



Integrating Gender and Nutrition within Agricultural Extension Services

Technology Profile

Type of Technology: Physical

Langstroth Beehive

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The Integrating Gender and Nutrition within Agricultural Extension Services (INGENAES) project works to improve agricultural livelihoods focusing on strengthening extension and advisory services to empower and engage smallholder farmers, men and women. The technology profiles support INGENAES's goal of improving the dissemination of gender-appropriate and nutrition-enhancing technologies and inputs to improve women's agricultural productivity and enhance household nutrition. The technology profiles identify issues and opportunities to make technologies more attractive for men and women farmers, to increase men's and women's benefits from using technologies, and to design distribution models for extension agents, input suppliers, and mobile devices to get the technologies into men's and women's hands.

Bangladesh is one of the world's most densely populated nations. It is located in South Asia, bordered by India and Myanmar (Burma). Independent since 1971, the country's agricultural sector provides 18.6% of the country's Gross Domestic Product and employs to 45% of the total labor force. In recent years, the country's positive economic growth has helped to achieve national food security and some reduction in poverty levels. Both the proportion of underweight children and children with severe stunting have seen rapid and dramatic declines in recent years (Bhagowalia et al. 2012: 1). However, poverty and malnutrition remain a serious problem for one-fourth of the population who have few assets and are often vulnerable to shocks from disease, economic crises, and extreme weather. Gender disparities are significant. Although 78% of employed women work in agriculture (compared to 53% of men), their contributions are not fully recognized because of cultural norms that value female seclusion and undervalue female labor. These norms also limit women's ownership of land in their own names (3.5%) and restrict access to and control over other productive assets. The Bangladesh national baseline survey of the Women's Empowerment in Agriculture Index in 2011 found that the domains contributing most to low levels of empowerment were weak leadership and influence in the community (33.8 percent), lack of control over resources (23.6 percent) and lack of control over income (15.0 percent) (Sraboni et al. 2013; Scalise 2009). In this context, providing women income-earning opportunities that are not tied to land or which require geographic mobility could be promising avenues for strengthening women's empowerment.

Technology design and dissemination

Beekeeping, known as apiculture, utilizes domesticated honeybees to obtain honey, beeswax, and other medicinal products; to increase crop productivity; and to enhance conservation of global biodiversity (Abrol 2010). The beehive enables beekeepers to reap the rewards of apiculture by housing the bees, facilitating access to honey, wax, and propolis (a resin-like substance that holds the honeycomb together), and making it possible to move the bees to different fields to pollinate crops.

The Langstroth Beehive was developed in 1850 by Lorenzo Lorraine Langstroth. It was designed to facilitate bee health, be easy to use, and maximize honey production. The Langstroth hive is used specifically with the *Mellifera* breed. *Apis mellifera* originated in Europe and Australia and is the most popular because it produces significantly more honey (150 kg of honey per hive) than many local species, like the *Apis cerana indica* (15 to 20 kg of honey per hive),¹ which is native to Bangladesh. Both *Apis mellifera* and *Apis cerana indica* can live in the Langstroth hive design (Moniruzzaman and Rahman 2010).

In Bangladesh, the Bangladesh Small and Cottage Industries Corporation (BSCIC) began promoting beekeeping in 1977 with wooden hives, supplanting bee-hunting, the method of beekeeping prior to using wooden hives (Saha 2003). Beekeeping in Bangladesh continues today with help of the Government of Bangladesh and non-governmental organizations. There are many organizations that provide training on the rearing of bees. Some of them are: Bangladesh Institute of Apiculture (BIA), BSCIC, Proshikkhan Shikkha Karmo (PROSHIKA), and Mouchas Unnayan Sangstha (MUS). These organizations also provide technical support and provide or make available for sale the necessary equipment for beekeeping, such as clothing, a smoker, and hives (Moniruzzaman and Rahman 2010). BSCIC, the main actor interviewed for this assessment, has a training center on beekeeping in Gazipur, Bangladesh.² Using a Farmer Field School approach, participants are trained to use the beehives in a group, giving them hands-on beekeeping experience and connections with other beekeepers. Networking with other beekeepers is one way to maintain contact with the industry, allowing for comparing practices, and discussing new technologies. It is also a way to connect with farmers who are looking for bees to pollinate their fields. The training center also sells beehives to the participants. If the participants cannot afford the hives, they can receive a government loan. The initial cost is 2,000 Tk (approximately US\$ 25) for one hive with 3 frames and one queen bee. The average net return per year per hive in Bangladesh is 5,682.92 taka (Moniruzzaman and Rahman 2010).

There are no efforts to provide differentiated training to men and women or to target them in different ways. Respondents explained that this is because beekeeping is not physically challenging and is a culturally

BOX 1 DATA COLLECTION

Information for this report was gathered in Gazipur, Bangladesh. Mr. A.M.M. Saifullah, the co-owner of the Town Side Apiary and also a government extension agent who trains people how to raise bees, was both a key informant and also assisted in identifying other interviewees. The interviews on which this technology assessment was based were conducted during the third week of August 2015. Adopters of the technology included beehive users who had been trained at the BSCIC training facility or by a family member previously trained by BSCIC. A total of eleven adopters were interviewed. These included five women and three men who participated in individual interviews and three men interviewed as a group. The non-adopters were defined as people not using the hives and that live near adopters and have the potential themselves to be able to adopt the hives. A total of four people, two men and two women, were interviewed as non-adopters

¹ A.M.M. Saifullah, personal communication.

² This technology profile presents the efforts of Mr. A.M.M. Saifullah, an extension agent with BSCIC, to promote beekeeping in Gazipur, Bangladesh. Efforts by other organizations to promote beekeeping are not described.

acceptable profession for both men and women. Nonetheless, as Mr. A.M.M. Saifullah the primary BSCIC extension officer in charge of beekeeping explained, 20% of the participants at the trainings are women and 80% are men. This suggests the possibility that women are either constrained from attending training or not being targeted as bee keepers. Current efforts by BSCIC to recruit and train new beekeepers rely on localized efforts to spread the word in the community around the training center. The BSCIC extension officer selects participants for beekeeping training, prioritizing candidates who are close to the training center.

An advantage of beekeeping is that it does not require land ownership. This is significant because 45% of people are landless in Bangladesh and beekeeping gives them the opportunity to earn an income without purchasing land (Moniruzzaman and Rahman, 2010). In addition, according to user interviews in Vahadun, low entry costs and the ease of learning the trade in only one to two seasons, makes beekeeping a viable source of income for rural citizens. Many of the beekeepers interviewed combined their beekeeping activities with other income-generating activities.

Gender Analysis

Bees produce honey, which can be consumed at home or sold. The business of beekeeping also increases food availability through additional income that men and women beekeepers spend on food such as fish, milk, and meat. Farmers who use bees to pollinate their crops experience an increase in production, another avenue for increasing food availability.

Time and Labor

In Bangladesh, the division of labor between men and women for beekeeping tasks changes according to the different bee-keeping seasons. During the season for bee pollination, beekeepers will take the hives to different locations so that the bees can be near fields where they gather nectar. Beekeepers can set their hives near their own fields or take their hives to other farms for these activities. To capture the longest honey season, bees must be moved with each cropping season. For instance, an apiary might be located adjacent to a mustard seed field for the two months that mustard seed is grown. After this, to add variety and extend the time the bees are productive, an apiarian may move the hives to sesame fields.

The honey season is a busy time for beekeepers. The need to travel with the bees requires both portable hives and beekeepers who are able to travel. This nomadic movement can last as long as six months of the year and cover 500 km. The movement results in absence from the home, the family, and any work the apiarian may have outside of beekeeping. Although the hive itself can be moved by either men or women, **the need to travel is one barrier for women to use the technology in Bangladesh.** The high value placed on women's seclusion in Bangladeshi culture limits mobility for women, and although the intensity of the constraint on mobility varies, most women interviewed do not travel with the hives and men are primarily responsible for traveling with the bees. However, one woman producer mentioned that while the men are away, some of the hives are left behind and she tends to these. These are the same types of hives but will produce different honey due to the difference in flower variety used for the bees to pollinate.

During the period that the bee hives are moved, family members left at home have to fill in for them. Men cannot always rely on their wives to maintain their other businesses if those require mobility or different skills that are not considered appropriate for women to do. Women of the family do take up new areas of work, e.g., to go to the market, **an activity previously not socially acceptable when the male spouse is home**, even though these tasks may only be temporary.



Capturing honey. © J. Henderson 2016

During the off season, the hives are taken back to the homestead to be fed and monitored. **It is frequently a woman from the household who cares for the bees and checks the hives for parasites or bee ailments during this time.** Women respondents estimated that this takes between thirty minutes and an hour and is done once a day at their convenience.

Income and Assets

All interviewees reported an increase in their income since beginning beekeeping. One man reported that one hive produces 15-20 kilograms of honey per week and that a kilogram of honey can be sold for 400 Tk. Another man stated that his yearly income increased by 200,000 Tk.

Overall, both men and women respondents claimed that starting the business is affordable and that they were able to receive loans from the government. One interesting observation was that men seemed to be more knowledgeable about the exact amount their income had increased each year than women. This difference might be due to the fact that men generally have more control over income and higher educational levels. An additional possibility is that the men have more control over the selling of the honey, and therefore have better knowledge on the income generated.

Of the women interviewed, several reported having control of the income from honey sales once they became involved in beekeeping. It was not clear from the interviews the reason for this but one possible explanation might be that when men leave their homes to take the bees to a different location, their wives remain at the house and have more control over decisions. Another possibility is that women manage the beekeeping business at home while men are engaged in other income-generating activities. One advantage to beekeeping is that it is not necessary to own a storefront to sell honey; many beekeepers sell honey from their homes. This is an advantage for women.

Many women reported that their increased earnings from selling honey are spent on their families, particularly on their children, food, and clothing. Some women mentioned that they had no source of income before they started beekeeping and now they are in control of the income.

Issues and Opportunities

Beekeeping as a livelihood strategy appears to increase the income of both men and women while not dramatically increasing their time and labor burden. Despite the lack of ability for women to participate in the movement of the hives, they are seeing positive shifts in income control. This may be due to the shift in duties once men leave with the hives. Once the task of shopping shifts from men to women, the women are able to control income used for food and other necessities.



Beehives in the flower field. © J. Henderson 2016

The interviews revealed that the lack of mobility of women in Bangladesh results in the men from the household taking the bees to the fields for pollination. The consequence of this is a lack of power to control the adoption of hives. To increase a woman's power over the adoption of the hives it would help to expand the geography of the training to women located near lychee, sesame, mustard, or any other fields with flowers. This would eliminate the need to move the hives great distances and rely on men in the family.

Additionally, the training for use of the beehives could include attention to starting a honey-selling enterprise. Although women were also selling the honey, it seemed that the men were more knowledgeable about the exact income. By adding this section to the training it could help fill the educational gap between men and women, encouraging women to take on more of the honey sales.

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