

8 Summary of findings

8.1 *Improved Stoves*

8.1.1 **First Survey Findings Barriers & Channels Improved Stove**

Original findings regarding the barriers to the use of improved stoves found that:

- a very neutral attitude towards using improved stoves, i.e. no convincing rational attitude that prompts use of the improved stoves
- a strong positive attitude towards the continued use of the traditional stove
- a strong propensity to keep the traditional cooking pots and cooking methods and belief that improved stoves would not permit the use of these traditional utensils or cooking methods.

The suggested channels for the promotion of improved stove adoption:-

- the husband (as a strong social referent for this behaviour) needs to be included in the approach on the use of improved stoves.
- family presentations may be more effective than isolated demonstrations for women
- radio should be used to reinforce messages
- demonstrations should be used as part of message delivery by extension workers

The subsequent messages developed in the January 2000 workshop focused on:

- The ability of the improved stove to handle their traditional pots
- The ability of the improved stove to cook their traditional foods
- The importance of reducing fuel wood consumption and preserving the trees
- Encouragement of tree harvesting via pruning

The last two elements were introduced so as to integrate the improved stove use with the wider issue of sustainable natural resource management.

8.1.2 **Findings Regarding Improved Stove Adoption and the Impact of Extension**

- The 'focused' extension has led to an increase in the use of improved stoves and a stronger intention to continue this practice.
- It also appears that the adoption relates to the improved 'wood-burning' as opposed to 'coal pot' stoves.
- The use of and intention to continue to use the improved stoves is driven more by the sense of social obligation than by their attitudes towards stoves.

- Positive changes have taken place in the targeted outcome beliefs and the corresponding attitudes targeted by the extension programme, i.e.
 - The traditional 'three stone stove is not necessarily the best option.
 - The stoves will be able to cook their traditional foods.
 - They will be able to use their traditional cooking pots on the improved stoves. This attitude is now more strongly believed and valued.
 - The increased awareness of the future need to adopt alternative fuel stoves also indicates that the extension process has increased their awareness of the limitations of accessible fuel wood resources.
- The main 'drivers' for the adoption of improved 'wood-burning' stoves after exposure to the extension intervention now relate to the improved stoves greater economy, ability to cook the preferred foods and handle their traditional pots. The issue of being able to use them within the house is also a persisting important driver.
- One of the main findings of this research is the more positive response achieved by including the improved stove as part of a wider integrated approach to sustainable natural resource management.
- Where this has taken place in comparison to a 'stoves only' demonstration, the social support from the important social referents for the adoption of the improved stove has significantly increased.
- This increased social support is across the genders, i.e. husband and extension agents, who in many cases are also males.
- Where stoves have been promoted on their own without its integration within a wider natural resource management, education programme, the perceived social normative pressure to adopt has not significantly changed.
- In the case of stoves it appears that increased social pressure from the most influential social referents is the precursor to initial adoption. The practice is then stabilised through experience, strengthening the reasoning (attitudes) supporting this practice.

8.1.3 Conclusion

- Regarding the promotion of improved stoves, the barriers identified in the first survey, the subsequent messages developed to address these and the 'channels' or most appropriate social referents to target in the 'focused' extension strategy have been vindicated.

8.1.4 Recommendations

- There is a need for time to consolidate the influence of extension messages through more prolonged extension activities to ensure the wider application of the improved 'wood-burning' stoves.
- Experience will lead to the decision to continue the use of these stoves being based on their own knowledge and evaluation, forming stronger bases for durable change. (Behaviour based on one's own rationalisation of experience leads to greater stability of the chosen behaviour)

8.2 Firewood Collection

8.2.1 First Survey Findings Barriers & Channels Firewood Collection

An initial 'first' structured survey carried out in 1998 regarding barriers to 'dry' firewood collection identified the following barriers:

- The overriding perception that there would not be a problem with future access to firewood

- Perceived social pressure to continue current practices
- Low self-perception amongst women regarding their tree harvesting (pruning) capabilities
- The rejection of many of the traditional taboos and beliefs regarding the effect of certain types of wood on their health.

It was felt that extension messages aimed at encouraging sustainable firewood collection behaviour should:

- Raise awareness regarding the possible destruction of the fuel wood source.
- Build a positive self-perception regarding tree harvesting (pruning) ability via 'demonstrating' and reinforcing good practice.
- Reinforce some of the traditional taboos that have an actual physical basis for their existence, e.g. the effects of some types of wood smoke on the health of the household.

From the first survey findings it was recommended that future extension should use the following channels:

- Be carried out through groups representing natural friendship networks rather than an emphasis on individuals
- Involve the most important social referents and gain their endorsement of the proposed practices, particularly the chief
- Be promoted by the local extension agents.

In the workshop held in January 2000, it transpired that firewood collection had not been a focus of the attending extension agencies' respective interventions. During the workshop different extension messages and strategies were developed.

Unlike the other two behaviours, 'improved stove use' and 'wood lot planting', the inclusion of 'sustainable firewood collection' was new and both tools and methods of integrating the 'collection' messages within existing programmes had to be developed. A follow-up workshop in December 2000 reinforced the earlier workshop's outcomes and promoted the development of various extension tools, e.g. dramas and flip charts to assist this process.

8.2.2 Findings Regarding Sustainable Firewood Collection and the Impact of Extension

- There has been a general deterioration in sustainable collection behaviour over the past 3 years.
- The 'focused' extension programme does appear 'to have halted' this negative trend and has led to more sustainable behaviour.
- Those exposed to the extension programme also demonstrate a stronger intention to continue practising a more sustainable collection in future.
- This positive intention is driven more by their sense of 'social obligation' than by their attitude towards wood collecting.
- Nevertheless, the previously identified barriers to sustainable collection practice that were addressed by the 'focused' extension programme have changed within the targeted population.
- For instance:- an awareness of possible future scarcity and women's self perception of their own capability to address it have now become drivers.
- However, the influence of beliefs regarding the negative impact of certain woods on health has grown and now may act as possible barriers to the adoption of more sustainable practice, particularly the collection of the dry wood of these tree species, thus increasing the pressure on the other tree species.

8.2.3 Conclusion

- The 'focused' extension programme has had a positive impact on both current collection behaviour and the participants' future intentions regarding sustainable firewood collection.
- This is mainly due to a change in the perceived social pressure of their most important social referents regarding the collection of only dry wood.
- However, overall there has been a general deterioration in sustainable collection practice in the past three years. The 'focused' extension intervention has managed to reverse this negative trend within an increasingly difficult context.
- The positive change has taken place within a deteriorating fuel-wood collection environment, i.e. the poorer quality of wood collected and its increased cost, reflected in the longer collection time needed per unit of firewood and the shorter duration of that unit. This was observed within a context where household size and number of meals cooked have not significantly changed over the period of intervention.
- In the case of the rural Dagomba women, the main finding is the importance of targeting / involving the subjects' important social referents and changing the referent's perceived attitudes toward the natural resource in question, in this instance firewood and its source, trees, i.e. an integrated cross-gender approach to natural resource management.

8.2.4 Recommendations

The findings suggest that:

- Initiatives aimed at encouraging improved fuel wood management by rural women should be part of a wider integrated strategy regarding natural resource management addressing the interests and needs of the different social strata within the community.
- Future extension strategy regarding sustainable firewood collection promotion amongst the rural Dagomba women should place more emphasis on involving the women's peer or friendship groups.
- Radio messages, if they are continued, should specifically target the under thirties. The women under thirty appear to be more open to the adoption of sustainable collection practice than the thirty to fifty age-group, however, the under-thirties are less likely to attend extension activities.
- Sensitivity to age needs be more apparent within future extension strategies addressing the natural resource management behaviour of Dagomba women.
- It is recommended that the extension programme should be prolonged so as to consolidate the positive behavioural and cognitive changes already achieved (The period of 'focused extension intervention was only six months.) For positive behaviour to become stable it is important that the newly adopted practices are supported by attitude (experience) and not just social pressure.

8.3 Woodlot planting

8.3.1 First Survey Findings Barriers & Channels Wood lots

There was a very strong positive intention to plant trees in wood lots. Few influential 'barriers' were identified when the sample is taken as a whole. One of the most interesting findings was that the women appear to have overcome some of the traditional taboos to planting trees.

The key barriers identified applied specifically to the 'displaced':-

- social and practical support
- the practical problems of theft, animal damage, drought.
- security of future utility

In future extension, in the light of the existing positive attitude to planting wood lots, should aim at accompanying practice and consolidating the learning process, i.e. the use of 'field demonstrations'.

Channels that need to be used for encouraging planting of wood lots:-

- The Chief, especially for rural people, particularly those not displaced.
- The family unit needs to be the focus, especially for non-displaced
- Groups and communities developing ideas and working together

8.3.2 Findings Regarding Wood Lot Management and the Impact of Extension

- Generally tree planting and wood lot management behaviour have weakened over the past 3 years.
- Those communities exposed to the ‘focused’ extension initiative and particularly those who have attended demonstrations have registered a significant positive change in both their current practice and future intentions.
- The extension intervention has reversed the general negative practice trend.
 - E.g. Significant positive change was registered regarding tree planting, wood lot management, encouraging others to plant, setting aside land for trees and the increased participation of women.
 - Women are still reluctant to plant on their own and no change was registered regarding watering or fencing. However, where demonstrations have taken place there has also been a significant positive change in these two management practices (though still weak)
- The positive change in the expressed intention to plant wood lots is based mainly on the response to perceived social pressure rather than attitudes (experience based reasoning).
- The perceived social pressure from respected referents to participate in wood lot development and management has increased in the case of extension only (not significantly).
- The overall attitude has tended to weaken even when exposed to extension and demonstrations, although not significantly.
- However, changes in the subjects’ attitudes indicate that the some of previously perceived barriers have been addressed. I.e. those exposed to extension believe more strongly that:
 - They will be able to get land to plant trees
 - People will care for the wood lots
 - People will be ready to plant a wider variety of trees especially if provided with seedlings
 - Animals will not destroy the young trees
 - Seedlings will survive without wateringThose that have attended demos also believe more strongly that:
 - Their fate is not bound to the trees they plant
 - Their ownership of the trees planted will be respected
- Regarding those exposed to extension (without demonstrations) none of the belief statements (attitudes) registered a significant influence on their expressed positive intention.
- The extension agent was the only influential social referent of those exposed to the extension initiative.

Although, overall attitude has little apparent affect, those who had attended field demonstrations of wood lot management registered several beliefs (attitudes) which appear to ‘drive’ their intentions regarding wood lots, i.e.:

- People will be prepared to water seedlings and care for communal wood lots
 - They will be able to acquire land for planting
 - Planting communally will provide for their children, and that the trees will belong to those who plant them
 - Trees will also be used for construction
- However, three sub attitudes still appear to be barriers:
- Tree ownership is no longer respected and people will steal from communal trees
 - Planting trees may lead to infertility for the women involved*

- With regard to those who have attended field demonstrations, the most influential social referents appear to be family, friends, radio and landlord. However in each case their normative score was significantly reduced.

8.3.3 Conclusion

- The main finding is the importance of targeting / involving the subjects' important social referents via an integrated cross-gender approach to natural resource management.
- Field demonstrations have proved a particularly effective extension tool regarding wood lot promotion.