PROTECTIVE FEEDS FOR SCAVENGING POULTRY

DFID Project R7633

Meetings in India (19th – 28th September 2000)

Report and Action Points

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1.0 Project Summary

The project aims to ascertain whether feedingstuffs containing tannins, saponins and antioxidants, in conjunction with improved housing and feeding systems can significantly improve the health and productivity of scavenging poultry in India. Surveys based on group discussions followed-up by individual semi-structured interviews will be carried out in up to 12 villages in both northwest India and Tamil Nadu. Information gathered will include production data, likely effects of intervention, feed types and disease factors (see Appendix 1).

Little is known about the disease status of Desi poultry and whether, for example, there are significant differences in the diseases found in Tamil Nadu *cf*. northwest India; there are differences in the diseases found in the poultry in regions cropping high and low tanniniferous material; what effect the weather/seasons have on disease incidence. Because of these unknowns a disease monitoring programme will be instituted. Part of the monitoring will be carried out before the surveys mentioned above to provide information that can be used to select appropriate villages and questions to include in the main survey (see Appendix 2).

A literature review will be carried out to identify indigenous plants that potentially have the correct properties. This will be used when deciding what feeding types/systems to evaluate as for the intervention. Potential treatments to be used within the interventions will be evaluated in a statistically sensitive manner by replicated studies at TANUVAS and SAC. Following this evaluation appropriate interventions will be tested in the field. The effects of the intervention will be evaluated by the collection of baseline data both before and every four months after, the introduction of the intervention (see Appendix 3).

A national workshop, reviewing and assessing feeding and husbandry strategies and the overarching effect of disease, will be held (see Appendix 4).

In the latter half of the final year of the project the results will be written-up and disseminated.

2.0 Action Points Arising From Visit

1. Report of Visit and associated action points to be circulated **01/11/00**
Action: N Sparks

2. Report of Visit and associated action points to be circulated **01/11/00**
Action: N Sparks

3. Draft 'disease monitoring' protocol to be produced for discussion **01/11/00**
Action: Tom Pennycott

4. Draft 'baseline production' protocol to be produced for discussion **01/11/00**
Action: Tom Acamovic and Nick Sparks

5. Commence analysis of plant materials for tannins and saponins **01/10/00**
Action Prof Chandrasekaran

6. Work to date carried out by TANUVAS on scavenging poultry to written-up **01/01/01**
Action : Dr Natarajan

7. Literature review on nutritional and ethnoveterinary properties of indigenous plant s to be completed **01/01/01**
Action Tom Acamovic and Nick Sparks

8. Research Assistant to be appointed to project at Namakkal **01/10/00**
Action: Prof Chandrasekaran [1]

9. Roles, if any, of Govt Veterinarian and Nematologist (Udaipur) to be clarified **01/11/00**
Action Dr Shindey

10. Commence gathering of first disease data set – TANUVAS **01/12/00**
Action: Prof Chandrasekaran [2]

11. Commence gathering of first disease data set – BAIF **01/01/00**
Action: Dr Joshi [2]

12. Commence initial survey and training – BAIF **01/01/01**
Action: Dr Joshi/MC Conroy [3]

13. Commence gathering of first baseline data set – TANUVAS **01/02/01**
Action: Prof Chandrasekaran/MC Conroy [4]

14. Commence gathering of first baseline data set – BAIF **01/02/01**
Action: Dr Joshi [4]

15. Complete gathering of first disease data set – TANUVAS **01/02/01**
Action: Prof Chandrasekaran

16. Complete gathering of first disease data set – BAIF **01/02/01**
Action: Dr Joshi

17. Commence initial survey and training - TANUVAS **01/02/01**
Action: Prof Chandrasekaran

18. Complete gathering of first baseline data set – TANUVAS **01/04/01**
Action: Prof Chandrasekaran

19. Complete gathering of first baseline data set – BAIF **01/04/01**
Action: Dr Joshi

20. Commence gathering of second disease data set – TANUVAS **01/04/01**
Action: Prof Chandrasekaran

21. Commence campus based studies – TANUVAS **01/05/01**
Action: Prof Chandrasekaran [5]

22. Complete gathering of second disease data set – TANUVAS **01/05/01**
Action: Prof Chandrasekaran

23. Next set of review meetings (BAIF/TANUVAS) Approx **01/03/01**
Action N Sparks

24. Commence gathering of second disease data set – BAIF **01/07/01**
Action: Dr Joshi

25. Complete gathering of second disease data set – BAIF **01/08/01**
Action: Dr Joshi

Notes

[1] Prof Chandrasekaran to arrange appointment of research assistant. Specification to include ideally: good command of the English language, ability to relate to village women (eg able to listen and ask questions that are not 'leading', able to gain trust of the women), interested in the project, interested in learning 'Rural Appraisal' techniques. While it is desirable that a women is appointed to this post ultimately the best all-round candidate should be appointed.

[2] See Appendix 2

[3] See Appendix 1

[4] See Appendix 1

[5] Campus-based – details to be agreed by TANUVAS and SAC by February 2001

Appendix 1 - Surveys (Results of Discussions at TANUVAS and at BAIF)

Two areas - Tamil Nadu, Northwest India.

In each of these two geographic areas, the survey will include two different crop-producing regions, e.g. tanniniferous and non-tanniniferous.

Initially, Czech Conroy and Ashwine Ghorpade will go to both areas for the **Pilot survey**, then the **Base-line survey** at Northwest India will be carried out by somebody else (male or female) at BAIF, and in Tamil Nadu by the (probably female) vet to be employed by TANUVAS.

Protocol indicates up to 16 villages in Northwest India and up to 16 in Tamil Nadu. Likely to be up to 12 in each geographical location. All to be selected from tribal areas, all to be below the poverty line.

Questions to be decided by CC and Dr Ashwini, but could include information about hatchability, mortality, bodyweights, behaviour, supplementary feeding, diseases, etc.

Pilot survey

A partial analysis of the disease monitoring programme data and the survey data will permit identification of a smaller number of villages.

BAIF will question women on feasibility of following individual birds through the life cycle. Data from the Pilot survey will be analysed by Dr Ghorpade and then sent to Czech Conroy. (Data from the Base-line survey will be analysed initially by Dr Ghorpade [for BAIF areas] and the new appointment [for TANUVAS areas].

Analysis of the plant material – Tom Acamovic will specify a list of plants so that villagers can be asked by field workers about specific plants.

Baseline survey

Baseline data will be collected from up to 6 villages/regions at each of the 4 locations (2 locations in Tamil Nadu, 2 locations in Northwest India) ***every 4 month***s.

The pre-survey disease monitoring programme described/discussed elsewhere will form part of the baseline data collection.

Further baseline data will be collected during the surveys of the villages by TANUVAS (Tamil Nadu) and by BAIF (Northwest India).

The collection of baseline data will continue every 4 months after intervention, permitting a before/after comparison.

Baseline data will be collected by BAIF in Northwest India and by TANUVAS plus field vets in Tamil Nadu (including the vet appointed by TANUVAS).

Protocols (to include an appropriate assessment of liveweight gain) for the production of baseline data will be produced by Nick Sparks and Tom Acamovic.

The possibility of the collection of baseline data by a person (woman?) in the village was raised, in advance of the proposed intervention.

Timing

a) In Tamil Nadu, the rainy season is August to January, therefore possibly the best time for the survey would be between February to June, 2001.

b) Possible times for the survey to be carried out in North-West India, would be February to April when it is dry and cool.

Locations

Tamil Nadu

In Tamil Nadu, it is proposed that half of the villages will be in Namakkal district (the paddy belt), half will be in Trichy district (sorghum belt).

The schedule proposed is:
Pre-survey disease programme of sampling in December to January 2001, when it will be wet.
Base-line survey in February to April 2001
Post-survey disease programme of sampling in April to May 2001, when it will be dry.

North West India

The locations in northwest India are still to be finalised, possibly near Udaipur in Rajasthan. The villages will be selected based on the results of the presurvey programme of sampling. Dr Shiney will contact the Government Vet interested in poultry diseases, and the nematologist specialist at the Agricultural College to see if they still wish to be involved in the project. An alternative location is Panchmahal district in Gujarat (Dr Pradhan is based in Vadodara district (next to Panchmahal). Panchmahal district has a high rainfall, is covered by the Western India Rainfed Project. Location will be decided upon following the pre-survey programme of sampling, as above.

The schedule proposed is:
Pre-survey disease programme of sampling in January to February 2001, when it should be cool and dry.
Base line survey in February to April, 2001.
Post-survey disease programme of sampling in July to August, in the wet season.

Survey methodology.

Semi-structured, not a questionnaire. Group discussions, then individual interviews.

Appendix 2 - Disease Monitoring Programme

Little is known about disease of desi poultry in general. It is not know whether there are differences in disease patterns between Tamil Nadu and Northwest India, or between different locations in each of these two regions, or at different times of the year.

Disease status may influence the choice of villages to be included in the surveys, the choice of villages for which base line data will be recorded and, possibly, the nature of the base line data to be recorded. Knowledge about prevalent disease may also influence the nature of some of the questions asked in the survey.

It is therefore proposed that a **Disease monitoring programme** be carried out in Tamil Nadu and in Northwest India. This disease monitoring programme will be carried out at difference locations in each region, and both in the dry season and the wet season.

Tamil Nadu

It is proposed that sampling for the **Disease monitoring programme** be carried out in the wet season in December 2000 – January 2001, followed by the **Base-line survey** in February 2001 – March 2001, followed again by further **Disease monitoring programme** sampling in the dry season of April 2001 – May 2001.

A trader has been identified who buys desi birds from the predominant rice growing areas of Namakkat District, and another trader who buys desi birds from the predominantly sorghum growing area of Trichy District (rice has no significant quantity of tannin while sorghum can contain above 100 g/kg tannin.

During the sampling months of the **Disease monitoring programme**, it is proposed that five birds per week will be collected from each of the two traders. Either the whole bird will be purchased, or samples of blood and digestive tract will be collected when the birds are slaughtered at the traders' premises.

Disease monitoring could include the following:

a) Serology for ND, pullorum disease and IBD.
b) Examinations of blood smear for haemoparasites.
c) Culture of one caecum for salmonella, including *Salmonella pullorum*.
d) Total worn count, from stomachs (proventriculus and gizzard), small intestine and caecum, and including nematodes, cestodes and trematodes.
e) Worm egg count in faecal or caecal material.
f) Examination for lesions of coccidiosis.
g) Coccidial oocyst count in faecal or caecal material.

It was suggested at Namakkal that the sample could be collected by vets from TANUVAS, by vets from the Field Service, or by the vet to be appointed by TANUVAS.

It was suggested that the parasitology be carried out by Dr Harikrishnan at Namakkal, possibly aided by the vet to be appointed by TANUVAS.

It was suggested that the serology and examination for salmonella be carried out by the Microbiology Department of TANUVAS at Namakkal.

Northwest India

It is proposed that sampling for the **Disease monitoring programme** be carried out in the dry season of January 2001 - February 2001, followed by the **Base-line survey** in February 2001 – April 2001, followed again by further sampling for the **Disease monitoring programme** in the wet season of July 2001 – August 2001.

Unlike the situation in Tamil Nadu, the option of obtaining material from a trader/slaughter plant seems unlikely. Instead, it is proposed that five birds per week be purchased from villages in:

(i) Udaipur region of Rajasthan
(ii) Panchmahal region of Gujarat.

Sampling in Udaipur to be arranged by Dr Shindey of BAIF. Sampling in Panchmahal to be arranged by Dr Pradhan of BAIF.

Samples from Udaipur could be tested by the Government vet and parasitologist in Udaipur. Samples from Panchmahal could be tested by the Veterinary College in Panchmahal. Alternatively, some of the samples could be sent to TANUVAS for further examination.

Co-ordination

Tom Pennycott to produce a draft protocol for discussion, to be sent to Prof Chandrasekaran at Namakkal, Dr Shindey at Udaipur and Dr Pradhan at Vadodara for discussion with the appropriate department, etc.

Appendix 3 - Report of Visit

Those involved from the UK were Czech Conroy (CC), Tom Pennycott (TP), Tom Acamovic (TA) and Nick Sparks (NS).

Tuesday 19th September

TA, CC, TP and NS travelled to Mumbai

Wednesday 20th September

TA, CC, TP and NS travelled from Mumbai to Chennai. At Chennai UK party was met by Prof Chandrasekaran and Dr A Natarajan (TANUVAS). The party then travelled overnight to Salem

Thursday 21st September
From Salem the party travelled to the TANUVAS institute at Namakkal. Following an initial meeting with Prof Chandrasekaran, Dr A Natarajan TP and CC departed with Dr A Natarajan to visit Jambumadai village in Trichy District. As a result of this visit it was agreed that a follow-up meeting would take place with some of the women on the Saturday.

Friday 22nd September
A meeting with the Dean (TANUVAS) took place to update him on the progress of the project. There then followed discussions with Prof Chandrasekaran and Dr A Natarajan regarding the experiments to be conducted on station.

In the afternoon a stakeholders meeting took place that was attended by the UK contingent, Animal Health Department Director and Vets and TANUVAS staff. The purpose of the meeting was to discuss and confirm project details and schedule with the local Animal Health Officers. The following notes summarize what was discussed:

> In Tamil Nadu, there are 1,100 Government Dispensaries, each of which has one Veterinary Assistant, one Livestock Inspector and two Animal Attendants. Each region has a hierarchy of Directors.
>
> Bird keepers can take their birds to a Government Dispensary ('Field Vets') on, for example, a Saturday, for free vaccination. A live vaccine was used (Kumarov strain), ½ cc being given by subcutaneous injection in the wing. Vaccine can be stored in the deep freeze then posted out, provided it is used within 3 days of removal from freezer. Usually only one dose given, around 8-10 weeks.
>
> Possibly, they could train somebody to vaccinate birds in the village, e.g. Women's Support Group.

Vaccination also carried out at "Health Camps" run by 4 Field Vets/camp, with additional input by University Vets. One Health Camp was held each month in each Punjab Unit. About 180 per year. 3,000 participants. 1,000-1,5000 animals and birds. The camps were also used for training particularly vaccination procedures. Attendance was voluntary (one day). 60-70% of people attending were women. Possibly samples could also be collected at the Health Camps. Health Camps may cease next March (to be reviewed).

Birds coming from the dry belt had a higher value than those from elsewhere in the region.

Following this meeting the UK contingent met field vets, in preparation for the visit to the village the following day, and members of TANUVAS staff (Pathology and Microbiology)

Saturday 23rd September

An early morning meeting took place at Jambumadai village in Trichy District. The following notes summarize what was discussed:

The number of women attending the meeting fluctuated however about 7 out of 35 were landowners, the remainder claimed to be landless (only enough ground for a house and yard). Those classified as landless had paid work for only 4 months of the year. There were about 70-80 families in the village of which 50% had goats, 66% had chickens and 10% kept large ruminants.

Eighteen women (all scheduled caste) at the meeting had 31 cocks and 26 hens between them. Often hens, no cocks, but those who do have cocks often have more cocks than hens.

Most gave supplementary feeding, morning and evening. Birds received sorghum, millet, rice bran and broken rice twice/day. The quantity of supplementary feeding given was stated as being approximately equal to 200g but this did not match what was observed. Birds were also fed kitchen scraps. Poultry had been observed to eat leaves, ants, worms and grain.

Of 16 eggs laid, typically 6 would be eaten while of the remaining 10 maybe 7 or 8 would hatch. Hatchability was better in the summer than in the rainy (winter) season. Of the 6-7 that hatch, maybe 4 would be reared to 2 months. Of the 4 after 2 months, 2 or 3 should be reared to slaughter (125 rupees/bird), but all might die (disease appears to be more prevalent in the rainy season).

Disease up to 2 months: white diarrhoea common, with excess saliva. Predators less important, but those involved normally would be crows (especially) and rarely dogs, cats, bandicoots. Only occasionally red diarrhoea. Green diarrhoea usually terminal. Particularly acute during the rainy season.

After 2 months: causes the same. First white diarrhoea, then swollen head, drool saliva (like CRD). Terminally green diarrhoea. Sometimes worms (roundworm) especially when white diarrhoea, but not red diarrhoea. All ages affected. Very few recover.

About 50% were aware of vaccination but commented that vaccination often failed (but usually given after the appearance of the disease). Would vaccinate their birds if done in the village, if informed in advance, so that they could keep the birds in.

In order to plan the detail of the on-station studies a tour of TANUVAS facilities was undertaken by the UK party and our hosts and discussions took place on the detail of the studies to be undertaken.

Summary meeting with UK contingent and Prof Chandrasekaran and Dr A Natarajan.
CC, NS, TP and TA travel overnight to Chennai.

Sunday 24th September

CC, NS, TP and TA travel to Mumbai and then on to Pune..

Monday 25th September
Initial meeting with UK contingent and Dr Joshi, Dr Ashwini Ghorpade (Social Scientist, BAIF), Dr P K Pradhan (Chief Programme Co-ordinator, INDRA), Dr Shindry (BAIF Rajasthan), Mr V C Badve (Research Programme Coordinator, BAIF).

The following notes summarize what was discussed:

BAIF interested particularly in the reasons why potential benefits (such as housing, which was being promoted through the BAIF EU-funded project) do not appear to feed through to the villagers.

Poultry are an additional source of income for poor farmers and benefit landless people because they can keep poultry but not large animals.

In the tribal belt deshi poultry are kept for eggs and meat (various phenotypes – yellow through to red). They don't want to use the white leghorn and usually vaccines and medication are not available. On average, one village may have 200 families, 1,000 people, 500 birds, e.g. 50% of families keep chickens, average of 5 birds per family.

There is a weekly market for deshi birds (100-200 rupees) and their eggs. The best prices are obtained during the festival season, October-March (eg eggs – 150 rupees for 100 eggs from White Leghorn cf 300 rupees for 100 (smaller) eggs from Desi. Produce tends to be sold as and when the owner requires money. The birds are

characterized by poor liveability (main constraint) and egg production. Flock sizes typically ranged between 5-25.

The winter season is the healthiest. The summer/rainy season is worst for disease and traditionally breeders avoid breeding during that season. (July-August is wet, January-February is dry and cool).

Tried rearing fairly intensively to 6-8 weeks, then selling in weekly market (e.g. 1,000 per week), with vaccination at rearing site, but high mortality after sale.

Major problem seems to be diarrhoea, worms, coccidiosis, ND and, on some sites predation.

No structured veterinary service in South Rajasthan. In theory, local animal health vets provide vaccination, but not done because of practical difficulties.

Have trained local women (as part of another project) to administer vaccine (live La Sota) at one week one, by nasal route. Seemed to work. Only given in late winter. La Sota/nasal route used for ease of administration and training.

Visit BAIF field station (Urulikanchan) and associated laboratories.

Tuesday 26th September

Further discussion with Dr Joshi and colleagues to firm up details and schedule. A Government vet in Udaipur (South Rajasthan) was keen to be involved in the project and similarly at a university in Udaipur there was a nematologist who would like to be involved.

Wednesday 27th September

UK contingent travelled to Mumbai for overnight flight.

Thursday 28th September

UK contingent depart for UK

Appendix 4 - Workshop

Comments at Tamil Nadu

1½ days to discuss the results obtained elsewhere in India, e.g. next July/August? Or later, to give more time for results from this study to be available.

July/August a bad time, because the field trial would also be starting then, and Tom Acamovic and Tom Pennycott have commitments.

Hold at BAIF?

Topics to include infectious diseases of Desi birds.

Comments at BAIF

Should be India-focussed.

Would prefer to do it at BAIF (Pune? Udaipur?) after some results are available.

Possibly May 2002?

Need to discuss with NRI

Appendix 5 – Participant's addresses and contact details

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