

The Epidemiology of Foot-and-Mouth Disease in Nepal

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ABSTRACT

Foot-and-Mouth Disease (FMD) is endemic in Nepal and is of significant economic importance in the agricultural production system of the country. The disease is a major constraint on effort designed to upgrade the quality of livestock through the introduction of high yielding, improved breed of animal. Out of 75 districts, serotypes of FMD virus has been identified in 60 districts of Nepal. Of the seven standard serotypes, O, A, C and Asia-1 have been isolated. The socio-economic situation in the country is not conducive to the adoption of a slaughter policy in the control of FMD. Vaccination is likely to be the cornerstone around which any future policy will be built.

The economic losses due to FMD in Nepalese context are discussed. The epidemiology of FMD and vaccination strategies for FMD prevention and control are outlined.

KEYWORDS: Livestock - Nepal - Foot and mouth disease - Crossbred - Vaccine - Control - Region.

INTRODUCTION

Livestock plays an important and integral role in the agricultural farming system in Nepal. Livestock population in relation to arable land and animals per persons are large by Asian standards and livestock productivity is low. Low livestock productivity is attributable mainly to wide range of endemic livestock diseases where FMD accounts to be the top most, other factors include poor nutrition, low genetic potential and traditional management systems etc. Livestock farming is subsistence and consumption oriented in rural areas. Cattle and buffaloes provide the majority of the draught power for cultivation and harvesting and the main method of transportation in rural and sub-urban areas. Buffalo are particularly important to the people of Nepal because they are kept for multiple use, i.e. milk, meat, and manure production, draft power and biofuel. Live animals are imported as well as exported in large numbers from neighbouring countries and vice versa.

In recent years, there is a sharp increase in the number of crossbred cattle population as a result of continuous efforts of Department of Livestock Services to improve productivity of local cattle through artificial insemination and extension activities and commercialization of dairy farming. The improved breed of cattle and buffalo are highly susceptible to a devastating disease like FMD which may produce fatal outcome and heavy economic losses to the farmers.

ECONOMIC IMPORTANCE

The economic importance of FMD due to the loss of productivity following infection is enormous. Infection in draft cattle causes a serious problem in tillage on which the preparation of agricultural land is fully dependent. It virtually paralyses the cultivation work and thus causes a great shortfall in agricultural

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output. In dairy cows sharp drop in milk production, abortion and chronic mastitis is very common. In suckling calves the mortality rate is often very high. Moreover, FMD free countries are reluctant to import live animals and livestock products from countries where endemicity of FMD is well established. Thus, the enormous loss caused to the country by FMD is incredible.

Various study reports clearly indicate that FMD is the priority livestock disease of significant economic importance in Nepal. It has been estimated that the economic loss due to FMD in Nepal by the end of 1995 would be 144.8 million Nepalese Rupees (Hassel and Associates, 1979). The estimation was based on economic losses due to FMD in cattle and buffaloes in terms of productivity and draft power only. In addition, a study covering six districts representing three diverse agro-ecological zones showed that FMD contributes 41.2 per cent of total economic losses in animal production due to livestock diseases in Nepal (APROSC, 1991). Similarly, a study on economic impact of livestock diseases in rural areas indicated that FMD is responsible for 26% economic losses in overall livestock production (Lohani and Rasali, 1992).

Considering the fact that FMD infection is responsible for 20% losses in milk production and 10% losses in meat production, it has been estimated that economic losses due to FMD infection is 398 million Nepalese Rupees per year (Karki and Gongal, unpublished report).

EPIDEMIOLOGICAL SITUATION

FMD is endemic in Nepal since time immemorial. Epidemic outbreaks of FMD have been reported from time to time in cattle, buffaloes, sheep goats and pigs. It is of interest to note that one of the few documented cases of naturally occurring FMD in elephants was recorded in Nepal in 1975 (Pyakural et al, 1976). It is reported in all parts of the country irrespective of altitude and climatic variation. Although the outbreak of FMD is reported all the year round, high incidence of FMD is noticed during monsoon and post-monsoon period. The reason could be extensive movement of animals for agricultural activities during the rainy season and unrestricted importation of large number of food animals across the border during religious festivals in October and November. In fact, movement of livestock takes place across all the borders of Nepal. It is seasonal in the north whereas it is all the year round in the south. Most probably, the single most important factor in the continued and high frequency of occurrence of FMD in Nepal is the movement of livestock. Constant movement of livestock across national frontiers provides the mechanism of introduction of different types of viruses into the country.

The diagnosis of FMD especially in cattle is easy due to distinct clinical signs and symptoms and epidemic character of disease outbreak. Therefore, even farmers can easily identify the disease. Rural farmers did not report the disease mainly because the sick animals recover quickly and it is not a killer disease.

The laboratory based FMD diagnosis was started in 1965 when specimens from suspected cases of FMD were sent to the WRL for confirmatory diagnosis. Since then, serotyping of FMD virus from local isolates have been recorded. Different serotypes were identified for the first time in following years.

<u>Serotypes</u>	<u>Year of identification</u>
O	1965
A	1967
Asia-1	1984
C	1990

Subtype A₂₂ was recorded prior to its detection in India in the early seventies (Ferris et al, 1992). Serotype C was recorded from 1990 to 1996 whereas other serotypes are recorded from time to time. Out of 75 districts, serotypes of FMD virus has been identified in 60 districts of Nepal. Of the seven standard serotypes, O, A, C and Asia-1 have been isolated. The distribution of serotypes of FMDV during the period of 1983 to 1997 is presented in Annex 1. The results of FMD virus serotyping in the FMD laboratory of Nepal and the World Reference Laboratory of United Kingdom over the past 10 years demonstrate that O and Asia-1 are

major dominant serotypes of FMD virus found in this country. Asia-1 was found to be the major serotype responsible for epidemic outbreak of FMD in the year 1994/95 and 1996/97. The prevalence of different serotypes of FMDV in neighbouring countries is presented in Table 1,

Table 1

Distribution of Serotypes of FMDV in Nepal and Neighbouring Countries

Countries	Serotypes			
	O(%)	Asia-1(%)	A(%)	C(%)
Nepal	69.2	18.6	8.4	3.8
India	54.4	21.4	14.1	10.1
Bangladesh	57	34	9	0
Pakistan	38.5	29.3	14.4	

As can be seen from Table 1, the prevalence of different types of FMDV is similar in the countries of Indian sub-continent. Serotype C is rare in Nepal, Bangladesh and Pakistan. Very little is known about prevalent types of FMDV in Tibet. It has been reported that O and A are predominant serotypes responsible for epidemic outbreaks of FMD in the People's Republic of China and Bhutan.

The results of FMD virus serotyping in the World Reference Laboratory, UK shows that there is little similarity of FMD virus serotype A with Indian vaccine strain but it has close antigenic relationship with Saudi Arabian vaccine strain SAU 23/86 which is being used in Saudi Arabia since 1986. Subtype A₂₂ was recorded prior to its detection in India in the early seventies (Ferris et al, 1992). A comparison of the Asia-1 field isolates with the two vaccine strains PAK 1/54 and IND 8/79, indicated that IND 8/79 was antigenically most closely related to the Nepalese isolates. Similarly, a vaccine containing the strain O IND 53/79 would have been antigenically suitable for use in Nepal against the type O outbreaks during the period 1988-1990 (Ferris et al, 1992).

CONTROL STRATEGIES

The socio-economic situation in the country is not conducive to the adoption of a slaughter policy in the control of FMD. As outbreak of FMD occurs everywhere irrespective of altitude and climatic variation and extensive movement of food and other animals is observed in and around the country without proper veterinary sanitary inspection, vaccination of susceptible livestock animals is the best mean to protect animals during the epidemic outbreak of the disease. Vaccination is likely to be the cornerstone around which any future policy will be built. Potent, safe vaccine will be required for both prophylactic and emergency purposes.

The antigenic variation within a type has been recognised as a major impediment in launching a successful campaign against FMD. This is more relevant in those countries where the disease is endemic.

This results in a natural selection process of the field viruses during the course of the epidemic which occurs round the year (Mukhopadhyay, 1986). Therefore, constant updating of the vaccine strain in relation to the field virus activity is necessary for which monitoring of the subtype activity is essential. It is evident from the published literature that propagation of virus through a partially immune population may give rise to gradual antigenic drift which in due course of time may endanger the whole population through the emergence and establishment of a subtype in the field, thus putting the entire immunoprophylaxis campaign in jeopardy.

At present, polyvalent vaccine which includes serotype O, A, C and Asia-1 is imported in small quantities from India and recommended to immunize improved breeds of cattle and buffaloes. We do not know

whether the incorporation of Indian FMD virus strain in their vaccine gives enough protection against prevalent local FMD virus strain or not?. It is unfortunate that even after vaccination there are frequent reports of vaccine failure from different parts of the country. There could be many reasons for it. As compared to many other vaccines, FMD vaccines are relatively poor in many aspects. For example, FMD vaccines do not effectively protect the respiratory tract. As a result, a proportion of vaccinated animals which encounter the field virus are likely to become carriers, and thus pose a potential risk to any susceptible animals with which they may come into contact later (Donaldson and Kihm, 1996). If the vaccine virus is dominant to the field virus there will be no problem, but if the field virus is dominant to the vaccine virus there could be a problem. Once a non immune animal has introduced disease to a farm, there is a strong possibility that the immunity of some vaccinated cattle in close contact will be swamped. Perhaps, this is the reason why "Stamping out" policy is preferred for FMD control and eradication than mass vaccination. Nepal is out of exception. It is highly recommended to have a vaccination coverage of 95% for the successful implementation of FMD control programme in endemic zone.

Prior to 1980 there was no separate programme and infrastructure for FMD control in Nepal. After the establishment of a separate FMD Epidemiological Laboratory, planning, execution, monitoring of the control programme along with diagnosis and serotyping are being done within the country. Today, National FMD Control Section is a specialized government agency for the epidemiological surveillance and control of FMD in Nepal which is equipped with basic laboratory facilities for diagnosis and serotyping of the FMD virus. Initially, FMD laboratory was established with an objective of vaccine production but it was concluded that it is not economically viable. Now, epidemiologists, veterinary experts and livestock planners are realizing that FMD vaccine should be produced in Nepal using local strains of FMD virus. We can produce FMD vaccine with slight modification in the present structure of the FMD laboratory, but we need cooperation from some donor agencies.

Existence of various serotypes of FMD virus with great antigenic variation, high cost of vaccination, relatively short duration of immunity, shortage of vaccine and vaccine failure makes the FMD control programme very difficult. On the other hand, majority of Nepalese farmers did not understand seriousness of the disease problem because mortality due to the disease is very low. The productivity of local breed of animal is very low and therefore farmers could not see visible economic burden due to the FMD infection. In general, farmers are interested to vaccinate their animals when there is an outbreak of disease in the village area.

It is very difficult to control the disease in a country like Nepal which has limited resources, lack of trained manpower, poor infrastructure, service network and lack of free availability of effective quality vaccine. Even under such circumstances, we are advising to report FMD outbreak in time so that ring vaccination could be managed to contain the disease. In addition to that, we are recommending to launch regular vaccination of exotic and crossbred cattle and buffaloes as a part of District Animal Health Programme.

It is high time to develop a broad-based field epidemiological programme and a strong extension programme for educating the public regarding the importance of this disease in the productive animal population. We are proposing to establish a FMD vaccine bank at the central level so that farmers could get FMD vaccine in time. It will be possible to provide FMD vaccine in cheaper price when it is purchased in bulk quantities. It must be noted that private sector is reluctant to keep the stock of FMD vaccine for various reason and therefore, it is the prime responsibility of government to ensure adequate supply of vaccine for prevention and control of disease of national importance. Community based FMD control programme will be launched in the near future in some potential dairy belts and busy animal trading routes with the involvement of farmers group and cooperatives.

CONCLUSION

It is utmost necessary to study the local virus strains in depth to select candidate strains for incorporation in vaccines for prophylactic use in Nepal. In addition, attempts should be made to produce monovalent FMD vaccines in the laboratory for ring vaccination. There is an urgent need of international help for strengthening FMD control programme as a whole in Nepal.

FMD does not recognize national boundaries. It is the disease of regional and global importance. We have a long tradition of livestock trade with India, China and Bangladesh in different ways. Animal movement is almost unrestricted in Indo-Nepalese and Sino-Nepalese border areas for various reasons and it is difficult to foresee any dramatic changes in the control of animal movement in cross border areas only by executing legislative actions in coming days. The inter-dependency is well developed and well established among these countries of South-East Asia. The past experience of Rinderpest Control and Eradication Programme gives us a clear message that it is possible not only to control but also to eradicate highly contagious, devastating livestock disease only through regional and international cooperation. Since we are in the stage of declaring this region free of rinderpest in next few years, it is highly recommendable to enhance mutual cooperation for the control of epidemiologically complex disease problem like FMD on regional or sub-regional basis. We can not expect any change in overall situation if FMD control programme is launched in isolation in the countries of Indian sub-continent.

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Serotypes of FMD Virus Identified in Nepal, 1965 - 1997

Year of collection	Number of samples	Serotypes					No Virus Detected
		O	A	Asia-1	C	Mixed*	
1965	2	2	0	0	0	0	0
1966	3	3	0	0	0	0	0
1967	5	0	4	0	0	0	1
1968	3	1	1	0	0	0	1
1975	6	3	0	0	0	0	3
1978	1	1	0	0	0	0	0
1983	7	5	1	0	0	0	1
1984	40	12	8	7	0	0	13
1985	68	37	0	7	0	0	24
1986	31	10	3	0	0	0	18
1987	54	19	0	6	0	0	29
1988	113	25	5	6	0	0	77
1989	53	13	3	8	0	0	29
1990	80	41	0	2	1	1	36
1991	10	5	0	0	0	0	5
1992	5	2	0	0	1	0	2
1993	74	8	0	0	9	0	57
1994	64	9	0	8	1	0	46
1995	51	3	0	7	0	0	41
1996	100	30	4	0	1	0	65
1997	100	9	0	13	0	0	78
Total	870	238	29	64	13	1	526

* O+C

Serotypes	Percent
O	69.2
Asia-1	18.6
A	8.4
C	3.8

NVD(%) 60.5

Source: Institute of Animal Health
 World Reference Laboratory
 Pirbright, UK

Serotypes of FMD Virus identified in Nepal, F. Y. 1987/88 - 1997/98

Year of collection	Number of samples	Serotypes				No Virus Detected
		O	A	Asia-1	C	
1987-88	42	3	4	6	0	29
1988-89	44	6	3	10	0	25
1989-90	93	25	3	10	0	55
1990-91	90	20	7	24	2	37
1991-92	129	46	0	14	2	67
1992-93	74	7	1	6	11	49
1993-94	126	20	7	6	2	91
1994-95	100	9	0	15	0	76
1995-96	120	19	9	6	1	85
1996-97	100	9	0	12	0	79
1997-98	52	10	2	5	0	35
Total	970	174	36	114	18	628

Serotypes	Percent
O	51
A	10.5
Asia-1	33
C	5.5

NVD(%) 64.7

Geographical Distribution of Serotypes of FMD Virus, Nepal

Geo. Region	Serotypes			
	O	A	C	Asia-1
Mountain	8(14.5%)	2(12.5%)	2(14.3%)	5(12.5%)
Hill	28(51%)	10(62.5%)	8(57.1%)	22(55%)
Terai	19(34.5%)	4(25%)	4(28.6%)	13(32.5%)
Total	55(100%)	16(100%)	14(100%)	40(100%)

Source: National FMD Control Section
 Chapali, Budanilkantha
 Kathmandu, Nepal

Distribution of serotypes of FMDV Identified from field isolates, Nepal, 1983 - 1998

S. No.	Dev. Region	Districts	FMDV serotypes			
			O	Asia-1	A	C
1	Mid-Western	Dang	X	X	X	X
2		Pyuthan	X	X	X	X
3		Rolpa	X			
4		Salyan	X	X	X	X
5		Banke	X			X
6		Bardia	X	X		
7		Surkhet	X			
8		Jumla	X	X		
9		Mugu	X	X		X
10		Humla	X			
Total			10	6	3	5
1	Far-Western	Kailali	X	X	X	X
2		Doti	X	X		
3		Achham		X		
4		Bajhang	X			
5		Kanchanpur	X	X		
6		Dadeldhura	X			
7		Darchula	X			
Total			8	4	1	1
Grand Total			55	40	16	14
Nepal		61 Districts				

FMDV Serotypes yet to be identified in following districts

Taplejung, Panchthar, Saptari, Solukhumbu, Kholang, Manang, Myagdi, Dolpa, Rukum, Jajarkot, Kalikot, Dailekh, Baitadi and Bajura.

Total: 14 Districts

Source: National FMD Control Section, Budanuilkantha

FMD In Nepal

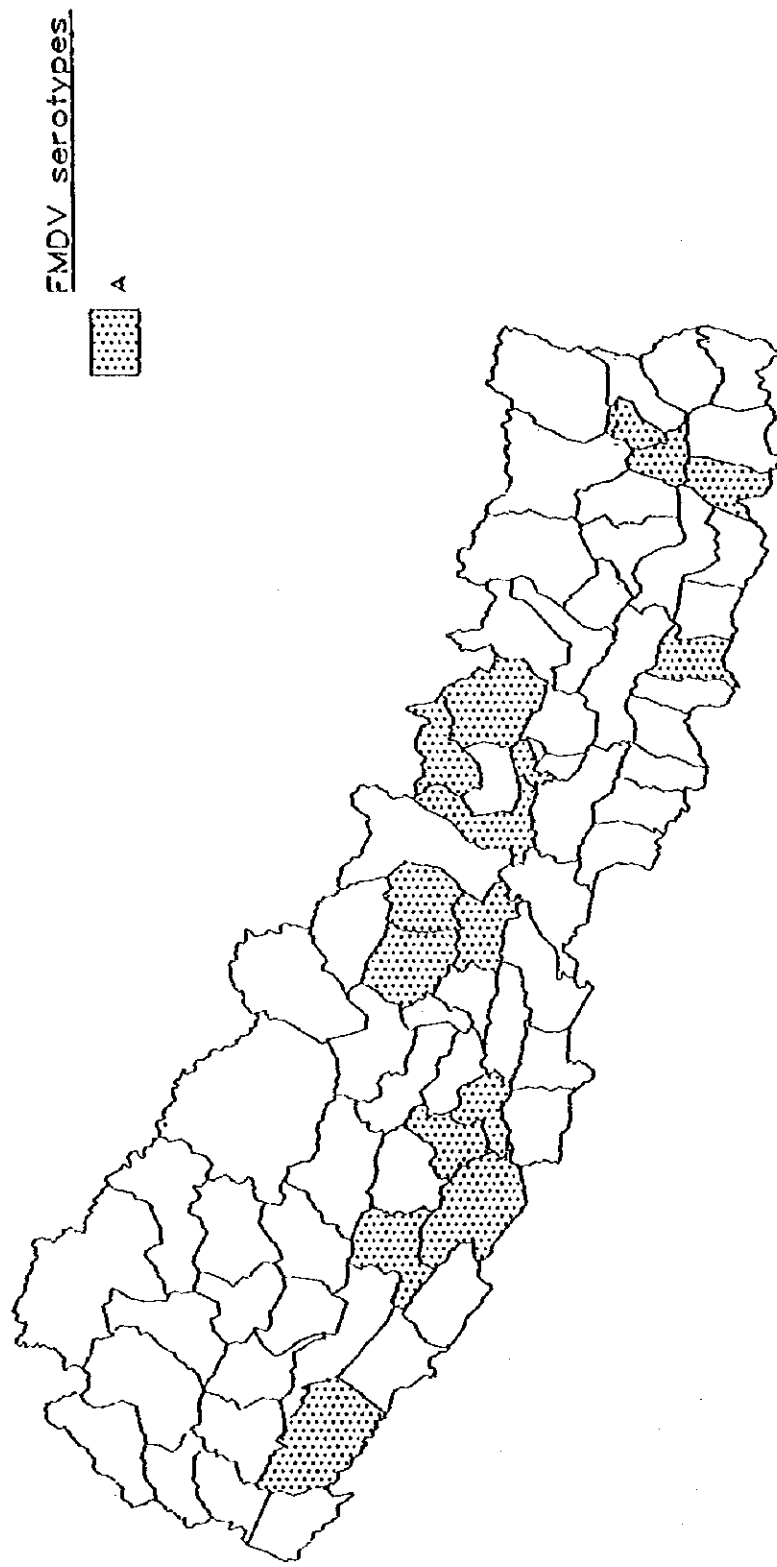
Animal species	Outbreaks	Cases	Death	Vaccinated
Sui	1	3	0	0
Cap	3	64	7	57
Buf	11	434	2	0
Bov	467	45763	448	13021

Source: Central Epidemiological Unit, Central Vet. Lab.

Distribution of serotypes of FMDV identified from field isolates, Nepal, 1983 - 1998

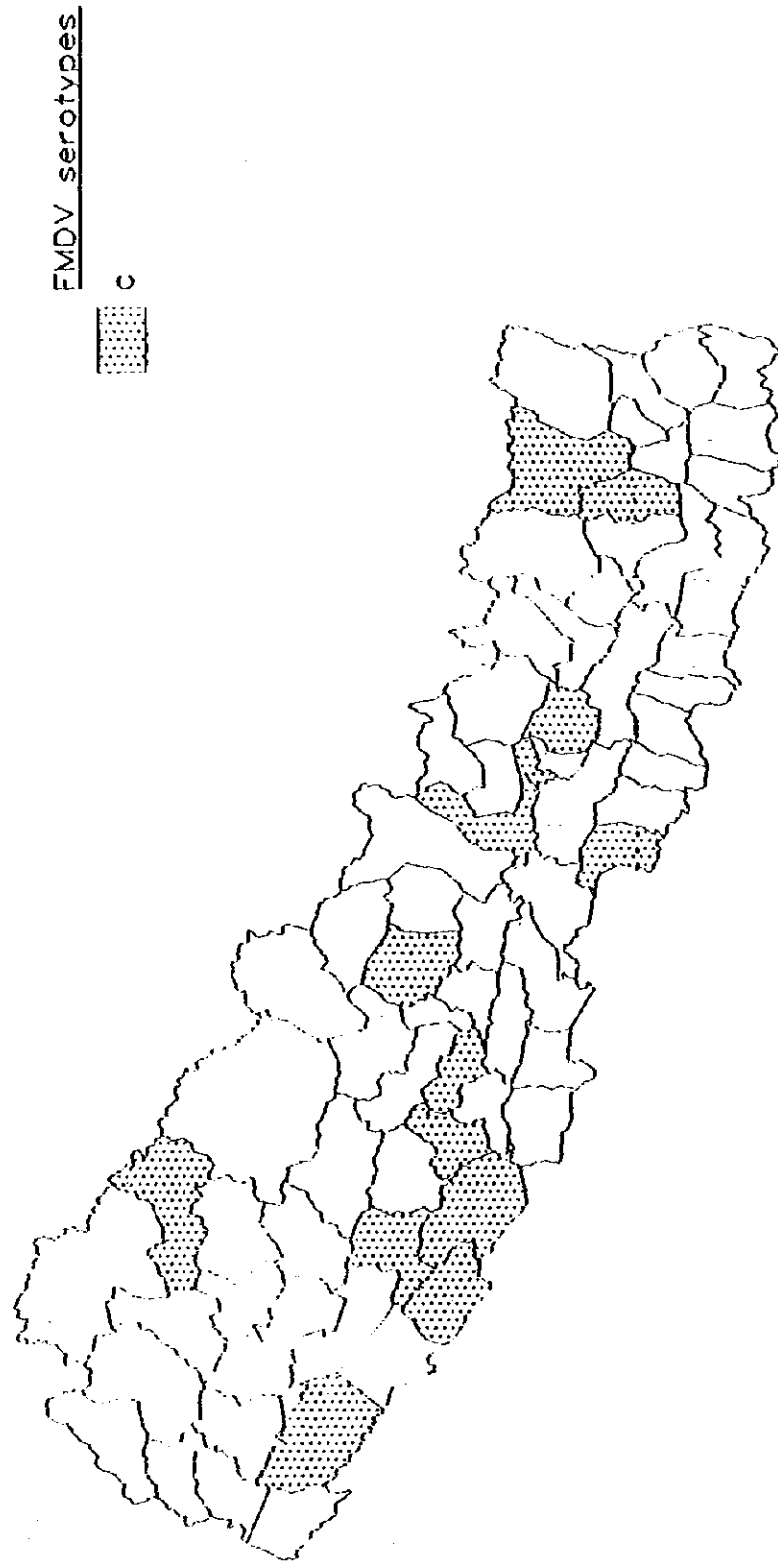
S. No.	Dev. Region	Districts	FMDV serotypes			
			O	Asia-1	A	C
1	Eastern	Ilam	X			
2		Jhapa	X	X		
3		Morang	X	X		
4		Sunsari			X	
5		Dhankuta	X	X	X	
6		Terhathum			X	
7		Bhojpur	X			X
8		Sakhuwasabha				X
9		Siraha	X	X		
10		Udayapur	X	X		
11		Okhaldhunga	X	X		
Total			8	6	3	2
1	Central	Dhanusa	X	X	X	
2		Mahottari	X	X		
3		Sarlahi	X	X		
4		Sindhuli	X	X		
5		Doljha	X	X		
6		Ramechhap	X			
7		Rautahat	X			
8		Bara	X			
9		Parsa	X	X		X
10		Chitwan	X			
11		Makwanpur	X	X		
12		Kathmandu	X	X	X	X
13		Lalitpur	X	X		
14		Bhaktapur	X	X		
15		Kabhre	X	X		X
16		Dhading	X	X	X	X
17		Nuwakot	X	X		
18		Rasuwa	X	X	X	
19		Sindhupalchok	X	X	X	
Total			19	15	5	4
1	Western	Nawalparasi	X	X		
2		Rupandehi	X			
3		Kapilbastu	X			
4		Palpa	X			
5		Argakhanchi	X		X	
6		Gulmi	X	X		X
7		Syangja	X	X		
8		Tanahu	X	X	X	
9		Lamjung	X	X	X	
10		Gorkha	X			
11		Kaski	X	X	X	X
12		Parbat	X	X		
13		Baglung		X		
14		Mustang		X		
Total			12	9	4	2

Distribution of serotypes of FMDV identified from field isolates, Nepal
1983 - 1998



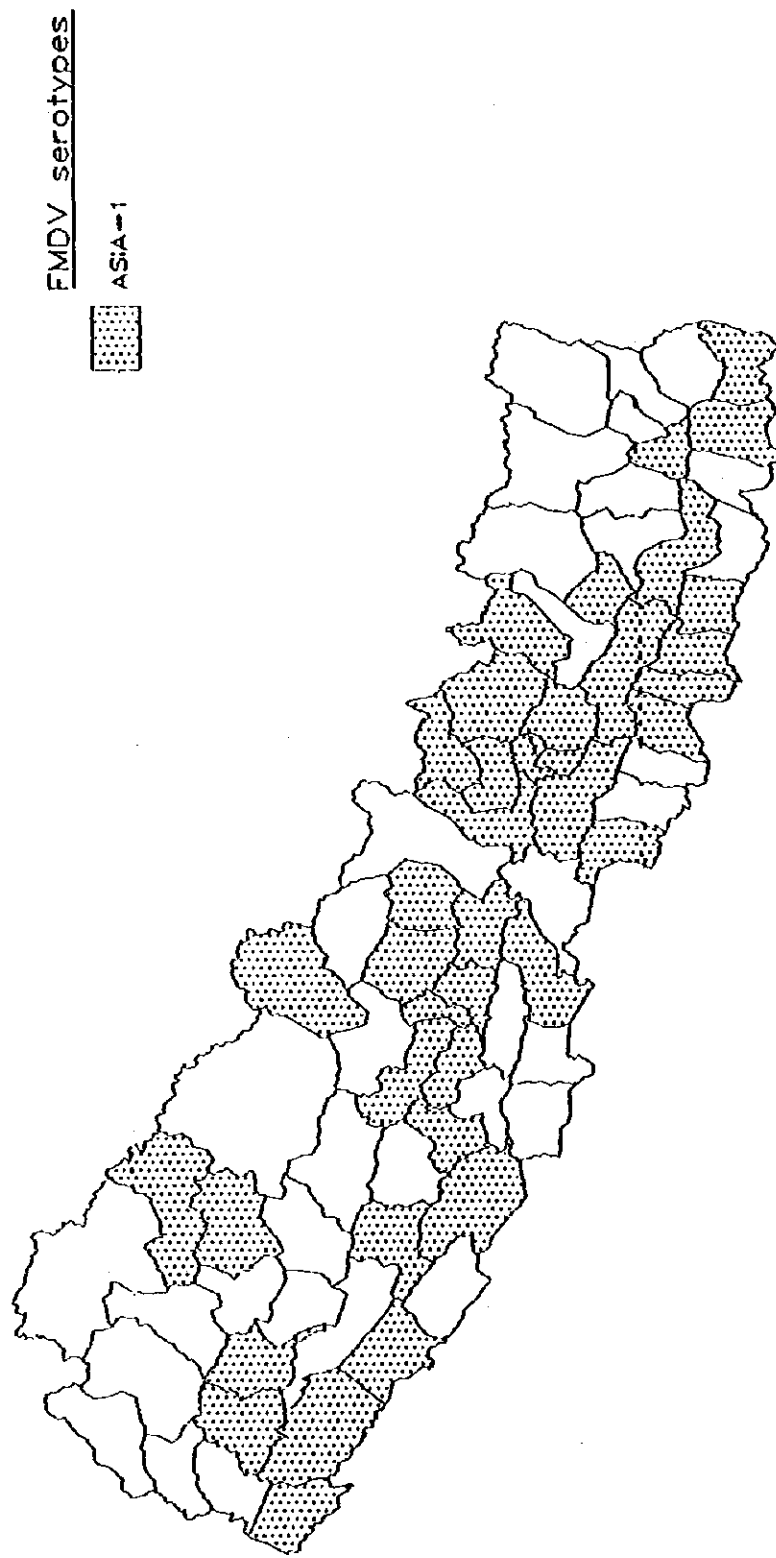
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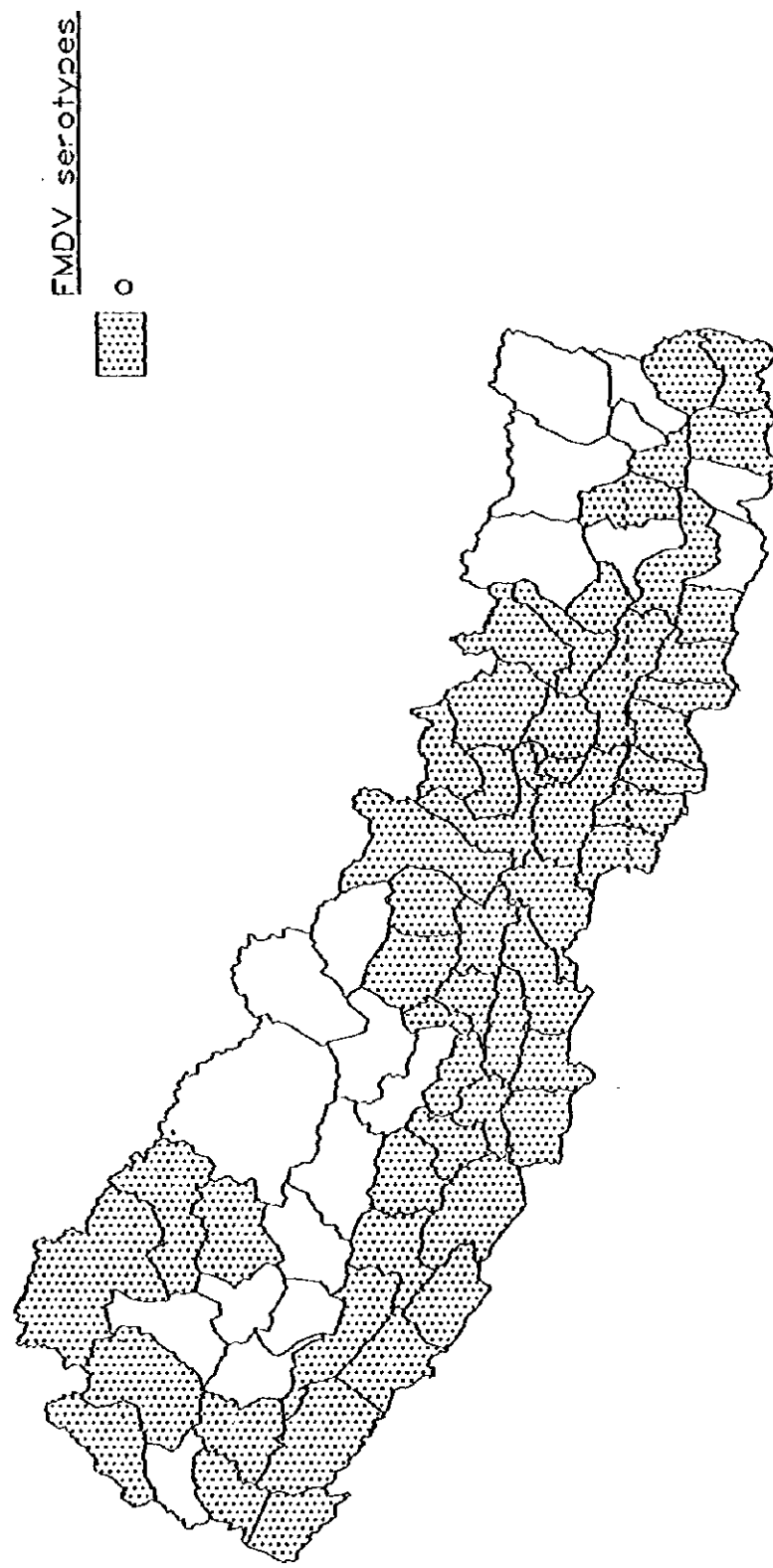


Distribution of serotypes of FMDV identified from field isolates, Nepal

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Distribution of serotypes of FMDV identified from field isolates, Nepal
1983 - 1998



Attention to Madhab Kharel

(1) 援助窓口に対する質問内容 (様式 1)

Questionnaire to the organization which nominates participants
(Please type)

Name and Position: VIJAY PARAJULI UNDER SECRETARY

Organization: National Planning Commission Secretariat.

1. How do you evaluate the group training course in "Laboratory Diagnosis of Poultry Diseases" from the view point of the national policy? (当該分野に関する政策)

Nepalese agriculture sector is in the process of transformation and poultry has emerged as a major subsector. A large amount has been invested in this sector, however, poultry laboratory facilities has still lacking. The course contribute to reduce such gaps in a significant way.

2. How were you choosing the organizations to which GIO (General Information) course brochures of this training are distributed? (当該技術分野の代表機関の選定)

The GIO seems quite informative, and thus we have not face any difficulties for choosing appropriate organization for the purpose.

Was it difficult to choose them?

A. Difficult

B. Not so difficult

If you choose A, please give the reason for it.

3. How did you choose or select applicants? (窓口での最終人選方法)

We send the training offer to the concerned ministry through appropriate channel and the ministry decides the appropriate candidates for the purpose.

(2) 研修員所属先に対する質問内容 (様式2)

QUESTIONNAIRE TO THE ORGANIZATION OF THE EX-PARTICIPANTS

Name and Position: Dr. ADARSHA PRADHAN, CHIEF (AHRD)

Organization: ANIMAL HEALTH RESEARCH DIVISION (AHRD)
Nepal Agricultural Research Council

1. Did your organization place any examinations to select the applicants?
A. Yes B. No

If so, please itemize the qualifications to be examined. (選考方法)

2. Choose and answer on each item. (コースについて)

(1) Duration of the course

A. too long B. about right C. too short

(2) Qualification

A. too specific B. about right C. too wide

3. Do you have any systems to disseminate the knowledge the ex-participants acquired in this training? (研修結果の普及方法)

A. Yes B. No

If yes, what kind of system do you have?

A. Seminar B. Report C. Others (Please specify.)

4. Do you think this training have been beneficial to your organization? (当該機関における研修効果)

A. very much B. somewhat C. No

Please give the reason.

- Increased capability to support the farmers at the time of outbreak of the disease
- Research activities increased in the area of avian health

5. Regarding the evaluation of the ex-participants. (研修員の研修成果の評価)

(1) Did their knowledge and technique improve?

A. very much B. somewhat C. no

If so, please give the reason.

- Efficiency in the laboratory work has been increased.
- Skill on poultry disease diagnosis and research has been upgraded.

4. How do you evaluate the training course in which participants of your country attended?
(帰国後、窓口機関での研修成果の確認)

The concerned ministry evaluates the participants performance and based on that performance the concerned ministry forwards their demand for the training courses for the next time.

5. Are there any other training opportunities rendered by other foreign countries?

Yes

No

If you choose A, please give an outline of the training: (他機関主催の研修との比較)

However, this particular training has not been provided by other foreign countries.

(2) Did the course have positive effect on the participant's individual career development?

- A. very much B. somewhat C. no

(3) Did their professional consciousness increase?

- A. very much B. somewhat C. no

(4) Did their leadership increase?

- A. very much B. somewhat C. no

(5) Did the participation in the course have influence on their promotion?

- A. very much B. somewhat C. no

6. Please give any other comment regarding the course. Please specify.

Course as such is very good. However, it would be better if the course be adjusted to expose the trainees on research aspect as well.

(3) 研修員に対する質問内容 (様式3)

QUESTIONNAIRE TO THE EX-PARTICIPANTS
(PLEASE TYPE)

Name (year of your participation) : Mr / Ms. Vijay Chandra Jha (1997)

Present Job : Animal Health research & Disease investigation.

Present Post : Veterinary Scientist (2).

1. Employment / Work Experience (経歴)

(1) Work Experience: Before Training at JICA

Date (from to)	Work / Job Position	Responsibilities
1988 to 90	Assistant Vet. officer	A.I., Disease investigation & treatment to livestock & poultry, livestock development & extension work.
1990-1996	Vet. investigation officer	Animal health research. Disease investigation.
1996-1997	Scientist (2)	

(2) Work Experience: After Training at JICA

Date (from to)	Work / Job Position	Responsibilities
1998 to up till now	Scientist (2)	Animal health research particularly bact. & viral diseases. Disease investigation in field & lab.

2. Evaluation of the JICA training program. (研修コース評価)

(1) Can you apply the knowledge and technique acquired in the training to your present job?

Please check (X) one from below.

_____ all most _____ some _____ a little _____ none

Please explain your answer briefly.

Most of the techniques I learned during the training programme are applicable to my present work. After this training I am more confidently performing the disease investigation & research work related to poultry disease.

(2) Do you think JICA training is beneficial to yourself and your organization?

To yourself (研修員にとっての有益性)

A. Yes B. No

If yes, please check (X) the reason from below.

- Promotion of the position
- Responsibility
- Increase of salary
- Improvement of technique and knowledge
- Professional recognition
- International contacts
- Others (Please specify.)

If no, please state the reasons.

To your organization

A. Yes B. No

Please describe the reason in detail.

Because the knowledge and techniques I achieved after the training has enabled me to understand the poultry disease problems in more depths. I can perform most of the immunodiagnostic tests in the lab. This is a benefit to our organization.

(3) Which part of the training program was most beneficial to you? (研修内容の有効性)

The laboratory investigation works of poultry diseases as well as visit to different poultry farms & slaughter houses in Japan was most beneficial to me so as to learn much in the field of poultry sector.

(4) What subject / area was missed out in the training program? (研修内容の問題点)

Nutritional diseases of poultry, laboratory examinations of mycoplasma, haemophilus and campylobacter etc. Also post-mortem examination of different diseases in poultry cases was missed.

(5) How did you try to apply what you have learned in the training?

Now I can perform many immuno-diagnostic tests used to diagnose poultry diseases.

(6) What kind of problems do you have in applying the techniques in your organization?

Please check (X) the problems in the below. (阻害要因)

Lack of trained Technologist / Researcher
 technical literature
 funds
 foreign experts
 career perspective
 equipments
 research facilities
 others ()

Various constraints

economic situation
 poor management
 political situation
 brain drain
 no suitable training

Please describe the problems in detail.

The major problems are trained technologist, research facilities, poor management & lack of working environment & team spirit.

3. Do you think that this training course should have continued in the same form?

A. very much B. somewhat C. no

If so, please give the reason.

Because this training seemed to me very much specific. This training should include little more about poultry farm management systems and more post-mortem examination of diseases birds & laboratory tests on mycotoxins.

4. Please give us any comment or suggestion regarding the course.

**FOOD ACT NO. 26 OF 1980 WITH INCLUSION OF AMENDMENTS
FROM FOOD (AMENDMENT) ACT NO. 20 OF 1991**

**Consolidated by Dr. H.M. Fernando, Director /E&OH of the
Ministry of Health-For training purposes only.**

Act.No. 26 of
1980.(Certified
on 17th July 1980)

**AN ACT TO REGULATE AND CONTROL THE MANUFACTURE
IMPORTATION , SALE AND DISTRIBUTION OF FOOD, TO
ESTABLISH A FOOD ADVISORY COMMITTEE, TO REPEAL
THE FOOD AND DRUGS ACT OF 1949, AND TO PROVIDE FOR
MATTERS CONNECTED THEREWITH OR INCIDENTAL
THERE TO.**

Short Title

1. This Act may be cited as the Food Act.

PART I

PROHIBITION IN RESPECT OF FOOD

Prohibition on
manufacture,importation, sale,
expose for sale store and
distribution of food.

2. (1) No. person shall manufacture, import, sell expose for sale,store or distribute any food -
- (a) that has in or upon it any natural or added deleterious substance which renders in injurious to health;
 - (b) that is unfit for human consumption;
 - (c) that consists in whole or in part of any unclean, putrid, repugnant , decayed,decomposed or diseased animal substance or decayed vegetable substance or insect infested;
 - (d) that is adulterated;
 - (e) that has in or upon it any added substance in contravention of the provisions of this Act or any regulation made thereunder; or
 - (f) in contravention of the provitions of this Act or any regulation made thereunder.

(2) No person shall manufacture, prepare, preserve, package or store any food under insanitary conditions.

(3) No person shall import, sell or distribute any food manufactured, prepared, preserved, packaged or stored for sale under insanitary conditions.

Labelling, Packaging, advertising etc.

3. (1) No person shall treat, process, package, label, sell, store, expose for sale, import or advertise any food in a manner that is false, misleading, deceptive or likely to create an erroneous impression, regarding its character, value, quality, composition, merit or safety.

(2) Any food that is not labelled or packaged as required by the regulations made under this Act or is labelled or packaged contrary to such regulations shall be deemed to be labelled or packages contrary to subsection (1).

(3) The Chief Food Authority may after giving the labeller or advertiser of any food an opportunity of being heard, prohibit the labelling or advertising of such food in contravention of the provisions of subsection (1) of this section.

4. Where a standard is prescribed for any food, no person shall label, package, sell or advertise any food which does not conform to that standard in such a manner as is likely to be mistaken for the food for which the standard has been prescribed.

Sale for purposes other than human consumption of food rendered unfit for human consumption.

5. No person shall offer for sale, expose for sale or sell for use as animal food or for other purposes any food which has been spoiled or rendered unfit for human consumption except with the permission of, and in accordance with the directions issued by the Food Authority or such other person authorized by that authority in writing in that behalf.

Warranty

6. (1) No manufacturer or a distributor of or a commission agent or a dealer in any food shall sell such food to any vendor unless he also gives that vendor a warranty in the prescribed form in respect of the nature, substance and quality of that food.

(2) A bill, cash memorandum or invoice in respect of the sale of any food given by a manufacturer or distributor of or a commission agent or a dealer in any such food to the vendor of that food, shall be deemed to be a warranty under the preceding provisions of this section in respect of that food, if such bill, cash memorandum or invoice contains a description of the nature, substance and quality of that food.

(3) No manufacturer or distributor of, or a commission agent or dealer in, any food shall under subsection (1) give a warranty which is false.

Registering

7. (1) No person shall manufacture, prepare, preserve, package, store or sell any food in any premises unless such premises has been registered by the relevant Food Authority who shall be the registering authority.

(2) No person shall manufacture, prepare, store or sell or distribute any food unless he is the holder of a certificate of Registration authorising him to manufacture, prepare, store, sell or distribute any food otherwise than in accordance with the terms and conditions of such registering.

PART II

ADMINISTRATION

Food Advisory Committee

8. (1) There shall be a Committee which shall be called the Food Advisory Committee consisting of -

- (a) the Director General of Health Services who shall be the Chairman of the Committee;
- (b) the Director (Environmental & Occupational Health) in charge of Food Control Administration who shall be the Secretary of the Committee;
- (c) the Government analyst or any officer nominated by him;
- (d) the city Analyst or Assistant City Analyst or the Colombo Municipality;

- (e) the Principal Collector of Customs or any officer nominated by him;**

- (f) the Chief Medical Officer of Health of the Colombo Municipality;**

- (g) (i) a representative of the Ministry charged with the subject of Food nominated by the Minister in charge of that subject, or a representative of any department under that Ministry nominated by that Minister;**

- (ii) a representative of the Ministry charged with the subject of Trade, nominated by the Minister in charge of that subject, or a representative of any department under that Ministry nominated by the Minister;**

- (iii) a representative of the Ministry charged with the subject of Local Government, nominated by the Minister in charge of that subject, or a representative of any department under that Ministry nominated by that Minister;**

- (h) a representative of the Sri Lanka Standards Institution nominated by the Minister in charge of the subject of Industries;**

- (i) a nutritionist from the Medical Research Institute nominated by the Minister;**

- (j) a food technologist nominated by the Minister;**

- (k) two experts in food science nominated by the Minister, out of whom shall be a bacteriologist;**

- (l) two members nominated by the Minister one of whom shall represent commercial interests and the other industrial interests;**

- (m) two members nominated by the Minister to represent the interests of the consumer ; and**

- (n) the Chief Food and Drug Inspector.**

(2) Every member of the Committee nominated by the Minister under paragraphs (j), (k), (l) and (m) of subsection (1) shall, unless he earlier vacates office by resignation, death or removal, hold office for a period of three years from the date of his nomination and shall be eligible for re-nomination.

(3) Every member of the Committee other than the members referred to in subsection (2) shall cease to be a member of the Committee on his ceasing to hold office which qualified him to be, or to be nominated as, a member of the Committee

(4) The Committee may discharge its functions notwithstanding any vacancy among its members.

(5) Seven members of the Committee shall form a quorum for any meeting of the Committee.

(6) Subject to the provisions of this Act, the Committee may regulate its own procedure in regard to its meetings and the transaction of business at the meetings.

Duties of the Food Advisory Committee

9. (1) It shall be the duty of the Food Advisory Committee to advise the Minister on matters arising out of the administration of this Act and to carry out other functions assigned to it under this act.

(2) The Committee may appoint such sub-committees as it deems fit, to exercise such powers, perform such duties or discharge such functions as may, subject to such conditions, if any, as the Committee may impose, be delegated to them by the Committee, and may appoint to these sub-committees persons who are not members of the Committee.

Food Authority

10. (1) Save as otherwise provided in subsection (4), for every administrative area of a local authority there shall be a Food Authority to carry into execution and enforce within the administrative area of the respective local authority the provisions of this Act and the regulations made thereunder.

(2) The Food Authority under subsection (1) for the administrative area of

(a) A Municipality shall be -

(i) The Municipal council constituted for that area ; or

(ii) The Medical Officers of Health for that area, where the Municipal Council is unable to execute its functions as Food Authority.

(b) any other local authority shall be -

(i) the local authority constituted for that area, where that local authority is appointed by the Minister as the Food Authority for that area on the recommendation of the Minister in charge of the subject of Local Government; or

(ii) the Medical Officer of Health or the Divisional Health officer for that area where the local authority constituted for that area is not appointed as the Food Authority under sub paragraph (i).

(3) Every Regional Director of Health Services shall, within the area for which he is appointed, supervise and co-ordinate the work of the Food Authorities under subsection (1) in that area.

(4) For the administrative area of every local authority-

(a) the Excise Commissioner shall be a Food Authority in relation to food which is excisable within the meaning of the Excise Ordinance; and

(b) the Principal Collector of Customs shall be a Food Authority in relation to food the importation of which is prohibited under this Act;

Provided that the Principal Collector may delegate to any officer nominated by the Director of Health Services the powers vested in the Principal Collector as a Food Authority under this Act.

Chief Food Authority

11. (1) The Director General of Health Services shall be the Chief Food Authority for the purposes of this Act.

(2) The Chief Food Authority shall supervise, guide and co-ordinate the work of all Food Authorities under section 10.

(3) The Chief Food Authority may give such directions as he may deem necessary to any Food Authority regarding the carrying into execution, and the enforcement of all or any of the provisions of this Act or regulations made thereunder, and every Food Authority to whom directions are given shall comply with such directions.

(3 A) Subject to the provisions of subsection (3), the Chief Food Authority may, in case of urgent necessity, give such directions as he may deem necessary, to any authorised officer, regarding the carrying into execution of all or any of the provisions of this Act or regulations made thereunder, and such authorised officer shall comply with such directions with the assistance of a Medical Officer of Health or a Divisional Health Officer.

(4) The Chief Food Authority may delegate all or any of his powers under this Act to any subordinate officer by name or office with the approval of the Minister.

Default of local authority

12. Where on a report of the Chief food authority that a local authority, as the Food Authority for the administrative area of that local authority, has failed to carry into execution, enforce or comply with any provision of this Act or any regulations made thereunder or any direction given to it by the Chief Food Authority, the Minister, after giving that local authority an opportunity to show cause against it, if satisfied that the local authority has failed and that the failure affects the general interest of the public, may, with the concurrence of the Minister of charge of the subject of Local Government, by Order published in the Gazette, empower, the Chief Food Authority to carry into execution or enforce or comply with that provision or direction.

Authorised Officer

13. (1) The Minister may approve any Medical Officer of Health/ Divisional Health Officer, Food & Drugs Inspector, Food Inspector, Public Health Inspector and, in relation to examination and seizure of meat, any Veterinary Surgeon to be an Authorised Officer of one or more Food Authorities.

(2) Where the Food Authority is the Excise Commissioner or the Principal Collector of Customs, any person authorised in writing by the Excise Commissioner or the Principal Collector, as the case may be shall be an Authorised Officer of that Food Authority.

(3) Every Authorised Officer shall exercise the powers of a police officer in terms of the Code of Criminal Procedure Act for the purpose of discharging his functions under this Act.

Powers of Authorised officer

14. (1) An Authorised Officer may for the performances of his duties and the exercise of his powers -

- (a) at any reasonable time enter any place where he believes any article is manufactured, prepared, preserved, packaged, exposed for sale or stored and examine any such article and take samples thereof and also examine anything that he believes is used for the manufacture, preparation, preservation, packaging or storing of that article;
- (b) for the purpose of search, stop or detain any vehicle in which he believes that any article is being conveyed, search that vehicle and examine such article and take samples of that article;
- (c) Open and examine any receptacle or package that he believes to contain any article;
- (d) Where the authorised officer is a Medical Officer of Health/ Divisional Health Officer, person authorised by the Excise Commissioner or the Principal Collector of Customs under section 13 (2), examine any books documents or other records found in any place mentioned in paragraph (a) that he believes to contain any information relevant to the carrying into execution or the enforcement of this Act with respect to any article and make copies thereof or take extracts therefrom; and
- (e) seize and detain for such time as may be necessary any article by means of or in relation to which he believes any provision of this Act or regulation made thereunder has been contravened.

(2) For the purposes of this section and section 15 " article" means-

(a) any food including the whole or any part of any dead animal, bird or fish intended to be used or capable of being used for human consumption;

(b) anything used or capable of being used for the manufacture, preparation, preservation, packaging or storing of food; and

(c) any labelling or advertising material.

(3) An Authorised Officer acting under this section shall, if so required, produce his authority.

(4) The owner or person in charge of a place entered by an Authorised Officer in pursuance of subsection (1) and every person found therein shall give the Authorised Officer all reasonable assistance in his power and furnish him with such information and such samples as he may require.

(4 A) Information obtained by an authorised officer under subsection (4) shall not be disclosed except to a Government Department or to a court in connection with the administration or enforcement of this Act.

(5) No person shall obstruct any Authorised Officer acting in the exercise of his powers under this Act or regulations made thereunder.

(6) If any Authorised Officer applies to obtain samples of any food exposed for sale and the person exposing the food refuses to sell to the Authorised officer such quantity thereof as he may require or refuses to allow that officer to take the quantity which he is empowered to take as samples, the person so refusing shall be deemed for the purposes of subsection (5) to have obstructed an Authorised Officer.

(7) No person shall knowingly make any false or misleading statements either orally or in writing to any Authorised Officer, engaged in the exercise of his powers under this Act or any regulations made thereunder.

(8) Every vendor of food shall if so required by an Authorised Officer, disclose to the Authorised Officer the name, address and such other particulars as may be required of the person from whom that vendor purchased that food.

(9) No person shall remove, alter, tamper or otherwise interfere in any manner with any food seized under this Act by an Authorised Officer without the authority of that Authorised Officer.

(10) Any food seized under this Act may, at the option of an Authorised Officer, be kept or stored in the building or place where it was seized or may at his discretion be removed to any other place.

(11) An Authorised Officer shall forthwith inform the relevant Food Authority of any seizure made under this Act.

Procedure in respect of articles seized.

15. (1) Where an article in respect of which an offence has been committed, is seized under this Act by an Authorised Officer, such article may be destroyed or otherwise disposed of as the Authority may direct where the Authority is satisfied that there has been a contravention of any of the provisions of this Act or any regulations made thereunder and where the owner of such article or the person in possession of such article at the time of seizure consents in writing to the destruction of such article.

(2) Where the owner or person in possession of such article does not consent in writing to the destruction of such article the authorised officer,

(a) shall release such article if he is satisfied that the provision of this Act or any regulations made thereunder in respect of such article have not been contravened; or

(b) shall, where is satisfied that there has been a contravention of any of the provisions of this Act or regulations made thereunder, forthwith, with notice to such owner or person in possession of the article, inform the Magistrate's Court having jurisdiction over the area in which the offence was committed of the seizure of the article in respect of which the offence was committed.

(3) On information furnished to the court under subsection (2)
(b) such court shall -

(a) if, after trial, finds the owner or person in possession of the article guilty of contravening any of the provisions of this Act or regulations made thereunder, order that such article be forfeited to the Authorised Officer to be disposed of as the court may direct;

Provided, however, that where the offender is not known or cannot be found such article shall be forfeited to the Authorised Officer without the institution of proceedings in respect of such contravention ; or

(b) if, after, trial if finds the owner or person in possession of the article not guilty of contravening any of the provisions of this Act or regulations made thereunder, order that such article be released to such owner or person in possession.

(4) Notwithstanding the provisions of subsection (3) the Magistrates may, at any time after information is furnished to court under subsection (2) direct the disposal in such manner as he thinks fit, if any article seized, which is subject to speedy and natural decay.

Analysis

16. (1) An Authorised Officer may submit any food seized by him or any portion thereof or any sample taken by him, unless destroyed under section 15 (1) to the Approved Analyst for analysis or examination.

(2) Where the Approved Analyst has made the analysis or examination of any food submitted to him under subsection (1) he shall issue a certificate or report to the Authorised Officer setting out in that certificate or report the results of his examination or analysis.

(3) For the purpose of this section the " Approved Analyst" includes an Additional Approved Analyst.

Approved Analyst

17. (1) For the purposes of this Act and any regulations made thereunder the Government Analyst shall be the Approved Analyst.

(2) Notwithstanding the provisions of subsection (1) Minister may approve one additional approved analyst or more for any administrative area of a local authority. Notification of the approval shall be published in the Gazette.

(3) No person shall be approved as an Additional Approved Analyst -

(a) if he does not possess the prescribed qualifications ; or

(b) if that person is engaged directly or indirectly in any trade or business connected with the sale of food.

PART III

LEGAL PROCEEDINGS

Offences

18. (1) Every person who contravenes any of the provisions of this Act or any regulations made thereunder or fails to comply with any direction given under this Act shall be guilty of an offence and shall be liable on conviction -

(a) where the nature of the offence involves injury to the health of the public, to imprisonment for a term not less than six months and not exceeding three years, and also to a fine not less than (five thousand rupees) and not exceeding (ten thousand rupees);

(b) where the offence is the contravention of subsection (5) or subsection (9) of section 14, to imprisonment for a term not less than three months and not exceeding one year and also to fine not less than five thousand rupees and not exceeding ten thousand rupees ; and

(c) for any other offence -

(i) for the first offence to a fine not less than five hundred rupees and not exceeding three thousand rupees or to imprisonment for a term not exceeding six months or to both such fine and imprisonment;

(ii) for a second or subsequent offence to imprisonment for a term not less than three months and not exceeding one year and also to a fine not less than thousand rupees and not exceeding five thousand rupees.

(2) where a person convicted for an offence under this Act or any regulations made thereunder is convicted for a second or subsequent offence of a like or similar nature under this Act or any regulations made thereunder, the court convicting him for the second or subsequent offence may -

(a) cause the name and the address of the person convicted and the offence and the punishment imposed for that offence to be published in such newspaper or in such other manner as the court may direct and recover the cost of publication from the person convicted as if it were a fine imposed on him;

(b) cancel the licence or certificate of registration (if any) issued to the person convicted for the manufacture, importation, preparation, storage, sale and distribution of food under this Act or any other law and inform the relevant licensing authority or registering authority accordingly.

(3) (a) Where a person convicted of the offence of using any premises without first obtaining a certificate of registration in respect thereof in terms of section 7 (1) of this Act continues to use such premises either by himself or by any other person on his behalf notwithstanding such conviction, the Magistrate may, upon application made for a closure order by the relevant Food Authority, or any officer authorised by such Food Authority, order the closure of such premises or the discontinuance of the trade or business carried on therein until such time as such person obtains a certificate of registration in respect of such premises from such Food Authority.

(b) In any proceedings referred to in paragraph (a), a certificate signed by or on behalf of the Food Authority stating that the person mentioned in the certificate continues to use such premises without first obtaining a certificate of registration in respect thereof in terms of section 7 (1) of this Act, shall be prima facie evidence of the facts stated therein.

(c) Where such person fails to comply with the closure order issued under paragraph (a) of this subsection, the Magistrate shall forthwith issue an order to the Fiscal of such Court requiring and authorising such Fiscal to close

such premises and discontinue the trade or business carried on therein before a date specified in the order, not being a date earlier than three days nor later than seven days from the date of issue of such order. Such order shall serve as sufficient authority for the Fiscal to enter the premises with such persons as he may deem necessary to close such premises and discontinue the trade or business carried on therein.

Person committing offence liable to be arrested without a warrant and to be tried by a Magistrate's Court

19. Every person who commits an offence under this Act or any regulation made thereunder may be arrested without a warrant and every offence under this Act or any regulation thereunder shall be triable by a Magistrate's Court.

Institution of proceedings

20. (1) A prosecution for an offence under this Act or any regulations made thereunder shall not be instituted.

(a) except by an Authorised Officer; and

(b) after the expiration of three months from the date of detection of that offence or where sampling is done, from the date of sampling.

(2) where at any time during the trial of any offence under this Act or any regulations made thereunder, the court is satisfied on the evidence adduced before it, that any person other than the person charged with the offence was knowingly concerned in the commission of the offence, the court may notwithstanding subsection (1) (b) proceed against that other person as though a prosecution has been instituted against that person.

Where the accused proves that some other person is guilty of the offence.

21. (1) Where a person (hereinafter referred to as "the accused") is charged with an offence under this Act, he shall, upon complaint duly made by him in accordance with the provisions of section 136 of the Code of Criminal Procedure Act and on giving notice to the prosecution of his intention on or before the first date of calling of the case after service of summons be entitled to have any other person whom he charges as the actual offender brought before the court, and, if, after the commission of the offence has been proved, the accused proves to the satisfaction of the court that the commission of the offence was due to the act or default of such other person, such other person may be convicted

of the offence, and, if the accused further proves that he has used all due diligence to enforce the provisions of this Act, he shall be acquitted of the offence.

(2) Where an accused seeks to avail himself of the provisions of subsection (1) -

(a) the prosecution, as well as the person whom the accused charges with being the actual offender, shall have the right to cross-examine him, if he gives evidence, and any witness called by him in support of his pleas, and to call evidence in rebuttal ; and

(b) the court may take such order as it thinks fit for the payment of costs by any party to the proceedings to any other party thereto.

(3) Where it appears to the relevant Food Authority that an offence has been committed under this Act in respect of which proceedings might be taken under this Act against some person and such Authority is reasonably satisfied that the offence complained of was due to an act or default of some other person and that the first-mentioned person could establish a defence under subsection (1) of this section, such Authority may cause proceedings to be taken against that other person without first causing proceedings to be taken against the first-mentioned person.

In any such proceedings the accused may be charged with and, on proof that the offence was due to his act or default, be convicted of the offence with which the first-mentioned person might have been charged.

Defences

22. (1) In a prosecution for an offence under this Act or any regulations made thereunder it shall be a defence for the accused -

(a) that he purchased the food from another person, who furnished him with a written warranty under section 6 and that he sold such food in the same condition that it was at the time purchased it;

(b) that he could not have with reasonable diligence ascertained that the sale of the food would be in contravention of the Act or any regulations made thereunder; or

(c) in relation to an offence for the publication of an advertisement, that he received the advertisement for publication in the ordinary course of business and had no reason to believe that an offence would be committed.

(2) In a prosecution for the offence of sale of food which is adulterated or contrary to the provisions of this Act or any regulations made thereunder, it shall not be a defence for the accused that he did not know that such food was adulterated or that the sale was contrary to the provisions of this Act or any regulations made thereunder or that the purchaser purchased such food for analysis and was not prejudiced by the sale.

Report of Approved Analyst or
Additional Approved Analyst

23. (1) In the absence of evidence to the contrary a document purporting to be report or a certificate signed by the Approved Analyst or an Additional Approved Analyst upon any matter submitted to him for examination or analysis shall be sufficient evidence of the facts stated therein.

(2) Where a party against whom the report or the certificate referred to in subsection (1) is produced requests that the Approved Analyst or an Additional Approved Analyst, as the case may be, summoned as a witness, the court shall summon him on that party depositing in court the expenses of summoning him including such fees as may be prescribed, payable to him and shall examine him as a witness.

(3) The report or the certificate referred to in subsection (1) shall not be received in evidence unless the party intending to produce it has given the party against whom it is intended to be produced a copy of the report or certificate and reasonable notice of his intention to produce it.

Authorised Officer to produce
before court the part of the
sample retained by him.

24. (1) Where a sample obtained by an Authorised Officer is required to be divided by him into parts, one of which shall be retained by him, the part retained by him shall be produced in court at the commencement of the inquiry, in relation to that sample.

(2) The Magistrate may of his own motion and shall at the request of any party to the prosecution forward for analysis or examination the part of the sample produced in court under subsection (1) to the Approved Analyst or an Additional Approved Analyst other than an analyst who has analysed or examined any other part of that sample.

(3) The analyst to whom the part of the sample is forwarded under subsection (2) shall send his report or certificate to the court within twenty -eight days of the receipt by him of that part of the sample.

(4) The expenses of analysis or examination shall be paid by such party as the court may direct.

Copy or extract of document
taken by an Authorised Officer

25. A copy made or extract taken from any book, document or other record by an Authorised Officer under section 14 (1) (d) shall, if certified to be a true copy or extract by the Authorised Officer, be admissible in evidence against the person keeping or maintaining that book, document or record or causing that book, document or record to be kept or maintained, and shall be *prima facie* evidence of the contents of that book, document or record.

Presumptions

26. (1) For the purposes of this Act and any regulation made thereunder -

(a) any food commonly used for human consumption shall, if sold or offered, exposed or kept for sale or stored be presumed until the contrary is proved, to be intended for sale for human consumption;

(b) any food commonly used for human consumption which is found on premises used for the manufacture, preservation, packaging, preparation, storage or sale of any food be presumed, until the contrary is proved, to be intended for the preparation of, or admixture with, food meant for sale for human consumption; and

(c) any substance capable of being used in the consumption or preparation of food which is found on premises used for preparation of food shall be presumed until the contrary is proved, to be intended for use in the composition or preparation of food for human consumption.

(2) Where in a prosecution for the offence of manufacture of food which is adulterated, it is established-

(a) that the food was adulterated with the addition of any other substance; and

(b) that the accused had in his possession or in his premises that other substance.

It shall be presumed until the contrary is proved that the food was adulterated by the accused by the addition of that other substance.

(3) Where the package containing any food has on or upon it the name or address purporting to be the name or address of the person by whom it was manufactured or person by whom it was manufactured or packaged, it shall be presumed until the contrary is proved that such food was manufactured or packaged, as the case may be, by the person whose name or address appears in or upon the package.

offences committed by a body of persons.

27. Where an offence under this Act or any regulations made thereunder is committed by a body of persons then-

(a) if that body of persons is a body corporate, every person who at the time of commission of the offence was a director, general manager, secretary or other similar officer of that body; or

(b) if that body is not a body corporate every person who at the time of commission of the offence was a member of that body shall be deemed to be guilty of that offence, unless he proves that the offence was committed without his consent or concurrence and he exercised all such diligence to prevent the commission of that offence as he ought to have exercised in the circumstances having regard to the nature of his functions.

PART IV

GENERAL

Protection for action taken in good faith

28. No suit, prosecution or other legal proceeding shall be instituted against any person for any act which in good faith is done or purported to be done by him under this Act or regulations made thereunder.

Payments into and out of fund of local authority under this Act.

29. (1) There shall be paid -

(a) into the fund of a local authority, fines paid or recovered in respect of an offence under this Act or regulations made thereunder in a prosecutions instituted by an Authorised Officer of a Food Authority which is a local authority;

(b) out of the fund of the local authority expenses incurred by such local authority in the administration of this Act.

(2) It shall be lawful for the Court before which an offender is convicted of an offence under this Act, to direct in respect of any fine that may be imposed for such offence that a sum not exceeding twenty five percentum of the fine recovered shall be awarded to the Authorised Officer who secures such conviction.

Notification of Food Poisoning

30. Every medical practitioner carrying on his profession within the administrative area of any local authority shall report all cases of food poisoning In that area within his knowledge to the Regional Director of Health Services or to the Medical Officer of Health or Divisional Health Officer of that area.

Application of other written law to food.

31. (1) The provisions of this Act and any regulations made thereunder relating to food which are excisable articles within the meaning of the Excise Ordinance shall be in addition to and not in substitution for the provisions of that Ordinance.

- (2) The provisions of the Customs Ordinance shall apply for the purposes of the enforcement, and prevention and punishment of contraventions or attempted contraventions, of the provisions of this Act and any regulations made thereunder relating to the importation of any food.**
- (3) For the purposes of the application of the Customs Ordinance to any food the importation of which is prohibited under this Act, such food shall be deemed to be goods the importation of which is prohibited under that Ordinance.**
- (4) In the event of any conflict or inconsistency between the regulations made under this Act and by-laws made by any local authority under any written law, the regulations made under this Act shall prevail.**

Regulations

32. (1) The Minister may make regulations in respect of matters required by this Act to be prescribed or in respect of which regulations are authorised to be made and in particular the Minister may, after consultation with the Food Advisory Committee make regulations in respect of all or any of the following matters:-

- (a) declaring that any food or class of food is adulterated if any prescribed substance or class of substance is present or has been added to or extracted or omitted from that food;**
- (b) the labelling, packaging, offering, exposing and advertising for sale of food;**
- (c) the size, dimensions, fill and other specifications of packages of food;**
- (d) sale or conditions of sale of any food;**
- (e) the use of any substance as an ingredient in any food to prevent the consumer or purchaser from being deceived, or misled as to its quantity, character, value, composition or safety or to prevent injury to the health of the consumer or purchaser;**

- (f) the standards of compositions, purity, quality or other property of food;**
- (g) the importation of food in order to ensure compliance with the Act and any regulations made thereunder;**
- (h) the method of preparation, manufacture, preservation, packaging, storing and testing of any food in the interest of, or for the prevention of injury to, the health of the consumer or purchaser;**
- (i) (i) the person to whom the circumstances in which, and the terms and conditions subject to which the certification of registration of under this Act may be granted or refused.**

(ii) the manner and mode in which applications for certification of registration under this Act may be made and dealt with; and

(iii) the fee payable for the issue of a certification of registration;
- (j) requiring persons who manufacture or sell any food to furnish such information and maintain such books and record as the Minister considers necessary for the proper enforcement and administration of this Act and the regulations made thereunder;**
- (k) the powers and duties of Authorised Officers, the Approved Analyst and Additional Approved Analysts and taking of samples and the seizure, detention or forfeiture and disposal of articles within the meaning of section 14 and 15 ;**
- (l) the forms to be used for the purposes of this Act and any regulations made thereunder;**
- (m) the analysis or examination of any food, procedure for taking samples of such food and tariff of fees to be paid for the analysis or examination of such food; and**
- (n) prohibitions and restrictions relating to the sale and transport for sale of any adulterated food.**

- (2) Every regulations made by the Minister shall be published in the Gazette and shall come into operation on the date of publication or on such later date as may be specified in the regulation.
- (3) Every regulation made by the Minister shall as soon as convenient after its publication in the Gazette be brought before Parliament for approval.
- (4) Any regulation which is not so approved shall be deemed to be rescinded as from the date of disapproval but without prejudice to anything previously done thereunder.
- (5) The date on which any regulation shall be deemed to be so rescinded shall be published in the Gazette.

Interpretation

33. In this Act unless the context otherwise requires -

" adulterated" means the addition of a substance as an ingredient in the preparation of food or subtraction of any constituent from such food or subjection of such food to any other process or any other treatment so as to

(a) render the food injurious to health, or

(b) affect its character, value, composition, merit or safety;

" advertisement" includes any representations by any means whatsoever for the purpose of promoting directly or indirectly the sale or disposal of any food;

' food ' means any articles manufactured. Sold represented as food or drink for human beings and includes any article which enters into or is used in the composition or preparation of food

" Government Analyst " means the person for the time being holding the office of Government analyst and except for the purposes of section 8 includes any person for the time being holding the office of Additional, Deputy , Senior Assistant, or Assistant government Analyst;

" insanitary conditions" means such conditions or circumstances as may contaminate food with dust, dirt or filth or render food injurious to health;

" label" includes a tag, brand, mark, pictorial or other description, either written, printed, stenciled, marked, embossed or impressed on or attached to a container of food;

" labelling" includes a label and any written, printed or graphic matter relating to or accompanying any food;

" local authority " means any Municipal council, Urban council, Development Council or Pradeshiya Sabha and includes any Authority created and established by or under any law to exercise, perform and discharge powers, duties and functions corresponding to or similar to the powers, duties and functions exercised, performed or discharged by any such council;

" manufacture" means preparing any food for sale and includes any process or part of a process for making altering finishing packing, labelling or otherwise treating of food except packaging of food in the ordinary course of retail sale;

" medical practitioner" has the same meaning as in the Medical Ordinance;

" package" includes anything in which any food is wholly or partly contained, placed or packed;

" premises" includes any shop, stall or place where any food is sold or manufactured or stored for sale.

" relevant Food Authority" means a Food Authority appointed under section 10;

" sell" means to sell for cash or on credit or by way of exchange and whether by wholesale or retail and "sale" shall have a corresponding meaning; and

" Veterinary Surgeon" means a person registered as a Veterinary Surgeon or a Veterinary Practitioner under the Veterinary Surgeons' and Practitioners' Act.

Repeals and savings

34. (1) The Food and Drugs Act of 1949 is hereby repealed.

(2) Notwithstanding the repeal of the Food and Drugs Act, the regulations made under that Act relating to the prevention of adulteration of food and in force immediately before the coming into operation of this Act shall, except where and so far as they are not inconsistent with the provisions of this Act, continue in force until altered, amended or rescinded by regulations made under this Act.

FOOD (AMENDMENT) ACT, NO. 20 OF 1991. Includes an additional clause as follows.

Sinhala text to prevail in case of inconsistency

In the event of any inconsistency between the Sinhala and Tamil texts of this Act, the Sinhala text shall prevail.

(3) 研修員に対する質問内容 (様式3)

QUESTIONNAIRE TO THE EX-PARTICIPANTS
(PLEASE TYPE)

Name (year of your participation) : Mr./Ms. Hemal Kothalawala (1997)

Present Job : Veterinary Research Officer

Present Post : Veterinary Research Officer

1. Employment / Work Experience (職歴)

(1) Work Experience: Before Training at JICA

Date (from to)	Work / Job Position	Responsibilities
94.01.04 - 97.03.24	Veterinary Research Officer	1. Research on poultry viral diseases 2. Involve in poultry diseases diagnosis control & prevention activities 3. Participation of man -power development program's for farmers, students internees

(2) Work Experience: After Training at JICA

Date (from to)	Work / Job Position	Responsibilities
98.03.06 - up to date	Veterinary Research Officer	1. Research on poultry viral diseases 2. Involve in poultry diseases diagnosis control & prevention activities 3. Participation of man -power development program's for farmers, students internees

2. Evaluation of the JICA training program. (研修コース評価)

(1) Can you apply the knowledge and technique acquired in the training to your present job?

Please check (X) one from below.

all most some a little none

Please explain your answer briefly.

The Division of Virology & Poultry Service Unit of the Veterinary Research Institute is the main governmental body which provide service to the poultry farmers. I can apply most of the knowledge and techniques studied at the training without much difficulty because of the objective of the training and my duties are highly compatible.

(2) Do you think JICA training is beneficial to yourself and your organization?

To yourself (研修員にとっての有益性)

A. Yes

B. No

→ reason from below.

- Promotion of the position
- Responsibility
- Increase of salary
- Improvement of technique and knowledge
- Professional recognition
- International contacts
- Others (Please specify.)

If no, please state the reasons.

To your organization

A. Yes

B. No

Please describe the reason in detail.

The Department of Animal production & Health feels severe shortage of trained personnel in the field of poultry medicine since last few years. Therefore it produces much difficulty in laboratory diagnosis, control and spreading of emerging diseases in poultry. The experience which I have gained from the training is little relief for the present problem

(3) Which part of the training program was most beneficial to you? (研修内容の有効性)

The laboratory techniques on poultry disease diagnosis and veterinary public health.

(4) What subject / area was missed out in the training program? (研修内容の問題点)

The training program was covered all main subject areas but in some cases the time allocations made were inadequate. eg. laboratory practice on immunological studies.

Poultry meat inspection

(5) How did you try to apply what you have learned in the training?

The knowledge of laboratory techniques could apply directly for the diseases diagnosis and research works which carried by the division. But absence of trained personnel and limitations of existing facilities create much difficulty in application of techniques which trained in Japan. Eventhough many techniques already applied for the disease diagnostic purpose within the frame of existing facilities.

(6) What kind of problems do you have in applying the techniques in your organization?

Please check (X) the problems in the below. (阻害要因)

Lack of trained Technologist / Researcher
 technical literature
 funds equipments
 foreign experts research facilities
 career perspective others ()

Various constraints

economic situation brain drain
 poor management no suitable training
 political situation

Please describe the problems in detail.

At present there are no trained scientist with post graduate qualification in field of poultry medicine and virology at Veterinary research Institute. I am the most senior person who handle the disease diagnosis and research works in poultry medicine and virology. But I had only basic degree on veterinary science and five year experience in the same field. The poultry industry as a rapidly growing sector it produces problems of disease outbreaks, vaccination failures and emerging diseases in frequently as routine. As in above occasions I have feel great difficulty in solved the problem and performed further researches on problem areas due to lack of experience and proper qualifications.

At the moment the postgraduate scholarships and research grants given by the national funds are highly restricted due to poor economic situation of the country. It also badly effect the improvement of the present situation

3. Do you think that this training course should have continued in the same form?

A. very much B. somewhat C. no

If so, please give the reason.

The poultry husbandry is rapidly growing industry in most of the developing countries. That is identified as self employment and as a solution for mal nutrition of rural population. The diseases of poultry is the one of the major problem for the development of the industry. The training of Laboratory diagnosis of poultry disease is aimed to provide a basic knowledge on modern diagnostic technology of poutry diseases and update the excising skills on laboratory techniques.

Therefore continuation of the training in same form is very much beneficial to the scientists who are involve in poultry industry of respective countries.

4. Please give us any comment or suggestion regarding the course.

.....
The time allocations of the laboratory practice should have increased with increasing time period of the course.
.....

QUESTIONNAIRE TO THE EXPANDED PARTS

Name: G. V. L. Senanayake 95/96
 Title: Veterinary Surgeon (Practitioner)
Veterinary Surgeon

Work Experience (1)

(1) Work Experience Before training at JICA

Date (from to)	Work / Job Position	Responsibilities
1992-1993	Assistant Lecturer (Temporary)	Teaching of Undergraduates
1993-1995	Veterinary Surgeon	Diagnosis and Treatment of Avian Diseases

(2) Work Experience After Training at JICA

Date (from to)	Work / Job Position	Responsibilities
1998 upto Now	Veterinary Surgeon	Diagnosis and Treatment of Avian Diseases

2. Evaluation of the JICA training program. (研修コース評価)

(1) Can you apply the knowledge and technique acquired in the training to your present job?

Please check (X) one from below

all most some a little none

Please explain your answer briefly.

Some of the techniques like PCR & Flow cytometry cannot be applied because lack of facilities

1. How do you think the training programme should be conducted?

By gradual establishment of laboratory facilities.

2. What kind of problems do you face in applying the knowledge gained in your organization?

- | | | | |
|---|---|---|---|
| ✓ | ✓ | ✓ | ✓ |
| X | X | X | X |
| X | X | X | X |
| X | X | X | X |
| X | X | X | X |

3. How do you think the training programme should be conducted?

- | | | | |
|---|---|---|---|
| ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ |

4. What are the main problems faced by you?

Priorities of the organisation defer and change from time to time. Lack of appreciation of good work done and also the poor remuneration leads to frustration of the scientific officers.

5. Do you think that this training course should be continued in the same form?

A very much Yes No

If so, please give reasons.

Should have continued with a change of curriculum, to suit the needs of the different countries. Laboratory training should be more comprehensive.

6. Please give us any other points which are not covered by the course.

I am very grateful to the government of Japan and the JICA for giving this opportunity. It gave me a good exposure to laboratory techniques as well as

(3) 研修員に対する質問内容 (様式3)

QUESTIONNAIRE TO THE EX-PARTICIPANTS
(PLEASE TYPE)

Name (year of your participation) : Mr. N.A.V. Wasantha Kumara (1994)

Present Job : Veterinary Surgeon.

Present Post : Officer In Charge, Govt. Veterinary Hospital.

1. Employment / Work Experience (職歴)

(1) Work Experience: Before Training at JICA

Date (from to)	Work / Job Position	Responsibilities
1986.10.01 to 1994.Oct.	Veterinary Surgeon.	Diagnostic works. Curative works. Extension work. Under graduate training.

(2) Work Experience: After Training at JICA

Date (from to)	Work / Job Position	Responsibilities
1995 March	Veterinary Surgeon.	Same as 1

2. Evaluation of the JICA training program. (研修コース評価)

(1) Can you apply the knowledge and technique acquired in the training to your present job?

Please check (X) one from below.

_____ all _____ most _____ some a little _____ none

Please explain your answer briefly.

I have less facilities in my lab. Therefore I can't apply those advanced techniques.

(2) Do you think JICA training is beneficial to yourself and your organization?

To yourself (研修員にとっての有益性)

A. Yes B. No

If yes, please check (X) the reason from below.

- Promotion of the position
- Responsibility
- Increase of salary
- improvement of technique and knowledge
- Professional recognition
- International contacts
- Others (Please specify.)

If no, please state the reasons.

- Less than 9 months training is not recognize by the Department for promotion of the position.
- There is no salary increase after foreign training.

To your organization

A. Yes B. No

Please describe the reason in detail.

(3) Which part of the training program was most beneficial to you? (研修内容の有効性)

Immunology & Pathology.

(4) What subject / area was missed out in the training program? (研修内容の問題点)

(5) How did you try to apply what you have learned in the training?-----

I tried to start immunohistochemistry in Sri Lanka, & I got down some equipment to carry out this technique.

(6) What kind of problems do you have in applying the techniques in your organization?

Please check (X) the problems in the below. (阻害要因)

Lack of trained Technologist / Researcher
 technical literature
 funds
 foreign experts
 career perspective
 equipments
 research facilities
 others ()

Various constraints

economic situation
 poor management
 political situation
 brain drain
 no suitable training

Please describe the problems in detail.

3. Do you think that this training course should have continued in the same form?

A. very much B. somewhat C. no ✓

If so, please give the reason.

JICA has already trained 4 vets. in this field. I think individual training course (11 month) will be most benefitted and the ~~training~~ field of training should be decided by the Dir of the Department of Animal Production & Health, Sri Lanka.

4. Please give us any comment or suggestion regarding the course.

We had very short time period for each appointment. (about two weeks). I think participants should have the right to select ^{1 or 2} appointments, (eg Immunology or pathology). Then participant can choose # appointments according to their countries' need.

団長総括の要旨 (Dec. 18, 1998 帰国報告会にて) :

・ Follow-up teamの mission受け入れおよび調査に関して種々の準備およびFollow をして頂いたNepal およびSri LankaのJICA事務所および専門員の方々にあつく御礼を申し上げます。おかげで、初期の目的を果たすことができました。

・ 相手国の担当官も、多忙中に拘わらず、応対して頂いたことに感謝いたします。

・ 面会予定の関係機関の責任者は、私共の訪問目的および調査事項についてあらかじめ知らされていたためか、準備がよくなされており、調査に限られた時間を有効に使うことができた。

・ 面談した帰国研修生、関係機関の責任者は、コースによる受け入れに感謝され、「研修は非常に有益であるため、今後も引き続き受け入れてほしい」との要望をうけた。

・ 「家禽疾病診断技術コース」には両国からそれぞれ4名の研修員を受け入れた。相手国ではJICAのGIに沿って人選をしたが、「40才以下で3年以上の現場での経験」という条件を撤廃して欲しいとの意見もあった。しかし、帰国研修員の面談調査ならびに現地での視察の結果、受け入れた研修員は能力および人物の点で優れており、活発に活躍していることから、相手国における推薦・選抜方法ならびに受け入れ側で設定した年齢制限は妥当であったとの印象を強く受けた。

・ 研修生の研修後の任務は、研修前と同じもの、あるいは養鶏地帯に転任させられた人もいた。しかし、鶏病に対する知識および技能が備わったため、業務の範囲が広がった模様であった。しかし、技術が容易に移転・定着している状態ではないとの印象が大きかった。それは、機材の不足または欠如によるものである。ことに、出先の現場で任務を果たすことは、おおむね迅速に診断を下し、治療・予防を施す義務があることから、確定診断に必要とする機材は備わっていないため、肉眼所見を含む経験に基づいて行わざるをえない。ことにNepalの場合はKathmanduまでサンプルを送付し、その結果待ちということになる。したがって、研修能力を発揮できないという現状への不満や改善の要求が述べられていた。

・ 一方、Sri Lankaの場合、近隣に存在するPeradeniya大学、国立のVeterinary Research InstituteやGovernment Veterinary Hospitalから研修生が来たため、去る7月にPeradeniya大学農学部は無償で与えられた機材を含めた施設を有効に用いることにより、中央における試験・研究の効率化は、おおいに期待できる。しかし、地方（出先）からの研修員を受け入れていないが、出先機関における問題点はNepalと同様と推測される。

・ 両国とも、養鶏は収入の期待できる一大産業（鶏肉が高価であるため）であることは明らかで、平地では産業の発達しつつある。小規模ではあるが、養鶏は企業の形態をとり発展の兆しが歴然としており「Success story」の例が出てきている。種鶏、飼料、医薬品は輸入に依存しているが、農業開発が進むに従い自給率が上昇すると推測され、それにともない、鶏病の専門家のニーズも増大する考えられる。Nepalの20年計画といわれるAgriculture Perspective Plan「農業長期計画」はその現われと言えよう。Nepalでも、このような展望があるためか、Tribhuvan University, Rampur, Chitowanにある畜産学部を獣医畜産学部として改組し、1993年のAcademic yearから、自国で獣医師の養成を既に始めている。もはや、獣医学教育をIndiaやPakistanに依存していない。更に、食肉関係法を設定し、先進国なみの品質の食肉の生産を計画している。大阪府立大学における「食用動物疾病の診断技術コース」が既に開始されており、Nepalが求めるものと本コースが提供する内容とがうまくマッチしたのは、誠に好偶であった。

・ 他方、相手国には、いわゆる「供与慣れ」があるという印象をうけた。Nepalの

Tribhuwan Universityには、畜産学科の施設として、オランダ、イギリス、アメリカへ必要な建物として要求し、無償で受けた建物があったが、使用されていない状況であった。また、供与国は建築後大学に移管し、供与後の活用については関心を示していないとのことであった。現在、獣医教育病院に隣接した独立のMicrobiologyの建物がイギリスの供与で建築中であったが、完成後の活用状況を注視したいと、思われる。

Peradeniya大学農学部への無償供与は既に行われている。「もらえるものはいくつでも欲しい」ではなく、研究テーマと必要な機材の厳選と整合性のチェックが必要で、農学部、VRI、他の研究機関と共同で使用することを条件に供与が行われたかどうか、気にかかる。

・両国のみならず、他の国でも、わが国以上に縦割権限の著しいところは多い。施設や機材の効率的な使用のsoftware確立を条件とした供与が必要となろう。

家禽疾病の診断技術コース 帰国研修員リスト

ネパール

研修期間	研修生	研修前	研修後
平成5年度 93.09.09-94.03.24.	Govinda Thakur	Veterinary Officer (Animal Health), District Veterinary Hospital, Ministry of Agriculture, Department of Agriculture and Livestock Services, Kalaiya, Bara, Nepal	同左、現在インドへ留学中 (大学院修士課程在学中)
平成6年度 94.09.05.-95.03.17.	Parsu Ramidr Bhusal	Veterinary Officer, District Agriculture Office Solukhumbu, Ministry of Agriculture, Animal Health Division, Department of Agriculture and Livestock Services, Solukhumbu, Nepal	Veterinary Officer, District Veterinary Hospital, Ministry of Agriculture, Animal Health Division, Department of Agriculture and Livestock Services, Bhatapur, Chitowan, Nepal
平成7年度 95.08.28-96.03.08	Bhatt Diker Dev	Veterinary Officer, District Livestock Service Office, Ministry of Agriculture, Animal Health Division, Department of Agriculture and Livestock Services, Salayan, Nepal	同左
平成9年度 97.08.25-98.03.05	Vijay Chandra Jha	Veterinary Scientist (Veterinary Microbiologist), Animal Health Research Division, Nepal Agricultural Research Council, Tripureswor, Kathmandu, Nepal	同左

スリ・ランカ

研修期間	研修員	研修前	研修後
平成5年度 09/09/93-03/24/94	Withanage Gamini Saman Kumara	Lecturer (Probationary), Department of Veterinary Clinical Studies, Veterinary Teaching Hospital, University of Peradeniya, Peradeniya, Sri Lanka	同左、現在日本へ留学中 (大阪府 立大学大学院獣医学専攻博士課程 在学中)
平成6年度 94.09.05.-95.03.17.	Nilapitiya A. Y. Wasantha Kumara	Veterinary Surgeon, Department of Animal Production and Health, Government Veterinary Hospital, Bungalow, Getambe, Peradeniya, Sri Lanka	同左
平成7年度 95.08.28-96.03.08	Gamarallage Vijitha Kumara Senanayake	Veterinary Surgeon, Poultry Services Unit, Veterinary Research Institute, Department of Animal Production and Health, Gannoruwa, Peradeniya, Sri Lanka	同左、現在日本へ留学中 (現在、 宮崎大学獣医学科研究生、平成11 年4月から大学院博士課程進学予 定)
平成9年度 97.08.25-98.03.05	Hemal Kothalawala	Veterinary Research Officer, Veterinary Research Institute, Ministry of Livestock Development and Estate Infrastructure Department of Animal Production and Health, Gannoruwa, Peradeniya, Sri Lanka	同左

1. コース名など

(1) コース名

和 文 : 家禽疾病の診断技術

英 文 : Laboratory Diagnosis of Poultry Diseases

(2) 研修期間

a. 全体受入期間：平成9年 8月25日(月)～平成10年 3月 5日(木)

b. 技術研修期間：平成9年 9月29日(月)～平成10年 3月 3日(火)

(3) 定 員 6名

2. コースの目的・背景

(1) 目 的

わが国において既に克服された家禽疾病および開発途上国における家禽病にかかわる技術を移転するため、開発途上国の人材を受け入れ、家禽疾病および食肉の衛生管理の重要性を認識させるとともに、受入国の事情に応じた家禽疾病の診断技術を講義および実習により習熟させることを目的とする。それにより、開発途上国における家禽の衛生管理の改善を図るとともに、当該国の人々の健康増進に貢献する事を目的とする。

(2) 背 景

開発途上国では、蛋白供給源として家禽が重要視されており、中でも、肉用・産卵用の鶏の生産は著しく増加してきている。鶏は他の畜肉と異なり、肉・卵は宗教や生活習慣の制約を受けず広く人々に消費されている。家禽産業の発展は、家禽および飼料作物の改良・生産技術の改善によるものであり、これらの技術は先進国で開発され、開発途上国へ移転されたものが多い。これら生産・管理技術の移転に比べて家禽の衛生管理、特に疾病の予防・治療にかかわる技術の移転はまだ十分とはいえないため、技術移転および人材育成の必要性が必要となっている。

3. 到達目標

家禽疾病の診断および食肉の汚染検査にかかわる計画の立案、実行、結果の記録、総括する能力を下記の項目に従い養成する。

- (1) 健康な鶏、瀕死の鶏、死んだ鶏の取り扱い、検査。検査した鶏から検体をとる。
- (2) 手に入れた材料の取扱い保存および標本の準備。
- (3) 微生物学的、寄生虫学的、病理学的、免疫血清学的検査。
- (4) 汚染した家禽製品の食中毒のもととなる可能性を微生物学的に検定、また毒素の効力検定。
- (5) 実験的に病原体を感染させた鶏の肉眼的、顕微鏡的および微生物学的検査。
- (6) 実験室の衛生管理。
- (7) 方法論の解説、記録作成、結果の要約。
- (8) 実験室の全体的管理能力の養成。
- (9) 食鳥処理場において、法律に定められている基準に従い担当獣医師とともにライン上の鶏を検査する。

4. 研修項目

(1) オリエンテーション

講義と見学

①大阪府立大学農学部獣医学科の案内

②獣医学科にてオリエンテーション

職員の紹介、実験室、図書室、学生ホールおよび関連設備の案内

(2) 導入

講義

①世界の家禽消費と栄養価

②家禽と鶏卵生産に対する家禽の衛生の重要性

③家禽に対して有害な伝染病

④世界の重要な疾病の要約

⑤病原体、臨床兆候、病理学的所見、免疫血清学的所見、ワクチン接種による予防、衛生、動物伝染病学上の特徴および一般の公衆衛生に対する家禽製品の重要性

(3) 臨床学的診断法

講義

①臨床学的病理学

実習

①血液学

②臨床学的血液化学

(4) ウイルス性疾病

講義

- ①ウイルス分離法概説
- ②血清学的診断法概説

実習

- ①鶏腎組織培養
- ②鶏胚組織培養
- ③ウイルス培養法
- ④血清学的診断法

(5) 細菌性疾患診断

講義

- ①マイコプラズマ症
- ②サルモネラ症
- ③大腸菌症
- ④ブドウ球菌症

実習

- ①検出
- ②培養
- ③同定

(6) 嫌気性菌 (クロストリジウムを中心に)

講義

- ①嫌気性菌全般
- ②嫌気性菌病
- ③嫌気性培養法
- ④同定

実習

- ①嫌気性菌の培養
- ②毒性試験
- ③壊死性腸炎材料からの分離・同定
- ④壊死性腸炎材料からの分離・同定

(7) 原虫性疾患

講義

- ①蠕虫病
- ②ロイコチトゾーン症
- ③コクシジウム症

実習

- ①原虫の分離・同定
- ②血清学的診断法

(8) 免疫、血清学的方法

講義

- ①免疫学概説
- ②感染防御免疫機構
- ③血清学的診断法各論

実習

- ①免疫法、血清採集
- ②抗体の精製 (クロマトグラフィー、ホリアクリルアミド電気泳動)
- ③凝集反応細菌の血清学的同定
- ④沈降反応、免疫電気泳動
- ⑤溶血反応試験
- ⑥補体結合反応試験

- ⑦細胞障害試験
- ⑧ELISA
- ⑨リンパ球幼若化反応
- ⑩抗体産生細胞の検出

(9) 家禽疾病の病理学的診断

講義

- ①鶏の病理解剖

実習

- ①病理学的診断技術
 - a. 剖検術式
 - b. 肉眼病変の撮影

デモンストレーション

- ①透過型電子顕微鏡のための標本作製技術および観察方法
- ②光学顕微鏡検査のための病理組織標本作製技術
 - a. 固定
 - b. パラフィン包埋
 - c. パラフィン包埋組織の薄切
 - d. 凍結組織の薄切
 - e. 組織切片の染色
 - f. 光学顕微鏡による観察と組織写真撮影

(10) 関西近辺の食鳥処理場において、検査担当獣医師とともに法律に定める基準によりラインの鶏を検査する。また、公衆衛生上に重要な疾病の疑いのある鶏から集めた材料の病理学的、微生物学的検査に参加する。

(11) 個々の研修員による技術の要約

(12) 大学担当者による個々の研修員の評価

5. 研修方法

(1) 指導方法

- ①この研修は、獣医学科の6講座のそれぞれの研究実験室にて6名全員、或いは2、3名のグループに分かれて大学担当者によって行われる。
- ②研修員は実験室において、基礎的な知識および現在世界に存在している家禽の最も重要な疾病の診断技術を学ぶ。
- ③食鳥処理場において、現在日本の家禽産業が直面している疾病を観察する有益な経験を習得。工場における研究施設、衛生管理法、標本の取扱いおよび記録の作成法も習得する。

(2) 研修言語

英語（一部、日本語）

(3) 研修設備

黒板、スライドプロジェクターなどを講義で使用。

6. 研修委託機関

大阪府立大学農学部獣医学科

7. 研修員参加資格要件

(1) 応募要件

- a. 所定の手続きに基づき各国政府が推薦する者
- b. 大学を卒業した者、またはこれと同等の資格を有する者
- c. 関連業務に3年以上従事している者
- d. 35歳以下の者
- e. 十分な英会話および英文読解力を有する者
- f. 心身ともに健康な者（ただし、妊娠中の者は除く）
- g. 軍籍にある者は不可

(2) 割当国（9カ国）

中国、バングラデシュ、ネパール、パキスタン、スリ・ランカ、イラン、アルジェリア、ザンビア、ブラジル

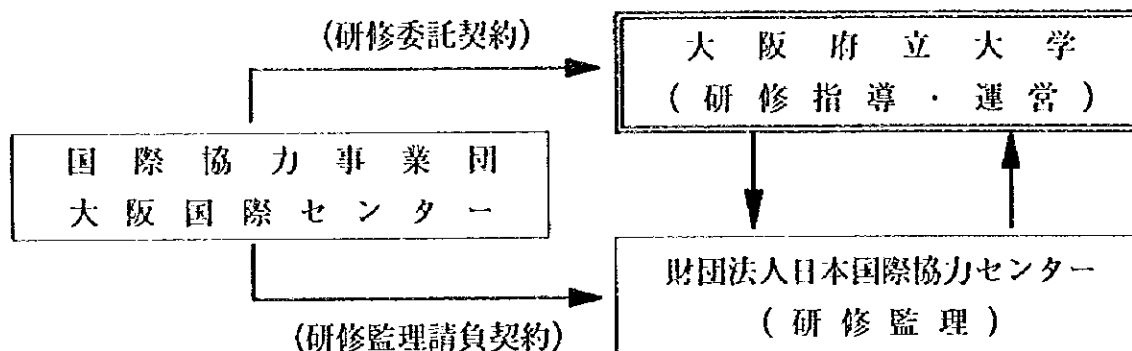
8. 研修実施体制

(1) 実施体制概略

国際協力事業団は、委託契約に基づき、大阪府立大学に本コースの研修指導・運営を委託する。

また、本コースの効果的運営のために研修監理業務（通訳・同行業務など）を財団法人日本国際協力センターに委託し、研修監理員の配置を行う。

これら業務の流れは以下のとおりである。



(2) 研修運営機関

a. 研修実施機関

国際協力事業団 大阪国際センター

(OSIC: Osaka International Centre)

〒567 大阪府茨木市西豊川町25-1

電話：0726-41-6900

FAX：0726-41-6910

b. 研修委託機関

大阪府立大学 農学部

〒593 堺市学園町1-1

電話：0722-52-1161

FAX：0722-52-0341

大阪府立大学農学部は、100余年前に創設された大阪府立農学校にそのルーツを持つ。学部には4学科41講座と附属農場および附属家畜病院があり、その充実した講座編成とそのスタッフの配置は、全国農学部中有数のものである。

c. 研修監理業務委託機関

(財) 日本国際協力センター

(JICE: Japan International Cooperation Center)

(財)日本国際協力センターは、国際協力事業の実施に関する協力、国際協力に関する広報などにおいて、わが国の国際協力事業の推進に貢献するために昭和52年に設立された公益法人である。

同大阪支所

〒567 大阪府茨木市中穂積1-1-59 茨木田中ビル5階

電話：0726-24-8686

FAX：0726-24-8681

9. 宿 舎

国際協力事業団 大阪国際センター (OSIC)

住所：〒567 大阪府茨木市西豊川町25-1

電話：0726-41-6900

10. 研修付帯プログラム

(1) 集合ブリーフィング (原則として火曜日)

来日の翌日OSICにおいて、事業団規則の説明、滞在費送金用銀行口座の開設計手続き、健康保険証 (Medical Card) の交付など、研修員が本邦で研修生活を送るために必要な関連事項の説明および所要の手続きを行う。

(2) 一般オリエンテーション

日本への理解を助け、短期間に日本社会になじませ、本邦での研修生活を実りあるものにするため、上記(1)のブリーフィングのあとに日本を紹介するプログラムを実施している。

日	時 間	内 容
第1日 (水曜日)	10:00~12:00	日本の社会と日本人
	13:30~15:00	日本語の特質から見た日本人と社会
	15:15~17:15	日本の歴史・文化
第2日 (木曜日)	終 日	関西バスツアー
第3日 (金曜日)	9:45~11:45	日本の教育
	13:15~15:15	日本の経済
	15:30~17:00	日本の政治・行政機構

(3) コース・オリエンテーション

本コースの到達目標、カリキュラム構成、研修日程について、コース・オリエンテーションを実施する。

(4) 日本語講座

①目的

日本語の学習を通じて日本人の考え方、行動様式を学び日本における生活を円滑なものとするため、OSICにおいて日本語講習を行う。

②講義時間および参加形態

a. 集中講習

技術研修に先立ち、9月1日（月）～9月26日（金）まで、1日5時間計80時間実施する。

集中講座は、正規の研修プログラムの一環として実施するものであり、本コースの研修員全員に受講が義務付けられている。

b. 一般講習

集中講習を補完し研修員の知的興味をさらに満たす目的で、集中講習修了後の技術研修期間中の夜間に希望者を対象に実施する。

1.1. 研修の評価

主として、本コースで設定した到達目標をどの程度達成できたかという視点から、研修を構成する諸要素について評価を行う。その結果は、次年度以降のコース改善に役立てることとする。

(1) ファイナルレポート

国際協力事業団所定の様式を用い、コースに参加した研修員が研修全般についての所感を取りまとめる。

(2) デイリーエバリュエーション

研修員による評価

付表-2の評価表を使用して、コースに参加した研修員の各講義および見学についての所感を取りまとめ、ファイナルレポートと相互補完の形で研修の全体評価の資料とする。

1.2. 修了証書

このコースを修了した研修員に対し、国際協力事業団は修了証書を授与する。

13. 研修員の待遇

(1) 入国資格

日本で技術研修を受けることを許可された者。なお、日本滞在中は日本国法令の適用を受けるとともに、働いて収入を得ることはできない。

(2) 支給手当

国際協力事業団の規程に基づき、本コースの研修員に下記の通り滞在費、その他の手当が支給される。

- a. 各国と日本間の正規運賃航空券。
- b. 生活費として1日あたり3,594円（宿泊費、朝食／夕食費は別途支給）。
- c. その他、支度費（15,000～40,000円期間別）、書籍費（5,000～17,000円期間別）、資料送付料（4,000～25,000円地域別）。
- d. 日本に到着後に発生した傷病に対する医療サービス（保険により無料治療）。
- e. 研修のための移動にともなう通勤費および研修旅行の旅費。

なお研修員の日本での滞在は、国際協力事業団のセンターでの宿泊を原則とするが、研修旅行などで最寄りのセンターを利用できない場合は一般のホテルを利用する。ホテル利用の場合、国際協力事業団指定のホテルは、研修員の宿泊料を国際協力事業団がホテルに直接支払い、指定外ホテルの場合は宿泊料の実費を研修員の口座に振り込む。

国別年度別研修員参加実績表

	平成5年度	平成6年度	平成7年度	平成8年度	平成9年度	受入数計
国名	受入	受入	受入	受入	受入	
ネパール	1	1	1		1	4
パキスタン	1					1
スリ・ランカ	1	1	1		1	4
ガーナ	1	1				2
タンザニア	1	1	1			3
ケニア		1	1			2
ペルー	1		1			2
ブラジル		1	1		1	3
中国				1	1	2
バングラデシュ				1	1	2
インドネシア				1		1
フィリピン				1		1
セネガル				1		1
イラン				1		1
アルジェリア					1	1
計	6	6	6	6	6	30

