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Cow based Indigenous Technologies in dry farming

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Indigenous knowledge is the accumulated knowledge, skills and technology of the local people, derived from the direct interaction of human beings and their environment. The study was conducted at Coimbatore and Erode districts, in the western zone of Tamil Nadu with an objective of documenting the indigenous technologies adopted by the dry land farmers. Documentation of indigenous technologies was done adopting both individual and group approach. The paper describes five indigenous technologies involving cow-based products used by farmers for various purposes and an analysis on its impact. It is hoped to help the farmers to understand and exchange the cheaper, viable and reliable technologies in their areas.

Key words: Indigenous technologies, Cow based Indigenous technologies, Dry farming

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Indigenous knowledge has two powerful advantages over scientific knowledge like it has little or no cost, and is readily available. Indigenous knowledge can be defined as the knowledge built up by a group of people through generations of living in close contact with nature[1]. Over the years, the farmer in India had been using cow dung and cow urine as manure in the fields. However, a lot of wastages occurred and also a good part of the dung collected was being dried and used as fuel-cakes. Cow dung and cow urine are used for preparation of composts used in organic farming. However, bulk of the recoverable animal waste in the country is in the form of cattle dung and urine, both excellent for use in organic manure because of their high nitrogen content and their easy availability in the rural areas. When the fertile agricultural land has lost its fertility and nutrients of the soil have been extracted and not replaced, to replenish such nutrients, cattle dung or organic manure in the best, cheapest, harmless and most easily available manure. Villagers have traditionally used cow dung cakes as a common fuel, along with firewood.

Indigenous knowledge is found to be socially desirable, economically affordable, sustainable and involve minimum risk to rural farmers and producers. The failure of modern chemical farming to deliver prosperity to agricultural communities, increase in pest attack of crops, deterioration of soil and water resources, cost to human, and animal health has forced scientists to seriously examine whether traditional practices of farmers have any answers to the problems of modern agriculture. Scientists accept that Indigenous practices of farmers have pointers for sustainable agriculture in future. Indigenous knowledge systems provide a frame of reference for strengthening agricultural extension programmes and this has led to reorganization of interventions made by extension personnel. Identifying, documenting and incorporating indigenous knowledge in agricultural extension organization is essential to achieve sustainable agricultural development. The study was taken up with the objective of documenting the indigenous knowledge followed by the farmers in dry tracts of Tamil Nadu.

Methodology

The study was conducted in dry western zone of Tamil Nadu. It is comprised of two districts, namely Coimbatore and Erode. Documentation of indigenous technologies was done through interview and group discussion. Fourteen criteria, namely technology title, local name, location, agro-ecology, purpose, scope, description, conditions for adoption, feasibility, advantages, constrains, extent of adoption, approximate cost and technical effectiveness were used for collecting the required information about the particular indigenous technology.

Results and Discussion

Five cow based indigenous technologies adopted by the dry land farmers were identified and these are described below:

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Green leaf extract with cow's urine for pest control

Samalapuram village of Coimbatore District, Tamil Nadu is characterized by red soil and receives an annual rainfall of 680 mm. The farmers of Samalapuram have developed an innovative method of pest control using locally available green leaves of *Neem, Pungam, Nochi, Erukku* and *Tulsi*. The farmers prepared a green leaf extract, (locally known as *Poochi viratti*), which was used mainly to cut down their cost incurred for pest management. The farmers opined that *Neem, Pungam, Nochi, Erukku* and *Tulsi* leaves have some insecticidal property, bitter in taste, and ability to drive away the insects when the leaf extract solution is sprayed as foliar application in the field.

Farmers first crush about 1 kg each of green leaves of *Neem, Pungam, Nochi, Erukku* and *Tulsi* with the help of an indigenous milling tool made of granite stone called, *ural*. Crushed leaves are mixed with 100 L cow's urine and allowed to ferment for 10-15 days in a vessel (Fig. 1).

The solution is stirred daily using only a wooden sticks so that fermentation process takes place uniformly. Once an obnoxious odour comes out from the solution it is used as an indicator for completion of fermentation. Usually it takes 10-15 days. Then, the mixture is filtered using a cotton cloth. The leaf extract (10 L) was used for spraying 1 acre of the cropped land. Usually farmers spray leaf extract on 1 ½ months old crop even before the pest had attacked. This leaf extract is sprayed on paddy, red gram, black gram, brinjal, bhendi, etc. Most of the leaf-sucking pests like aphids, hoppers, borers and beetles get repelled due to this organic solution.

The method is effective and economical. No extra cost is involved to adopt this technology. Green leaf extract usage reduces the cost of pest control thereby minimizing the cost of cultivation. The green leaf formulation has both insecticidal and growth regulator properties. Nearly 40% of farmers have tried this organic method of pest control in villages.

Cotton seed treatment with cow dung

Farmers of Periyakallipatty village, Tamil Nadu practice cottonseed treatment with cow dung. This region is characterized by red soil and receives an annual rainfall of 680 mm. Farmers of dry land agriculture faced the problem of stickiness of cottonseeds creating difficulty during dibbling of the seeds. To overcome this problem, cotton growers follow a practice of seed treatment with cow dung slurry locally called as *Sanipal pidithal*.

Farmers mix the cottonseeds with cow dung in the ratio of 1:1/4, i.e. 1 kg cow dung is dissolved in ¼ L water (resulting in a semisolid form). The mixture is then rubbed with the seeds (Fig. 3). This treatment is believed to separate one seed from others easily during sowing. Apart from ease in sowing, this practice improved the early establishment of seeds. This practice was adopted for the purpose of removing the fuzzy hairs and also to make dibbling of cottonseeds easy.

Nearly 60% farmers adopt this technology as no extra cost is involved. It is both safer and cheaper method to facilitate sowing operation. It is moderately effective (60%) in sowing seeds.

Chilli seed treatment with cow dung slurry

Viraliyur village in Coimbatore district, Tamil Nadu is characterized by red soil and receive an annual rainfall of 650 mm. The chilli growers of this village use cow dung for the treatment of chilli seeds. Chilli is an important commercial crop grown as rain fed crop in this village.

Cow dung solution is prepared by dissolving 1 kg of cow dung in 2 L of water. Fresh cow dung is preferred because it mixes easily with water. Chilli seeds required for sowing (400 gm/ac) are tied in a cotton cloth and soaked in cow dung solution for 24 hrs (Fig. 2). The seeds are then dried in shade for 2 hrs, and used for sowing. This seed treatment induces germination in the chilli nursery 5 days earlier than normal sowing. Due to soaking, the seeds appear swollen and the sowing process becomes easier.

Nearly 40% farmers adopt this technology as no extra cost is involved. This process is effective (80 %) in inducing the germination of seeds and control of seed borne diseases like fruit rot.

Whitefly control with buttermilk in *Bhendi* crops

Kanoorputhur village in Avinasi *taluk*, Tamil Nadu is characterized by red soil and receive an annual rainfall of 720 mm. In *Bhendi*, whitefly is a great menace and is controlled by spraying fermented buttermilk. About 10 L of buttermilk is kept for 2 days for fermentation in a closed earthen pot. About 1 L fermented solution mixed with 9 L water is sprayed on 25 days old *Bhendi* crops (Fig. 4). Whiteflies, leaf-sucking pests attacking the crop usually in the vegetative stage serves as a vector in transmitting TMV (Tobacco Mosaic Virus). Hence by controlling the whitefly, transmission of viral disease is controlled.

Fig. 1 Green leaf extracts with cow urine

Fig. 2 Chilli seed treatment with cowdung slurry

Fig. 3 Cotton seed treatment with cowdung

Fig. 4 Whitefly control with buttermilk in *Bhendi* crops

Fig. 5 Ragi seed hardening using cow urine

Nearly 50% *Bhendi* growers have adopted this low cost technology. The use of buttermilk has been found to be moderately effective (60%) in controlling the whitefly infestation.

Ragi seed hardening using cow's urine

Soaking of *Ragi* (*Eleusine coracana* Gaertn.) seeds for seed hardening are followed by dry land farmers of Thondamuthur village, Tamil Nadu. The region is characterized by red soil with an annual rainfall of 700 mm. Ragi, commonly called *Poor man's crop*, is the main food grain in dry areas of Tamil Nadu. Farmers grow Ragi crop mostly in rain fed condition.

Seed hardening is a specific treatment given to seeds before sowing to withstand adverse soil moisture condition. To avoid water stress during the crop growth, an indigenous seed hardening method using cow's urine is practiced. For Ragi seed hardening, first cow's urine solution is prepared using fresh cow's urine (100 ml) mixed with 1 L cold water. About 6.0 L solution is required to soak 6 kg Ragi seeds. During soaking, cow's urine solution is kept

3-4 cm above from the seed level. After soaking for about 16 hrs, the seeds are shade dried for about 24 hrs and used for sowing operation (Fig. 5).

Cow's urine when treated with Ragi seeds were found to be effective against seed borne diseases like smut and also in inducing drought resistance in crop plants. Nearly 60% farmers have adopted this low cost technology.

Conclusion

Indigenous practices play a vital role in sustainable agriculture. It is the sum total of knowledge and practices which are based on people's accumulated experience in dealing with situations and problems in various aspects of life. It is hoped that farmers will be able to understand and exchange the cheaper, viable and reliable technologies in their areas and researchers will get Indigenous Technical Knowledge for test verification and able to select viable technology for popularization.

References

1 Johnson M, *Lore: Capturing Traditional Environmental Knowledge*, (IDRC: Ottawa, Canada), 1992.