

PROJECT PARTNERS WORKSHOP DECEMBER 18/19<sup>TH</sup> 2000  
SUMMARY REPORT  
Fiona Marshall 15/01/01

THOSE PRESENT

Imperial College: Fiona Marshall, Dolf te Lintelo & Nigel Poole  
Indian Council of Agricultural Research: Dr M C Jain, Dr Arti Bhatia, Dr S D Singh  
Development Tracks: Dr Neela Mukherjee, Dr A. Mukherjee  
Shristi: Ravi Agrawal  
University of Delhi (Geography Dept): Dr R B Singh; Bhuwan Kumar; Jyotsna Pandey  
University of Delhi (AERC): Dr D S Bhupal  
Banaras Hindu University: Dr Madhoolika Agrawal; Dr Rana P B Singh; Dr Chandra Sen  
DFID CPHP: Dr Andy Hall.

APOLOGIES

Centre for Science and the Environment, Dr Anumita Roy Choudary (due to illness)

MAJOR WORKSHOP OBJECTIVES

- Sharing experiences & results from phase 1 activities
- Discussing problems & opportunities have arisen?
- Discussing how the project partners can most effectively support each other to finalise phase one activities and move forwards – open discussion to resolve problems and exploit opportunities.
- Brainstorming on quality assurance mechanisms
- Drafting future work plans for each project partner, listing associated information/support requirements from the other partners, and agreeing on a timeframe.

NOTES ON SOME KEY AREAS OF DISCUSSION:

*1. Assessing levels of heavy metal contamination*

Excellent progress has been made in assessing the levels of contamination at 40 retail outlet sites in Varanasi. The results indicate that there may be a serious heavy metal contamination with levels of Zn, Cu, Pb and Cd greatly exceeding the Indian 'Prevention of Food Adulteration Act' permissible limits in many cases. Levels of Cadmium were particularly high in palak (spinach beet), and Dr Agrawal's results suggest that a major source of the contamination may be at the point of sale, indicated by a strong correlation between deposition at the retail site and contamination level in the crop. Considerable care must be taken in interpreting and extrapolating these results. For example, it is important to note that as we have not yet studied the reduction in contamination through washing or other food preparation practices and therefore the values provided do not provide reliable information relating to contamination at the point of consumption. In addition the extent of foliar deposition may vary considerably with climatic conditions. Much of the data presented was for the month of May, when deposition could be particularly high. A detailed report will be provided by Dr Agrawal in February for further discussion, whilst in the meantime the measured levels will also be compared with International standards,

The next steps for the environmental science team involve assessment of levels at the production sites, and to carry out controlled experiments to assess the extent to which the contamination at production sites is due to aerial sources. These activities were planned in detail during the workshop and will commence in February.

The Delhi team from IARI worked with The BHU team and Imperial College to develop comparable experimental protocols for the two cities. In order to make up some of the time lost due to the delay in Min of Ag approval, the Delhi team will take measurements at production sites and retail outlets simultaneously.

Both teams will work during January and February to measure the levels of heavy metal contamination in cauliflower – our selected winter crop. The external structure of cauliflower is such that it is likely to accumulate aerial deposits, so contamination levels may be high relative to our other target crops.

## *2. Developing hazard maps*

The maps are a major priority for follow up. Some very interesting material has been prepared, but there have been a series of largely unavoidable delays in production of maps for distribution to the project partners. However, the workshop provided an opportunity for stimulating and fruitful discussion and we were able to address many of the difficulties encountered.

Initially prolonged efforts were made to obtain official lists and categorisations as used by the state and city administrations, which would help to focus attention to certain areas in which subsequent field work would be conducted. Unfortunately both in Delhi and Varanasi this approach did not yield sufficient results due to lack of timely public sector cooperation and/or insufficient quality of available data. In Delhi, this process was also hindered by sudden replacements of key contacts in the administration. In addition, a Supreme Court litigation triggered of government action towards closing of non-conforming industries, strongly politicising the issue of locations of polluting industrial units, a situation also reflected in violent street protests and riots in the city. Furthermore in Varanasi our research partner Dr R B Singh was unfortunately suffering from ill-health, resulting in unavoidable delays in carrying out the field surveys. However Dr R B Singh has been working closely with Dr Agrawal and Dr Sen, and base maps have been prepared upon which emerging findings can relatively be easily be projected.

In both Delhi and Varanasi, the geographers, environmental scientists and agricultural economists, will need to continue to work closely together in developing the mapping outputs, and a series of specific follow up meetings have been arranged.

The workshop also offered an opportunity to discuss the protocol for the field studies which will be based on selected transects.

## *3. Marketing studies.*

Successful surveys have been conducted with various stakeholders at wholesale markets to examine issues such as the origin of produce, marketing channels, quality indicators, price variability and loyalty between traders. Preliminary findings were discussed at the December workshop, and a reports will be distributed to all project partners in February. Detailed work programmes were developed for an immediate survey for cauliflower (current season crop) with questionnaires for Producer-seller, wholesalers/commission agents/mashakores (Delhi) and retailers – with a focus on issues such as trader relationships. In addition, an initial consumers study to assess purchasing and preparation habits was discussed, with the schedule to be drafted by Dr Sen (BHU). Planning for product tracking from producer to retailer (buying samples for contamination analysis at various points in the marketing chain) and margin analysis is also underway.

#### *4. Supporting policy analysis.*

Discussions regarding the policy activities took place in the context of the need consider policy issues relating to stakeholders in the entire production-consumption chain, and to integrate the macro (data from Shristi/IC/CSE etc) and micro (data from Development tracks/BHU/UofD) perspectives, in order to seek realistic recommendations for formal and informal mechanisms for improved food safety and quality assurance.

Ravi Agrawal presented summary findings from the initial macro level policy analysis activities. A major aim of this work was to provide a review of the existing policy framework relating to monitoring, control and awareness of food safety in India, identifying stakeholders that we can continue to involve. Whilst a secondary data review of the legislative framework took place, the emphasis of the work was consultation with stakeholders and case study investigations. Consultations were conducted by the team at Shristi with a range of organisations across the country, from government and from the non-government sectors. This included prominent NGOs like the Consumer Education and Research Centre, Ahmedabad and the Consumer Action Group, Chennai. In Delhi, a case study was undertaken of the government supported fruit and vegetable cooperative of Mother Dairy, as this is a poignant example of an integrated production - distribution chain for fresh vegetables cultivated in areas around cities. It surfaced that not only in such an advanced organisation, but also in general, there appears to be a low awareness of food safety issues among organisations dealing with consumer issues. Nevertheless, the mustard adulteration scandal which lead to poisoning of many Delhi's citizen's in 1999 has highlighted the potential effects of contamination of the food chain and as such interest among the (urban) consumers and the media (at least temporarily) has increased.

Another recently published compilation study by the NGO Toxic's Link in Delhi indicates that a large majority of Indian consumers lack awareness about a widely prevailing problem of pesticide contaminated food products, even though these are a commodity often consumed on a daily basis. In addition, an exploration of the prevailing legal system in India reveals that although laws protecting consumers regarding adulteration and safety of food products, jurisprudence in this respect appears to be strongly lacking.

Shristi also presented some research which leads directly from the outputs of our previous DFID funded work by identifying policy areas and stakeholders relating to industrial pollution in agricultural areas, with a view to identifying those groups that would need to be informed of heavy metal contamination of produce at source, and

identifying possible means of monitoring and controlling emissions from industries in these areas.

A workplan for the next phase of the policy analysis work was discussed, and a detailed TOR will be agreed in January. Priorities for the immediate future include mapping/consultations with stakeholders concerned with other health/nutrition & environmental issues (who might assist in the process of consumer awareness of vegetable safety issues problems).

### *5. Participatory research*

The workshop group discussed how the participatory research could be most fully integrated with the other research activities providing the essential micro level perspective to assess the the implications of air pollution impacts and associated market and policy responses on poor vegetable producers and consumers. Practical issues raised included the comparative advantage of building on established links with communities from the last project versus starting work with new groups in areas identified as the main sources of our key crops. The detailed TOR will be developed in February after further consultation and exploratory field visits. The initial round of activities will focus on the role of vegetables in the livelihood strategies of the communities. Subsequent topics will include the vegetable preparation and consumption patterns, and the formal and informal advisory and support mechanisms that may be available to the poor for example, improving the awareness and safety of food consumed or advising producers on quality assurance issues.

**PROJECT PARTNER WORKSHOP PROGRAMME: 18/19th DECEMBER 2000, NEW DELHI  
ENHANCING FOOD CHAIN INTEGRITY: QUALITY ASSURANCE MECHANISMS FOR AIR  
POLLUTION IMPACTS ON VEGETABLE SYSTEMS IN INDIA**

**Venue: India International Centre, Committee Room 2,  
40 Max Mueller Marg, New Delhi, phone: 4619431**

**Programme day one: 18<sup>th</sup> December**

<b>Time</b>	<b>Activity</b>
9.30	Tea/coffee/biscuits
10.00 – 10.15	Welcome & introductions (Fiona Marshall)
	Project overview & workshop objectives (Fiona Marshall)
10.30 – 11.15	Presentation Ravi Agarwal (Srishti): <ul style="list-style-type: none"> <li>- What is the policy and legal context of existing food safety measures in India?</li> <li>- Who are the main stakeholders regarding food safety?</li> <li>- What is the importance of industrial siting policy and how could this affect production of safe food in urban and peri-urban areas?</li> </ul>
11.15 – 11.30	Tea/coffee/biscuits
<b>Session A.</b>	<b>Case study Varanasi</b>
11.30 – 12.00	Presentation Dr. Chandra Sen (Banaras Hindu University) /Dr Rana PB Singh (Society for Heritage Planning & Environmental Health; topics: <ul style="list-style-type: none"> <li>- Which urban and peri-urban areas do provide fresh vegetables (okra, spinach beet, cauliflower) to the markets in Varanasi?</li> <li>- What are the main types of traders handling the vegetables and through which channels is fresh produce marketed?</li> <li>- What quality attributes are important in the marketing of vegetables?</li> <li>- In which areas is agriculture production potentially affected by air pollution levels and pollutant sources (transport, industries)?</li> <li>- In which areas are potentially harmful industrial activities carried out in the vicinity of vegetable cultivating areas?</li> </ul>
12.00 – 12.30	Presentation Dr. Madhoolika Agrawal (Banaras Hindu University): <ul style="list-style-type: none"> <li>- what preliminary evidence is there regarding heavy metal levels of vegetables marketed in Varanasi?</li> <li>- What are the possible sources for pre and post harvest contamination of vegetable produce marketed in Varanasi?</li> </ul>
12.30 – 12.45	Presentation Dr. Neela Mukherjee: Discussing the role of Participatory Research Activities in addressing research questions: <ul style="list-style-type: none"> <li>- what is the role of vegetable produce in livelihood strategies of the urban and peri-urban poor</li> <li>- what are the micro-level food safety implications of perceptions, practices and consumption patterns of urban and peri-urban poor?</li> </ul>
12.45 - 13.15	Group discussion on status of Varanasi case and emerging issues
13.15 - 14.15	<i>Group lunch (at India International Centre)</i>
<b>Session B.</b>	<b>Case study Delhi</b>
14.15 – 14.45	Presentation Dr. RB Singh (Delhi University): <ul style="list-style-type: none"> <li>- In which areas is agriculture production potentially affected by air pollution levels and pollutant sources (transport, industries)?</li> <li>- In which areas are potentially harmful industrial activities carried out in the vicinity of vegetable cultivating areas?</li> <li>-</li> </ul>
14.45 – 15.15	Presentation Dr. DS Bhupal (Agricultural Economics Research Centre) <ul style="list-style-type: none"> <li>- Which urban and peri-urban areas do provide fresh vegetables (okra, spinach</li> </ul>

	<p>beet, cauliflower) to the markets in Delhi?          What are the main types of traders handling the vegetables and through which channels is fresh produce marketed?          What quality attributes are important in the marketing of vegetables?</p>
15.15 – 15.30	Presentation Dr. MC Jain (Indian Agricultural Research Institute): discussing the planned research activities in determining air impacts on vegetable crops in Delhi..
15.30 - 15.45	Tea/coffee/biscuits
15.45 – 16.30	Group discussion on status of Delhi case and emerging issues Delhi and Varanasi
16.30 - 17.00	Group discussion on potential directions and paths for dissemination of project research findings

**Programme Day Two: 19<sup>th</sup> December**

Time	Activity
9.30	Tea/coffee/biscuits
10.00 – 10.15	Summary of progress and introduction to the days activities (Fiona Marshall)
10.15 – 11.30	Participatory development of research action plans – I
11.30 – 11.45	Tea/coffee/biscuits
11.45 – 13.00	Participatory development of research action plans – II
13.00 – 13.15	Summary of workshop: progress & outputs (Imperial College)
13.15 – 14.15	<i>Group lunch</i> (at India International Centre)
14.15-15.30	Small group discussions to develop work plans for the next phase
15.30 – 15.45	Working towards quality assurance mechanisms – the wider picture (Nigel Poole)
15.45-16.00	Dissemination strategies and Summing up