems that are facing us at the present time besides the financial problem and others.

Concerning about the information I also agree that we are still lacking information from our neighbour countries of Southeast Asia. We have an annual conference about the beginning of February in Bangkok but it is only a national one. From my own opinion I think that if we can get some people who could act as an access of the interchange of technical papers, that will be very useful for our neighbour countries and I think the Tropical Agriculture Research Center of Japan can accept this proposal.

Certainly we do need germ plasm from several countries, especially of dairy cattle from Japan. From our own side, I do not think that we have very good germ plasm at the present time for the contribution.

Bui: As you well know, our country and our neighbours have been at war for a long time. Our Government is planning and ready for the post war reconstruction and development. I don't think that we lack the capability of producing the food, but we are rather exploiting the natural resources. In our country the natural resources are plentiful for food production but with the long war we cannot produce as we wish. I hope we can apply the results of researches so far have been acquired in other countries to our work of the post war Reconstruction and Development Plan.

The next question in my mind is that in the very near future the people and the Government of Japan would cooperate and assist the Government and the people of South Viet Nam at least at the beginning of the Reconstruction and Development Plan in the field of animal production. We can even have joint ventures in the field of animal production. Actually we are having the cooperation of the Japanese scientists to Viet Nam at the moment but we hope to see closer cooperation and assistance in the near future.

Masintan: A copied paper on duck, as a source of egg production, will be sent to the delegates in their own countries. I thank the Secretariat for the kindness for doing it.

Chairman (Soni): Duck and the buffalos are actually of a regional problem. Nowhere else in the world research of these two species can be done in concentrated and detailed ways, as we can do this in this region. So, from the international point of view also, it is almost our responsibility that we do this research on the buffalo and the duck for this region as well as for the whole world.

Now, I will request Dr. Abe to give comments, he will cover most of the Japanese side I am sure, but still I am going to request others to also add a few words after Dr. Abe has given his comments.

Abe: I am very happy to hear the valuable information on the situation of animal husbandry in respective countries and I have to confess that we did know too little about our friends in the Asiatic countries. I am convinced that we have to build real cooperation between those countries in every respect of research in animal husbandry.

Mr. Chairman mentioned four points about the building up cooperation of researches. They are the effective use of training facilities available in the region, exchange of information, avoidance of duplicates, and germ plasm reservation and mutual exchange. All these items seem to me highly important. However, I should like to place special stress on the exchange of personnel for training and joint research. I say this because it is most important in building real cooperation. If you want to build up real cooperation the most important is human relationships. I am sure the exchange of personnel for training and joint research will foster real close, human relationships and friendships which will be most important for the future cooperation. I believe this is slow but most steady way to build a real cooperation in the future.

Nishikawa: I hope that in the near future we have specialized annual meetings in the fields such as physiology, nutrition, reproduction, animal products and so on. I myself would like to have a society of animal production including Far East and Southeast Asian countries. I attended a conference on animal production which was held in Melbourne this May, and the World Association of Animal Production recommended to take a close relation in each region. Europe has one organization for animal production, so-called European Society for Animal Production and recently I was requested to be a co-editor of a new journal of animal production of European countries, named Animal Production Science Journal. Perhaps at the beginning of next year, the first number of this journal will be published. In Asia we have only inactive communication, and if possible I like to establish an organization to exchange the information of achievements and to have close relations and communications.

Chairman (Soni): Dr. Nishikawa has raised a very important point and given a very good suggestion also. Just as we have in Europe the European Chapter of the World Association of Animal Production, the Animal Production Associations in this region could be brought together. I, from India, who happens to be the Presi-

dent of the Indian Association of Animal Production, would welcome this idea and would like to help you in organizing this and providing any other help if necessary.

Tatsumi: I thank Dr. Kassim bin Ismail who mentioned to have more interest in the environment problems. Heat consists of high temperature and high humidity. This is one of the main problems in our country as in the Southeast Asian countries, but it is difficult to clear the effects and mechanisms especially of humidity upon animal production. Practically, to control heat economically is very difficult and we have to expect future studies on this problem.

Kameoka: During the three days of this Symposium I learnt very much from the reports presented by the delegates from various countries. In the near future, I want to study the various feed stuffs in Southeast Asian countries concerning the nutrient utilization and processing for various breeds of livestock. Livestocks in Asian countries are something different from my country and I believe the mechanism of the utilization of nutrient differs.

Speaking of this Symposium, I like to have a separate section in the future, for instance, poultry husbandry, swine husbandry.

Yoshida: During the last three days I got very interesting information in various fields, especially my special interest was feed supply which is my major project. I was interested in the report of Dr. Kassim bin Ismail from Malaysia where the most of the concentrates were imported, and Dr. Mensalvas's report, in which he informed us that the Philippines are looking for a substitute for soybean meal and fish meal. The problems of feed supply appear to be common in all the countries and in the future demand for both food and feed will increase at a very rapid rate all over the world. So I believe it is getting more and more important to find new feed stuffs in both natural and industrial resources. In this field of research there are a lot to be cooperated together in the Asian countries by exchanging information, research personnel and also test materials with each other.

Fujimaki: I must confess that my eyes in the field of research have been directed towards far western countries but on the occasion of this Symposium I have realized the present situation to promote scientific works cooperating with the scientists of the countries whose delegates are here. The importance of study on water buffalo, as some of the delegates have told us, has become vivid to me. In the near future, the studies on animal products to utilize them as more nutritious and more palatable foods will be very important in our neighbouring countries.

Chairman (Soni): Now, this completes the round of comments of our speakers. Now, I will request others who are listed as participants.

N. Yamada: All the distinguished delegates from abroad expressed their appreciation to the holding of this Symposium. We in Japan are more than grateful for that. Also I noticed that all the distinguished delegates expressed their wishes to take this Symposium as a first step for the further enhanced international cooperation in the field of animal research.

Regarding the future cooperation I would like to give you very briefly some information which will be useful to all of you. First of all, we have to discriminate the Tropical Agriculture Research Center from OTCA. We have two different organizations in Japan. OTCA is the abbreviation of the Overseas Technical Cooperation Agency. This is a semi-governmental organization dealing with technical assistance to the so-called developing countries on behalf of the Japanese Government, actually on behalf of the Ministry of Foreign Affairs. It deals with the sending of Colombo Plan experts to developing countries or establishing some technical assistance projects upon the request of the recipient countries with the government to government agreement. These are just technical aid or technical assistance programmes.

The Tropical Agriculture Research Center is not an aid agency but a research institution; one of the thirty institutions belonging to the Ministry of Agriculture and Forestry. Because it is a research institution, we are conducting research works on the technological aspects of tropical agriculture. But as you know Japan is not located in a tropical region. What we are doing now is to dispatch our research staffs to the research institutions abroad and conduct cooperative research works in close collaboration with scientists abroad standing on an equal footing and uniting our efforts to solve the problems in the field of agricultural technology. However, due to very limited amount of budget and number of personnel available at present, only four staff members are studying abroad in relation to the animal production in a wider sense. One is working on forage crops in Thailand, staying at the Pak Chong Forage Crops Station. Two scientists are working on the foot and mouth disease; pathological investigation on the foot and mouth disease virus at the Foot-and-Mouth Disease Laboratory of the Department of Livestock Development of the Royal Thai Government. The last one is an animal husbandry researcher, Dr. Matsukawa. He is attending this meeting here and is working at the Veterinary Research Institute of Sri Lanka, under the kind support of the Government of Sri Lanka, and under the kind guidance given by Dr. Dhanapala, Director of the Institute. Thus, the total is only four working in the field of animals production. But I am very much keen in increasing the number of the staff members who can work in close cooperation with animal research scientists abroad, particularly in the tropical Asian region.

Regarding the Symposium, we have a budget to hold a Symposium once a year and each time we take up a different topic because our mandate covers not only animal husbandry but also rice and other crops, forestry, horticulture and others, excluding fisheries. So that, the topic of the Symposium is different from year to year. At this symposium, we take up animal industry in a narrower sense, i.e., genetics, breeding, reproduction and management including nutrition. In the future we may have another symposium dealing with some aspects of veterinary science. It is still premature to say in what year and what kind of symposium we will have but it is my intention to continue this kind of activities.

Finally, about the JARQ. This is the abbreviation of the Japan Agriculture Research Quarterly, which Dr. Dhanapala has already mentioned. As you know perhaps all of the research institutes in Japan issue their own publications in order to report their research results. Unfortunately almost all of these publications are in Japanese, and there are only a few lines of English summary. It is usually very difficult for foreign scientists to understand fully the purpose of the research, methods of experiments, and the results from such a brief English summary. The Japan Agriculture Research Quarterly presents papers in English of about seven to eight pages. This Journal covers not only plant science but also animal science. Therefore, by paying attention continuously to articles of JARQ dealing with animal industry, you can follow up what is going on in Japan. This is free of charge and is being sent to libraries of the main research institutions in the region.

Chairman (Soni): I am glad that Dr. N. Yamada clarified this point because it is a very important piece of information and will help clarify the thinking of some of us. The moralities of the cooperation between the various nationalities have to be understood before anything is worked out.

I would request if any member of the Organizing Committee who has not spoken would like to say a few words.

Masaki: After Dr. N. Yamada, I have nothing more to say but if I add I think there are still many problems which should be solved. As Dr. Soni has pointed

out the day before yesterday, we Japanese scientists have had few occasions to study *Bos indicus*. This is only one example. Anyway, I hope our future cooperation in research and technics in animal industry will be successful.

Naito: From the reports of the delegates, I have learned so many things, particularly of buffalo and Bali cattle in which I have long been interested. As to the cooperation, my opinion is just the same as Dr. Abe's that it is most important to establish mutual friendship. In this connection, I hope young Japanese scientists have more intention to visit the countries in Southeast Asia and to do cooperative works with you on the problems of livestock in the tropical region.

Shibuya: As the Director of the Tropical Agriculture Research Center, Dr. Yamada noticed already there are several difficulties such as finance and so on but we shall try to continue our communication with you delegates of Southeast Asian countries on the research of the livestock industry. I hope that we will have another chance to meet together in the near future.

Suzuki: We Japanese scientists have studied animal science in many detailed parts in different fields but I think for the cooperation of research work in the future it is necessary to understand social and economic situations or backgrounds of the Asian countries. So, it was very useful at this time that you scientists from abroad made touch on the economic backgrounds of your own countries in your introductory statements.

Chairman (Y. Yamada): From the discussions I realize that facing the world crisis of food shortage, animal production is becoming more and more important as a source of protein. So our scientists are making efforts to enhance animal production technology. However, it is quite difficult to make an assessment of the technological achievement in all the fields of industry. For instance, Japan has a very high growth rate economically. Nowadays, we are facing another problem due to pollution and over pace of growth. Therefore, all of us in the animal industry, and people who have attended this Symposium should realize in the future that we should establish very appropriate research growth not only in our own field of science but also in all aspects of agriculture so as to secure all resources for human beings.

I also realized that when I visited Southeast Asia, I have been told from many friends there that in the past many scientists who visited this region played for their own interest, not to enhance the welfare of the people living in the countries. I myself was particularly concerned about this to establish good understanding and fine cooperation in the future. So, whenever you have any suggestion to us from your kindness, please tell us without any hesitation and please give us the necessary information before we make a further step, otherwise we will make our own decisions to the wrong way. We must accept these things at the beginning to establish the friendship and fine cooperation.

Ohnishi: The progress in animal research in Japan is somewhat remarkable in recent years but animal production is one of the youngest parts of agricultural industry in Japan. Therefore, animal research in Japan has so many problems akin to the Southeast Asian countries, such as protein supply and heat tolerance of cattle in the southern part of Japan, which are very serious still now. I believe we can cooperate and have to cooperate with those southern countries.

Chairman (Soni): The delegates have highlighted the importance of this Symposium, they have brought out that for successful industrial development of the livestock as a profession in this region, research is essential. The research needs to be of tropical nature, of applied nature and supported by the basic or fundamental research at the few selected centers, so that there is not much duplication. Most of the delegates have stressed the need for training, and training at all the levels,

post graduate, at the level of specialists and at the level of technicians. A training available in circumstances or ecological conditions in which a person has to work would have a better utilization than training taken in the areas, or in the countries which are very far or removed from the actual practical difficulties.

The members have also highlighted the importance of availability of information either on a regional basis overcoming the language barrier. Now, FAO is also working on these lines. I had occasion to attend one of the symposiums and meetings arranged by FAO on the Agriculture Research Information Service. I think that in this region also we can work out a common programme by which the language barrier is removed. Most of us have denied the information of the Japanese research works because what we get in the abstract published by the Commonwealth Bureau of Agriculture or by other bureaucracies does not justify to the depth of the research conducted in Japan. So, I would support the idea that there might be a journal even on the tropical livestock production which could highlight the research achievements, not only in Japan but in this area.

The idea of Dr. Nishikawa to organize a regional chapter of the World Association of Animal Production, has a lot of sense in it and I think all of the delegates will like to see how we bring that about.

Another point which was highlighted and which is becoming more and more important is the pollution problem. Some of the countries where the industrial growth rate has not been very high, will not appreciate the problem but it is not too long before every country in the region will be faced with it. So, it would be essential that research on the disposal of animal waste, the development of the housing which can take care of the pollution and other similar problems, are developed.

I think that covers most of the points especially the one brought out by Dr. Abe about the personal contacts, I think there is nothing better to improve the world understanding other than the personal contacts of the scientists, the research scientists. The research scientists can afford to go out of the political problems, it can work out a scheme by which the countries can cooperate.

In my personal capacity I would like to thank all of you.