

## Compatibility of animal husbandry practices of registered organic farmers with organic animal husbandry standards (OAHS): an assessment in Uttarakhand

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### ABSTRACT

Organic farming is increasingly being seen as one sustainable option to farmers, among the alternatives to conventional input intensive farming systems. Uttarakhand in India is promoting organic agriculture state state through registering the farmers and providing them necessary support including marketing in crop sector. However, these registered organic farmers, who maintain two or more than two livestock species under crop-livestock mixed farming systems, not yet geared to organic livestock production *per se*. As 'organic' is a process claim rather than a product claim, the study on the compatibility of animal husbandry practices of registered organic farmers with the recommended organic livestock production standards, may provide an idea of the existing situation to the stakeholders of organic farming, to explore possibility of organic livestock production in the state. Hence, this study was carried out with 180 registered organic farmers selected from 3 districts of Uttarakhand. Majority of the animal husbandry practices followed by the farmers were favorable to or closer to the recommended organic livestock production standards. Besides, the Indigenous Technical Knowledge (ITK) of registered organic farmers, if scientifically validated, may be further useful towards promoting organic animal husbandry in the state.

**Key words:** Animal husbandry practices, Indigenous Technical Knowledge, Organic livestock standards

Organic agriculture is gaining increasing importance in the agriculture sector of a number of countries irrespective of their stage of development. Though only a small percentage of farmers are expected to become organic producers, consumer demand for organically produced food and fiber products provide new market opportunities for farmers and businesses around the world (FAO 1999). Thus, the prospects of exports of food as well as non-food products such as organic leather and other textiles is the major motivating factor for the development and growth of organic farming in most of the developing countries including India (Chander and Mukherjee 2005). Considering the potential environmental as well as economic benefits, and compatibility of organic agriculture with integrated agricultural approaches of majority of Indian farming systems, organic farming has been considered an area of priority attention during the five year plans of India (10th and 11th plans). Among the 3 states so far declared as organic

in India, Uttarakhand is the first state declared as organic and promoting organic agriculture in a systematic manner through creation of a nodal agency i.e. Uttarakhand Organic Commodity Board (UOCB).

UOCB has registered 4,459 farmers 790.45 ha of land acquired organic status, whereas, 150.94 ha of land is in conversion, and UOCB could facilitate sale of certified organic crop products worth Rs 198.3 lakh during 2003-06 (Shah 2006). The livestock production systems of these registered organic farmers are not yet geared up towards organic livestock production, though, the farms operate under mixed crop-livestock integrated systems. The market demand for organic dairy products in India is next to fruits and vegetables (Menon 2007). The increasing global demand for organic foods is emphasizing the need of organic livestock production along with organic crop production. Organic livestock products are expected to come from farms that meet rigorous standards, which mandate the use of organic feed, prohibition of antibiotics, animal with free access to out door, fresh air and sunlight along with the essential feature of certification based on certification standards. Moreover, it's recommended that developing organic animal husbandry at all times require a thorough analysis of the problems, opportunities and existing local knowledge (Vaarst *et al.*

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2006). Hence, an attempt was made to document the existing practices including local knowledge of registered organic farmers of Uttarakhnad with respect to livestock production, so as to assess the compatibility of animal husbandry practices with the organic animal husbandry standards, developed among others by the Government of India.

#### METHODOLOGY

The state Uttarakhnad was selected purposively, where systematic development of organic agriculture is taking place through creation of a special institution i.e. UOCB. From the state, three districts were selected purposively i.e. 2 from Garhwal region i.e. Dehra Dun (plain and hilly area) and Tehri Garhwal (hilly terrain) and 1 from Kumaon region i.e. Nainital district (hilly and *bhavar* region), where organic farmers are involved with significant livestock farming activities. From each district, 2 blocks were selected randomly, whereas, villages were selected purposively with maximum number of registered organic farmers. Organic farmers (10) were selected randomly as respondents from each selected village. Thus, the sample selected and studied consists of 100 organic farmers, out of which, 110 farmers were from hilly area and 70 farmers from plain area, by virtue of their geographical location. Information was collected from farmers through direct interaction with the organic farmers using a structured interview schedule, coupled with researcher's observation. Collected information was analyzed using frequency and percentages.

#### RESULTS AND DISCUSSION

Findings of the study outline the existing animal husbandry practices of registered organic farmers as regards- Breeds and breeding; Nutrition / Feeding system; Health care; and Management of animals.

##### *Animal husbandry practices of registered organic farmers*

**Breeds and breeding:** The breeds maintained by registered organic farmers were mostly local breeds and the method of breeding followed was natural service whereas artificial insemination (AI) was not very popular. The breeds and breeding system followed by registered organic farmers were similar or nearer to the recommended organic livestock production standards, since in organic systems locally adaptable breeds and breeding methods are given preference.

**Nutrition/Feeding system:** Though the registered organic farmers had no proper idea about the feeding requirements of livestock to get the optimum yields from the local breeds they were maintaining, most of the feed, both roughages and concentrates were produced within the same agro-ecological region. The dependence on external sources like market purchased feeds was very less as also revealed in a study by Chander *et al.* (2007) across different agro-ecological regions of India that livestock were raised mainly on crop residues and grazing, with little external inputs from market. It was

not ascertained, whether these feeds were 100 per cent organic, otherwise there is a need to establish their organic status in order not to exceed the recommended percentage of conventional feed allowed in organic livestock production systems.

**Health care:** Health care in organic production systems insists on the selection of suitable breed to the agro-ecological regions, species specific feeding and rearing the animals in stress free environment conditions. Moreover, preventive management plays major role than curative management in organic systems. Vaidya and Partap (2007) reported better animal health due to organic fodder. The animals were mostly treated using locally available plant materials, while the allopathic treatment was given in rare cases. The routine use of antibiotics was very limited, in case of emergencies only. The local practices of health are generally encouraged as per the organic production standards, but the local treatment may require proper validation to be qualified for organic systems. Under organic management, though the alternative treatments are emphasized, but the animal should not be allowed to suffer for the want of treatment.

General health care was maintained through provision of fresh air and exercise through open grazing. This practice was found to be in line with the organic standards which encourage the natural immunological defense of the animals. Registered organic farmers were rich in possession of indigenous Technical Knowledge (ITK) which, however, needs scientific validation for approval by the certification agencies.

**Management of animals:** Animals should be provided access to open areas including grazing, sufficient space for movement when indoor, their behavioural needs should be taken care of so that animals feel comfortable. Most of these aspects were taken care of under the existing production practices of the farmers, yet, proper training is essential so as to fully consistent with the requirement of organic production systems.

Farms of registered organic farmers were well diversified with crop-livestock integrated systems. Cattle were kept in groups which graze together during day time, that fulfils the organic standard of providing animals social contact, sufficient free movement and opportunity to express normal behavioral pattern. Though the livestock housing pattern in the study area was protecting them from extreme cold, it needs modification in a way to facilitate exchange of gases and moisture free environment. Moreover, from zoonotic point of view, cattle housing should be located away from human dwellings, whereas, in the study area especially in hilly areas, they were located adjacent to human dwellings. The existing systems of housing may create hindrance from the certification point of view in organic systems; hence, the farmers need to be oriented towards comfortable housing systems as recommended in organic systems.

Animals have sentimental values among many farmers.

Livestock especially cattle were treated like family members. Farmers celebrate the occasion of calf birth and the naming ceremony of new born calves. Such practices attitude of care, responsibility and respect for animals, just as recommended in organic systems.

For a comprehensive assessment of the existing livestock production practices of the farmers of Uttarakhand in relation to organic livestock production, the practices were contrasted with the standards of organic production. Thus, the existing practices of registered organic farmers were compared with the standards like IFOAM Basic Standards (IBS), European Union (EU) regulations and National Organic Programme (NOP) of the United States (USA) and Indian National Standards- National Standards for Organic Production (NSOP 2000) Table 1.

*Traditional practices of animal health management:* The traditional practices followed by the registered organic farmers in the study area for treating sick animals, which reveals rich reservoir of Indigenous Technical Knowledge (ITK) available with the registered organic farmers in Uttarakhand.(Table2). The findings revealed that there is abundant knowledge and practices that have been used from generation to generation in livestock production (Table 2). Local remedies used against some ailments, common infections and parasites may be an alternative to the popular veterinary drugs in organic systems. However, these practices need to be validated and standardized in terms of dosage, active ingredients and appropriate level of processing to preserve organic status while maintaining efficacy of the drug and storage methods.

Table 1. Existing animal husbandry practices of registered organic farmers of Uttarakhand vis-a vis organic animal husbandry standards.

Existing practices	Organically recommended	Status and comment
<b>Breeds and breeding</b>		
Breeds maintained by organic farmers-	Local breeds that are well adapted to the environment and disease resistant.	Predominantly natural and indigenous breeds which adapt well to local environment.
Indigenous and local variety. Cattle 86.99% Buffalo 80.62% Goat and poultry 100%	The EU Regulation-Breeds or strains capacity of animals to the local conditions, their vitality and resistance to disease (Council Regulation No. 1804/1999, B 3.1), preference to indigenous breeds and strains.	Local practice is compatible with organic livestock production systems.
<b>Breeding method</b>		
Natural service: Cattle 87.92%, Buffalo 68.18%, Goat and poultry 100%	The natural service is the approved reproduction technique in Indian conditions, as per the standards of IFOAM-India (1996) and NSOP (2000).	For breeding, most commonly used practice is natural service.
AI. usage: by few farmers ETT usage:nil		Local practice is favorable to organic production systems.
<b>Origin of animals</b>		
Most (92.78%) of the livestock origin is within the same agroecological region.	Animals should be born and brought from organic farms only. Animals within the same agro-ecological region are preferred.	Local practice is much favorable to Organic livestock production.
<b>Nutrition/Feeding systems of animals</b>		
Ration consists of both concentrates and roughages.	Freed-must be from the farm itself, 100 per cent organic. In case of non-availability; at least 50 per cent organic.	Being under organic cultivation, concentrate feed is mostly certified. Whereas, case of roughages, nerly 40 per cent certified, 45 per cent: forest produce, though uncertified, but nearer to organic feed. Farmers had no proper idea about the feeding requirements, which needs focused attention to improve the productivity of cattle.
Concentrates: Home made: 75% Neighbour's farm: 10% Market: 15%	IBS: Allows a limited percentage of non-organic feed (not more than 10% dry matter per ruminant per annum; 15% for non-ruminants).	Feeding systems closern to organic feeding systems.
Roughages: On farm: 42.5% Forest: 47.5% Neighbour's farm: 6%	NOP of US: requires that feed including pastures and forage is organically produced and handled, EU-allows a	

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Existing practices	Organically recommended	Status and comment
Market: 4%	maximum conventional feedstuff of 5% for herbivores and 25% for other species.	
Silage feeding : nil	Polygastric animals should not be fed silage	No fresh preservation of feed by almost 100% of farmers. However, grass is preserved as hay for lean season. Current practice in the study area is most favorable to organic production systems.
Farmers use locally available forest produce which consists of herbs as well. Artificial and chemical feed additives-nil. Animal origin feed additives-nil	Additives of any chemical and of artificial nature not allowed.	Most of the farmers, especially from hilly areas, were not aware of artificial and chemical additives. Local practice is more encouraging to organic livestock systems.
Water sources-not sufficient enough, limited.	Ample access to fresh water	Water is a scarce resource in many regions due to less rainfall or low availability of water reserves. This situation may be less favorable to organic production systems. which needs focused attention on protecting and restoration of the water reserves.
Nearly 70% of livestock were maintained on both grazing as well as stall feeding, except in buffalo, where it was mostly on stall feeding.	As per standards of organic production systems, daily access to forage throughout the grazing season is a must, and pasture shall provide at least 50% of the daily dry matter intake during the grazing season.	Common Property Resources (CPRs) are scarce and are in decreasing trend. Hilly areas: Forests can meet demand. Plain area: CPRs limited. Hay pose a problem. Needs attention. Though, mostly stall fed, buffaloes graze in harvested fields and fallow lands thereby fulfilling the requirement of grazing in organic production systems. Mostly practices are favorable to organic production systems.
<b>Health care</b> Preventive management: 78.33% of farmers.Preventive and curative management: 21.67% of farmers.Breeds are locally adaptable.Grazing provided. Small livestock holdings.	EU regulation-on organic livestock production, animal health management-includes disease prevention; suitable breed selection and animal husbandry practice; quality feed; housing in free range conditions allowing regular exercise and with appropriate stocking densities.	Preventive management playing major role. Farmers' traditional practices of management were effective in protecting the health of animals. The systems of animal health practices were in consonance with the recommended organic animal husbandry standards.
Farmers rely on traditional or indigenous health care practices mostly. Traditional:61% Traditional and allopathy: 31.50%	Usage of chemical or allopathic medicines is prohibited. Permitted only when no effective alternate treatment is available, with certain limitations, as well-being of the animal is the main criteria.	Farmers, especially old women members of the family were rich in Indigenous Technical Knowledge (ITK) in health care, acquired from generations together. ITK need scientific validation for recommended usage in organic systems. Less access to conventional treatment in hilly areas. Hence, local health care practices are more favored in organic livestock farming.
Regular usage of vaccine was very less.	Usage of vaccination restricted.	Need of vaccine was little in hilly areas; In plain areas, though farmers use vaccination, it's not on a regular basis. Majority of livestock being local and indigenous breeds,

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Existing practices	Organically recommended	Status and comment
		need of usage of vaccine was hardly felt. Farm situation is favorable to organic production systems.
Usage of hormones was nil.	In organic production systems, animal should be strengthened through management measures, where reproduction takes place by natural means. Usage of hormones is not allowed.	Farmers were not aware of usage of any hormones and moreover, depend on traditional knowledge for reproductive disorders. Unlike in exotic and cross-breds, reproductive problems were less among the breeds maintained by registered organic farmers. Local practices are most favored to organic production systems.
<i>Management of animals</i> Majority of farmers had more than 2 livestock species and with rotation of 2-3 crops per annum with recycling of nutrients.	Biodiversity of farm is emphasized.	Mixed crop-livestock farming systems. Diversity of farm is maintained at species and ecosystem level. Local practice is most favoured for Organic livestock production.
Mutilations like castration (69.44%) and branding (22.22%) were followed.	Mutilations are not allowed, however, few exceptions are there.	Though mutilations are practised, they come under the exceptions mentioned in the standards. However, practices like branding need to be discouraged to make the existing systems more eligible to organic livestock production.
Animals protected against extreme weather, maintained in groups, and with access to free movement.	Standards insist on meeting physiological and ethological needs of the animals.	Animal welfare is well taken care of through different protective measures and in meeting the needs of animals. Local practice is favored in organic production.
Grazing of animals in groups.	Company of other animals of same kind; sufficient free movement and opportunity to express normal pattern of behavior.	Most of the animals graze together in forest areas. Farmers' local practice is favoured in organic production systems.
Livestock sheds/houses are not well ventilated, though, comfortable in extreme cold weather, especially in hilly areas.	Houses should be species specific and should be well constructed for exchange of gases and free from moisture.	Housing pattern less favored to organic systems. Housing systems need modification to withstand extreme cold as well as heat and with good ventilation measures.
Domestic animals are like family members, cows treated with respect and care.	Animal welfare is much emphasized.	Farmers attach a lot of value to animals with due care. Local practices are favored in organic systems.

General observation and interaction with the registered organic farmers revealed a number of general practices that are compatible with organic livestock farming practices. Moreover, the level of input use was less to almost negligible, as also revealed by Chander *et al.* (2007) in their findings that the level of input usage is negligible and market purchased inputs were not much use in dryland areas of India.

Majority of the livestock production practices were in line with what the organic standards recommend, thus, are

compatible to organic systems. Some practices, however, might act as hindrance for the existing livestock production systems to be certified as organic. For example, existing housing systems, limited water resources and diminishing trend of Common Property Resources (CPRs) may pose a threat for the development of organic livestock systems, which need to be addressed with suitable interventions to promote organic livestock systems alongside crop production in Uttarakhand in particular.

Table 2. Traditional practices followed by registered organic farmers of Uttarakhand

Ailments	Practices followed
Wounds	<i>Devadar</i> tree oil
External parasites	Cow urine and black ash; cloth dipped in petrol; camphor application; <i>Aadu</i> (peach) leaves minced and apply; red soil on legs; garlic+mustard for drinking; chanting of <i>mantras</i>
Loss of appetite	<i>Dhania</i> + onion + <i>kalazeera</i> + curd; <i>kalazeera</i> + <i>dhania</i> juice
Fever	<i>Kalazeera</i> powder
De-worming	Forest tree leaves; stem peelings; mustard oil
Bloat	<i>Kalajeera</i> + <i>dhania</i> mix with feed; cloth dipped in kerosene kept on nose to smell it
Rumination	<i>Kalajeera</i> + <i>dhania</i> powder + jaggery + onion + curd
Treatment of minor injuries	' <i>Bana</i> ' leaf paste local name of some grass
Control of ticks in animals	' <i>Karoi</i> ' grass is rubbed on skin
Treatment of ' <i>Gal Ghotoo</i> ' in livestock (H.S.)	' <i>Bhang</i> ' ( <i>Canabis sativus</i> ) and ' <i>Shivali</i> ' leaves are grinded together, put in cloth and whole cloth is boiled. After cooling, cloth is applied on affected portion; <i>Seera</i> (molasses by product)+ <i>Tambaku</i> inside the throat
Foot-and-Mouth disease ( <i>khuriya</i> )	Animals with foot rot and FMD are kept in mud; phenyl is applied on foot; and in condition of sour mouth, wheat flour is given to animal
For higher milk production	' <i>Pinda</i> ' a local feed prepared by mixing wheat flour in lukewarm water with ' <i>Gur</i> ', butter (extracted from curd), rice, <i>Jhingora</i> ( <i>Echinochola frumentacea</i> ) etc. ; ' <i>Bhimal</i> ' leaves+ <i>bhatt</i> (black Soybean) + wheat
Excessive bleeding during calving	' <i>Kalazeera</i> ' boiled in water and water is given to animals. Roasted <i>Zeera</i> powder is mixed in lukewarm milk and given to the animal
Mouth ulcers	Lemon + salt
Mastitis	Honey + <i>Haldi</i> (Turmeric)

Organic livestock production has high potential in the Uttarakhand especially in hilly areas, due to the favourable government interventions in organic crop production activities, available extensive lands and the biodiversity maintained. While promoting organic livestock farming, it is a fact that the ever growing population and reducing land size shall continue to work against the stability of natural environment, which is desired in organic livestock farming systems. Therefore, it raises concern as to what suitable strategies to be taken to allow co-existence of the increasing human population and organic livestock production. There is good knowledge and practices in livestock management as regards breeding, health care, nutrition and general husbandry methods among registered organic farmers, which could be used and suitably modified to suit organic farming systems. Traditional livestock farming followed in the state is not organic farming *per se*, however, the knowledge and practices of registered organic farmers, who are already marketing organic crop products, could be blended with the principles and practices of organic livestock farming to develop and promote organic livestock farming in the Uttarakhand.

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