To Smallholder dairy farmers who make core of the land-based economy of the mountains and have potential to flood India with milk

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Smallholder dairy farming is the core activity of dairy industry in India. India’s first rank in milk production in the world is largely thanks to the contributions of smallholders. Merely boasting of being world’s No. 1 milk producer cannot do. We have to be fair to who are at the heart of the glorious success story of India. This book is an humble effort towards exercising the duty of being fair to the real actors in the land-based economy of India, the smallholders.

India is a milk-drinking civilization. India’s top rank in milk production in the world has further consolidated this notion. Rivers of milk and curd used to flow in the country, they say. Smallholder dairy farmers have turned this belief into reality. This book is an attempt to partake in the celebration what India was and what it today is, on the front of dairy production.

There are certain regions and areas in the country which are often left on the periphery and are marginalized ones to the worst plight of the communities therein. Himalayan mountains are the stark example. These mountains, inherently, are the most fragile. They are also the most marginalised – inherently as well as geopolitically. These environments are inhabited by one of the world’s poorest communities. Yet, this region is unique in many ways and calls for the vision of all enthusiasts the world over. This book focuses absolutely on this region. Smallholders’ resource management for multiple land-based activities, including dairy farming, maintained with unique synergy is an area requiring research intervention. This book attempts to portray many facets of this community-based resource management that could further be articulated in our planning and programmes relating to dairy development in mountain areas.

Himalayan mountains are inhabited largely by the livestock-dependent farming communities. Livestock are the integral part of the farming systems. Large areas under common property resources (CPRs), such as forests and rangelands, encourage and tempt farmers to go in for and adopt animal husbandry as a source of organic manure, draught power, milk, wool, income, family security, risk-bearers, and social security. These animals are interwoven in the cultural fabric of the mountains. Dairying is the first and the foremost activity of the farmers. This activity is not just an economic activity but is deep-rooted in the cultural ethos of the mountains. This book has an analytical look at this activity of the farming class.

Times have changed. And they are changing at a faster pace. Values are also changing with the time. Farmers, in order to sustain their families, have to depend on cash incomes. Cash is needed for the education of children, marriages of sons and daughters, visit to relatives, having access to medical treatment, and for purchase of items critical for a family’s survival and welfare. Days of bartering system in which money hardly played any role are over. There has to be certain amount of money flow to a family. This is readily ensured when a family harps on the resources immediately in its surroundings. Dairy farming is such an activity. Dairy not linked with the market system won’t play assured role. Smallholders do not have equal access to the market system. Those in the peri-urban areas, however, find themselves in an advantageous position, for they can easily dispose their dairy products in the nearby market. This book especially focuses on the many issues relating to the market-oriented dairy farming in the peri-urban areas. Peri-urban areas, interestingly, are also the high pressure areas in the mountains. Most of mountain agriculture is concentrated at mid-altitudes. These areas, owing to immense pressure, are often highly transformed ones.
Urban areas further escalate the changes taking place by creating excessive demand to be met through land-based enterprises.

The market-oriented dairy development is the call of national and international organisations. When a dairy farm is linked with the market, it automatically sustains. However, such farms are fraught with certain problems. The in-depth research-based analysis presented in this book attempts to address these problems.

Plentiful availability of CPRs in mountain areas – as a result of local management/people’s governance – adds one more unique dimension to mountain agriculture. Mountain agriculture is a community-based agriculture. Forests, rangelands, plant and livestock genetic resources are all CPRs enveloped in common wisdom, common history of evolution and common culture. This feature of mountain agriculture should remain intact, for it induces and enhances social and cultural cohesion amidst a community in the mountains. Fabric of a society breaks up with privatisation that ultimately results in increased selfishness and insatiable greed. Individualism is opposed to social cohesion and social responsibilities and it leads to finally end up into social chaos, anarchy and unsustainability. Social cohesion, therefore, should be one more principle of development.

Development intervention in mountain areas, therefore, has to be extremely sensitive. Dairy farming too is a part of community based socio-economic activity. Dairy development processes, therefore, must obey – to say in conclusion – the principles of equity, justice, ecological augmentation and social cohesion.

Viable economy of dairy farming can neither be ignored nor overemphasised against the other four principles. The fifth principle, we have emphasised earlier, is the inevitable economic viability. This principle is also inevitably linked with dairy farming. Economic returns need be increased through market-linked dairy farming. But mere thought of economy cannot do. For example, ecological degeneration would cut the dairy off from forests and rangeland resources which are the major, and often exclusive, sources of feed. Ecological prudence ensures plentiful availability of fodder as well as other conditions of socio-economic welfare: balanced water cycle, enhanced soil fertility, appropriate micro-climate, diversified avenues, increased incomes, etc. ecological well-being is thus economic well-being. A collapse of the former condition is a doom for the latter. This book would also seek the perspective-based ways and means to augment dairy farming in mountain areas.

We would like to invite all the readers to give their critical comments on the book and further suggestions leading to the development of dairy sector in the mountains. We are of the strong opinion that large share of the benefits emerging from an enterprise must be poured in favour of farming community and that equity, justice and ecological augmentation must be the essential and inevitable outputs of an enterprise. Our efforts towards market-oriented dairy development should be fed with these principles. These principles are more crucial to be honestly implemented in the complex ecosystems of the fragility-ridden mountains than in less complex ones of the plains.

We hope this book, in addition to portraying a holistic picture of the smallholder dairy farming in the peri-urban mountain areas, would also serve as a useful tool for the planners, policy makers, field workers, researchers, students, dairy farmers and all those associated directly and indirectly with dairy enterprise in their efforts for dairy development.

Vir Singh
Babita Bohra
### Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AHD</td>
<td>Animal Husbandry Department</td>
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<tr>
<td>BQ</td>
<td>Black Quarter</td>
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<td>CPR</td>
<td>Common Property Resource</td>
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<td>DAP</td>
<td>Draught Animal Power</td>
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<tr>
<td>DDD</td>
<td>Dairy Development Department</td>
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<tr>
<td>DMU</td>
<td>District Milk Union</td>
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<td>FAO</td>
<td>Food and Agriculture Organisation</td>
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<td>FMD</td>
<td>Foot and Mouth Disease</td>
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<td>FWM</td>
<td>Fresh Whole Milk</td>
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<tr>
<td>GBPUAT</td>
<td>Govind Ballabh Pant University of Agriculture &amp; Technology</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GOI</td>
<td>Government of India</td>
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<td>HKH</td>
<td>Hindu Kush-Himalayas</td>
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<td>HS</td>
<td>Haemorrhagic Septicaemia</td>
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<tr>
<td>ICIMOD</td>
<td>International Centre for Integrated Mountain Development</td>
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<td>ILRI</td>
<td>International Livestock Research Institute</td>
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<tr>
<td>LPP</td>
<td>Livestock Production Programme</td>
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<tr>
<td>MPF</td>
<td>Mountain Perspective Framework</td>
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<tr>
<td>PPR</td>
<td>Private Property Resource</td>
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<tr>
<td>SMP</td>
<td>Skimmed Milk Powder</td>
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<tr>
<td>TB</td>
<td>Tuberculosis</td>
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<tr>
<td>ULDB</td>
<td>Uttaranchal Livestock Development Board</td>
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<tr>
<td>USA</td>
<td>United States of America</td>
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<td>VDC</td>
<td>Village Dairy Cooperative</td>
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India is predominantly an agrarian economy with more than 70 per cent population residing in rural areas depending on agriculture. Dairy farming is one of the most important economic activities in the rural areas. Dairying is intertwined with farming systems and is the most important dimension of the livestock-based livelihoods in the mountains throughout the Hindu Kush-Himalayan (HKH) Region. Rural communities fondly relish dairy products. Apart from ensuring nutrient supplies to the families owning dairy farms, dairying also offers promising employment opportunities and handsome economic returns. All categories of landholders are all involved in dairy, but it is largely the domain of the smallholders who own very small size of land. In the HKH Region, dairying is especially a promising economic activity for smallholders who comprise the majority of farming community in the Region.

India has an enormous wealth of livestock, especially the dairy animals. About one-fourth of cattle population and about half of the buffalo population of the world are found in India. Total bovine population of India is about 21 and 50 per cent of the world and Asia, respectively. The livestock resources are further enriched by many pristine breeds of each of the species. There are some 28 breeds of cattle, seven of buffaloes, 23 of goats and 44 of sheep in India, which could be classified as distinct breeds. These livestock serve critical purpose of India’s agrarian economy and an enormously large proportion of the country depends on them directly for their livelihood. The rest proportion of the population depends just for consumption purposes. Livestock products, especially the dairy products, are the desirable items of consumption virtually by all Indians. Further, dairy products fit into the belief system of the vegetarians, majority of whom, in fact, is lacto-vegetarian.

Contribution of agriculture to the country’s GDP accounts for about 25 per cent of which the share of livestock sector is about 6.5 per cent (over 25 per cent of overall agriculture). The share of dairying in the livestock sector accounts for about an impressive 65 per cent, indicating the significant role of dairying in the socio-economic situation of our country. The GDP growth rate in agriculture has been less than two per cent during the past one decade, whereas the livestock sector has consistently recorded a higher growth rate of four to five per cent during the same period (Tripathi 2004). There has been a phenomenal increase in milk production in recent years. India produced only 17.0 million tonnes of milk in 1951. This figure rose to 20.0 million tonnes in 1960, 23.2 million tonnes in 1973, 54.0 million tonnes in 1990, and 86.6 million tonnes in 2002-2003. There has been, thus, a record of 409 per cent in the increase of milk production in the country during the later half of the 20th Century.

At milk production front, India has surpassed all other countries in the world. Producing far more milk than USA (71 million tonnes) and Russia (40 million tonnes), etc., India ranks first in total milk production in the world (Hemalatha and Reddy 2001). India’s production of milk in comparison to that of the world and Asia is about 15 and 50 per cent, respectively. The White Revolution thus has gone hand in hand with the Green Revolution, rather much ahead of it. And it should be regarded as one of the proudest achievements of India after Independence.

Marketing of milk and milk products in India, however, faces a problem. India lags far behind in the export of milk and milk products, which constitute less than one per cent of the overall export of animal products from the country. With the existing export status of about 200 crore rupees per year, India’s participation in global trade is
Mountain Dairy in Mansfield, a dairy farm owned by the Stearns family since 1772, has brought back home delivery after an eight-year hiatus due to the coronavirus and people not wanting to leave their houses. Last Tuesday, they delivered milk to 22 customers and by Monday, the total was up to 90 customers and they were talking about possibly rolling out another delivery truck. Since they do a lot of business with colleges and restaurants, many of which are shut down, this has helped boost Connecticut Milk Bring It On Delivery Organic Farming Raising Truck Mountain. Major Connec

Dairy farming is an integral part of mountain agriculture in the central Himalayas, including in Uttarakhand State. Smallholders, comprising the majority of mountain farmers, are accustomed to rearing some animals as an essential component of the farming systems they have evolved. Among the various basic needs the animals fulfill, milk is the most important for a family. In the traditional mountain setting, dairy farming as a source of cash income may not be very visible, but dairy products have been and continue to be indispensable food supplements for virtually all families in the region.