

3. EXTENSION GUIDELINES

3.1 OBJECTIVES

Extension on the control and eradication of cattle and buffalo fasciolosis has the following objectives:

- To improve understanding and knowledge of fasciolosis (epidemiology, mode of spread) and its control measures among staff of the Department of Animal Health and Production and staff of the Offices of Animal Health and Production. They must have the capacity and capability to teach other stakeholders, especially farmers about control and eradication of fasciolosis;
- To improve knowledge and understanding of fasciolosis (epidemiology, mode of spread) and its control measures among extension workers and village livestock agents so that they have the capacity to conduct extension work for stakeholders, and farmers as well as deepening their own knowledge of treatment and control of the disease;
- To put in place among animal owners & farmers and stakeholders a good working knowledge and understanding of fasciolosis (epidemiology, mode of spread) and its control measures;
- To establish among staff of the Department of Animal Health and Production, staff of the Offices of Animal Health and Production, extension workers, village livestock agents, animal owners-farmers and stakeholders a good working knowledge of costs and benefits associated with fasciolosis control.

3.2 EXTENSION METHODOLOGY

Extension methods:

- Awareness of fasciolosis is obtained by the program “school-on-air” to stakeholders, animal owners and farmers. The extension & training activity is in three modules, each module lasting for two days. Each module starts three months after the previous one. It includes theory and practice, game play and responding to questions.
- Meetings with farmers and stakeholders. Farmers and stakeholders’ are interviewed on fasciolosis and its control measures, and their attitude for the fasciolosis control program is assessed.
- Pilot demonstration and display of posters and written extension material.
- Distribution of extension materials.
- Extension via television and radio.

3.3 SITE SELECTION

The site(s) being selected for the implementation of TIP on fasciolosis are those areas where prevalence of fasciolosis is higher than 30 percent.

3.4 FARMERS/STAKEHOLDERS SELECTION

Participants to be selected as recipients of training, education and extension should meet the following criteria:

- Those who have cattle & buffalo in an area where fasciolosis is a risk.
- Aged from 16 to 55 years.
- Has a duty to take care of cattle & buffalo and be responsible for their feeding.

Local authorities such as commune and village leaders are invited to participate in the education and extension training courses.

The recommended size of the group of farmers and stakeholders for training is 30. The group is divided into six groups of five for discussion, to play the games and do the presentations which will test that they have fully understood the theory provided during the course. Practical work, games and presentations during the course are specific to each course.

3.5 EQUIPMENT AND EXTENSION MATERIALS

Equipment and extension materials for training, education and extension activities comprise leaflets on fasciolosis, posters, banners, radio spots and teaching materials.. Teaching materials are drawings, pictures, fresh, and dried and preserved specimens of the snail identified as the mollusc *Lymnea*, the intermediate host of *Fasciola*. They include different kinds of drugs for treatment of fasciolosis, antibiotics and vitamins, a chart life-cycle of *Fasciola gigantica* and pictures of domesticated animals to demonstrate aspects of the training. Teaching materials also include flip charts and kits for group presentations from plenary sessions and discussions.



Leaflet and signboard on fasciolosis



Banner

Mollusk Lymnea



Triclabendazole/Fasinex

Genesis Ultra

Dovenix-25%/Nitroxinile



Farmbazan

Genta-Tylosin

Septotryl 24%



Drugs for participants' selection



Pictures display for participants' playing games



Chart life-cycle for fasciolosis

3.6 EDUCATION, TRAINING AND EXTENSION

The training, education and extension program for the farmers and stakeholders on fasciolosis and its control measures consists of three modules:

Module I

This module, participants are introduced to facts about fasciolosis:

a. Theory

- Morphology of Fasciola
- Life-cycle of fasciolosis, the relationship between susceptible animals and intermediate host of Fasciola mollusk Lymnea, how the disease is spread and infection occurs,
- Symptoms,
- Fasciolosis effects.
- Treatment and prevention.

b. Practices and playing games

Game 1: What are the susceptible animals for fasciolosis? 45 minutes.

- Individual participants select animal pictures which s/he thinks is of an animal susceptible to fasciolosis (different animal species are displayed for selection).
- Participants report to the groups explaining why s/he came to the conclusion that the animal is susceptible.
- The trainer provides an explanation of the correctness or otherwise of the answers.

Game 2: Which snail/mollusc is the intermediate host of Fasciola? What is the name of the snail/mollusk? Where is its habitat? 45 minutes.

- Individual participants select the snail species s/he thinks is the intermediate host of Fasciola. Different snail/mollusk species collected from the field are displayed for participants' selection. The exhibits could be live or dried & preserved snails or sometimes pictures of snails. The participant inspects the exhibits and draws his/her conclusions.
- Participants report their conclusions to the groups and explain how he or she reached that conclusion. Participants report to the group about the characteristics of the snail's habitat.
- The trainer confirms participant responses and provides further information.

Game 3: Matching the pictures from stages of the life-cycle of Fasciola. 45 minutes.

- Participants are asked to match pictures of the life-cycle of *Fasciola gigantica*.
- Pictures are cut separately: provided are pictures of cattle & buffalo; dung; miracidium, sporocysts, rediae, cercariae, metacercariae, snail/mollusk Lymnea etc.
- The trainers provide comment to the group on participant responses and provide additional explanations.

Module 2

In this module participants are taken through aspects of control of fasciolosis

a. Theory

- Revision module 1
- Information about fasciolosis control measures:
 - Biological control: collection and storage cattle/buffalo dung in a trench
 - Grazing management: safe & unsafe grazing zones, disease occurrence, grazing management
 - Use of anthelmintics

Game 1: To avoid infection with fasciolosis, where should animals be grazed? Draw on the map, zone(s) of fasciolosis risk and indicate periods when infection might occur. 45 minutes.

- Participant draws on the map, marking zone(s) of fasciolosis risk and indicates the time of high infection risk.
- S/he reports to the group
- The trainer confirms accuracy of participant answers and provides additional explanations.

Game 2: By which method could one expect to reduce the spread of Fasciola infection, by storing cattle/buffalo dung in a trench or by leaving it uncollected?

- Participant select picture(s), prepared for the game and
- Report to the group about his or her decision
- The trainer comments to the group on the answers and provides additional explanations.

Game 3: Which drug(s) can be used for treatment & control of fasciolosis? 45 minutes.

- Different kinds of drug as presented in the veterinary pharmacy in manufacturers' containers including drugs against fasciolosis, vitamins, and antibiotics are displayed for participant selection.
- Participants select any drugs they think could be used for treatment of fasciolosis. S/he explains to the group his/ her choice.
- The trainer confirms or denies participant answers and provides additional explanations.

Game 4: Schedules for drug use against fasciolosis. 45 minutes.

- Participants select drugs for treatment against fasciolosis and report to the group the timing of the schedule for treatment.
- The trainer confirms or denies responses from the group and provides additional explanations.

Module 3

In the third module, training on the control measures against fasciolosis and eradication of the disease is reinforced:

a. Theory

- Revision of the effects of fasciolosis

- Control measures against fasciolosis and eradication of the disease:
 - Biological control: collection and storage cattle/buffalo dung in a trench
 - Grazing management: safe and unsafe grazing zones, disease occurrence, grazing management to avoid infection
 - Use of anthelmintics: use of drugs and time/schedule for drugs use.

b. Practices and playing games

Question 1: What are impacts, caused by fasciolosis?

- Participants work in small groups. A representative from each group responds to the question.
- The trainer confirms or rejects participant answers and provides additional explanations.

Question 2: How many methods are there for control and prevention of fasciolosis?

- Participants work in small groups. A representative from each group responds to the question.
- The trainer confirms or rejects participant answers and provides additional explanations.

Question 3: What measures have to be taken to avoid fasciolosis infection?

- Participants work in small groups. A representative from each group responds to the question.
- The trainer confirms or rejects participant answers and provides additional explanations.

3.7 MONITORING AND EVALUATION

Farmers, animal owners and stakeholders are taught about fasciolosis and its control measures. Education and training consists of three modules for implementation over six months. Extension staff have a responsibility to conduct evaluation of results. A recommended procedure for monitoring and evaluation of the extension program is as follows:

- Conduct meetings with farmers, animal owners and stakeholders to explain and inform them of the importance of the fasciolosis program and obtain commitment by stimulating their interest;
- Prior to implementation of the program, conduct a survey of farmers', animal owners' and stakeholders' knowledge and understanding of fasciolosis and its control program, especially concerning changes in animal productivity. Some 10-15 percent of farmers/animal owners/stakeholders from the target area should be selected for the survey and interview. The survey should be conducted both halves of one year so that animal performance in the main seasons can be assessed;
- Implement the planned extension program on fasciolosis
- After the extension activity monitor the target group every three months. Collect information from them on outcomes including any changes in their attitudes to control of fasciolosis;
- Continue to monitor the results of program beyond the first three months. The introduction of control measures takes not fewer than nine months. And the animal production response will take longer.

3.8 WORK PLAN AND BUDGET

This TIP on fasciolosis and its control measures could be applied any time of the year without limitation however, considering the training and extension course should be organised to be at the most convenient time for farmers.

The work plan and budget for the TIP on fasciolosis is as follows:

Costs for fasciolosis control/head/year

| Activity/Control methods | Cost/Head/Year/Range | Total (average) |
|--|---------------------------------------|----------------------|
| Drugs | 20 000 riels (10 000–20 000) | 20 000 riels |
| Extension materials | 12 000 riels (8 000–12 000) | 12 000 riels |
| Education, training, extension to farmers, animal owners, stakeholders | 20 000 riels (10 000–20 000) | 20 000 riels |
| Dung storage house | 30 000 riels (10 000–30 000) | 30 000 riels |
| Meetings with farmers, animal owners, stakeholders | 16 000 riels (8 000–16 000) | 16 000 riels |
| Training extension staff | 12 000 riels (8 000–12 000) | 12 000 riels |
| | 110 000 riels (59 000–110 000) | 110 000 riels |

Expenses for the TIP on fasciolosis is 110 000 riels (59 000-110 000 riels) for one animal for one year. The total costs included:

- Farmer, animal owner will spend 50 000 riels (20 000-50 000) for drug against fasciolosis and dung storage shelter;
- The program will spend 60 000 riels (39 000-60 000) for costs of meetings, education, training and extension, survey, monitoring and evaluation.

**Work plan and budget for implementation of TIP
on fasciolosis and its control measures (12 months)**

| Activity | Unit | Quantity | Unit price | Total |
|--|------|----------|---------------|------------------------|
| Extension materials | – | – | – | 720 000 riels |
| Education, training, extension to farmers, animal owners, stakeholders | Time | 3 | 400 000 riels | 1 200 000 riels |
| Meetings with farmers, animal owners, stakeholders, survey, monitoring and evaluation: | | | | 960 000 riels |
| • Meetings with farmers, stakeholders | Time | 3 | 200 000 riels | 600 000 riels |
| • Survey | Time | 3 | 60 000 riels | 180 000 riels |
| • Monitoring and evaluation | Time | 3 | 60 000 riels | 180 000 riels |
| Training extension staff | | | | 720 000 riels |
| Total | | | | 3 600 000 riels |

3.9 RESOURCES MATERIALS

A DAHP researcher has conducted a study of fasciolosis and its control since 1990. After 1998, the researcher and others from the Department of Animal Health and Production have continued the fasciolosis research study with project support from the Australian Centre for International Agricultural Research (ACIAR). The relevant research studies on fasciolosis are as follows:

- Control of Fasciolosis in Cattle and Buffalo in Cambodia, Indonesia and the Philippines; ACIAR, AS1/96/160;
- Development of a Model for the Control of Fasciolosis in Cattle and Buffaloes in the Kingdom of Cambodia; ACIAR/2002/099.

These projects produced fasciolosis reports, research and laboratory protocols, and survey and research study formats. The projects also produced extension materials such as leaflets, posters, banners, radio spots, and TV spots and other education and training materials.

All information on fasciolosis can be found at the Department of Animal Health and Production.

THE CALENDER OF TREATMENT, ANIMAL GRAZING MANAGEMENT AND FEEDING
FOR THE CONTROL OF FASCIOSIS IN CATTLE IN SAANG DISTRICT KANDAL PROVINCE

| The control method | Sep. | Oct. | Nov. | Dec. | Jan. | Feb. | Mar. | Apr. | May | Jun | July | Aug. |
|---|------|------|--------------|------|------|----------------------|------|------|-----|-----|------|------|
| Infected period | | | | | | | | | | | | |
| Infected place | | | | | | | | | | | | |
| 1. Dry season rice field | | | | | | Dry season rice area | | | | | | |
| 2. Chamcar | | | Chamcar area | | | | | | | | | |
| 3. Household | | | House area | | | | | | | | | |
| 4. Treatment: Triclabendasole (12mg./kg. body weight) | | | | | | | | | * | | | |
| Albendasole (15mg./Kg. body weight) | | | | | | | | | * | | * | |
| Dovenix (10mg./Kg. body weight) | | | | | | | | | * | | * | |

Notice :

1. Dry season rice area: Grass, rice stem (after harvest) and water with metaecaccaria were sources of infection
2. Chamcar area: Grass, water from man made ponds and canals for water stock with metaecaccaria were main sources of infection
3. Household area: Drinking water from man made ponds and canals and grass with metaecaccaria were main sources of infection
4. * : Treatment month

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