

Original Research Article

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## Livelihood Security through Vegetable Cultivation in Tribal Belt of Ladakh

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### ABSTRACT

#### Keywords

Cold arid, Off season production, Handicrafts

#### Article Info

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The union territory of Ladakh is a cold arid desert with a majority of tribal population. The agriculture season here is limited for a few months owing to the harsh climatic conditions. In this extremely tough terrain; a farm women; Padma Dolkar from a remote village Chemday situated in district Leh of this region has taken the challenges of this harsh and tough terrain head-on. Dolkar is a mother, a wife, a gardener, a weaver and a spinner too. From vegetables production; both in season as well as by off season, she earned Rs.96, 479. Through handicrafts, she earns around Rs. 47000/year. Today she takes all the important decision related to domestic issues and those concerning her farm. This gives her a feeling of being empowered in the true sense.

### Introduction

Standing at a height of 2900 m to 5900 m above mean sea level, Ladakh region of the country is one of the highest and coldest (Kumar and Namgyal, 2019). This high mountain region of Ladakh is characterized by a rugged topography at an average altitude of over 3000 m. It is separated from the Indian subcontinent by the Great Himalayan Range and edged by the Karakoram Range to the North. As the region remains frozen in the winter months protected cultivation is indispensable for his region. Protected cultivation is a technique wherein the microclimate in the surrounding area of the plant is controlled partially or fully or

modified to protect the crop from weather especially very low or high temperatures, hail storms and heavy rains (Angmo *et al.*, 2017).

This is the story of a 43 years old farm woman Padma Dolkar who has achieved with sheer grit and faith what many in her village could not even dream of. Padma Dolkar is from Chemday village of Leh District. With a family of five, all her three children are still studying. Padma Dolkar is a marginal farmer with only about seven kanals of land. Her husband is an ex-serviceman. At an altitude of 3765 m, her village is considered extremely and cold where agricultural season starts 15-20 days later than many other villages in the district. Until 2016 she grew only few

vegetables on a few yards for domestic consumption. It was only when she took one month skill development training by KVK-Leh; then she realized that vegetable gardening could be taken up as an income generating enterprise. Today, as a result of technological interventions and the skill and technical guidance she acquired from KVK-Leh, she grows a number of vegetables and even utilizes technologies that not only fulfill her domestic vegetable requirement but also generate income by selling them in the market.

**Materials and Methods**

The primary data was collected from the individual farmer using a well developed open ended interview schedule in a face to face situation. Data regarding the production and price per quintal was obtained from the

farmer herself and was than analyzed and tabulated accordingly.

**Results and Discussion**

**Vegetable production**

Apart from raising vegetables nursery on her own, she +grows carrot, onion, cauliflower, cabbage, broccoli, kale, knolkhol, beans, pea, water melon, musk melon and tomato. Cool season crops are grown in the open but she uses trench and low tunnel technologies for raising tomato and melons.

Different vegetables crops are grown in lines on bed sizes of 2mx1.5m. She procures her seeds (recommended by KVK-Leh) from both Department of Agriculture (DoA) and private vendors (PV) (Fig. 1–5 and Table 1).

**Table.1** Income from vegetables

Crop	No. of beds	Area(m <sup>2</sup> )	Yield(q)	@Rs./kg	Amount
Tomato	8	24	2.00	35	7000
Cabbage	10	30	5.40	25	13500
Cauliflower	8	24	2.74	40	10344
Onion	12	36	10.80	40	43200
Carrot	6	18	0.60	30	1800
Knol khol	4	12	0.48	30	1440
Broccoli	5	15	0.45	60	2700
Beans	5	15	0.15	45	675
Peas	8	24	0.84	60	5040
Water melon	-	10	1.04	40	4180
Musk melon	-	10	1.65	40	6600
		218	26.15		96,479

**Table.2** Income from Handicrafts

Enterprise	Weaving	Spinning	Basketry	Total
Amount	32000	12000	3000	47000

**Table.3** Income from wheat and barley

Crop	Area (Kanals)	Income (in Rs)
Wheat	3	2250
Barley	3	2400
<b>Total</b>	<b>6</b>	<b>6650</b>

**Table.4** Total income from all the enterprises

Enterprise	Income (in Rs.)
Vegetables	96479
Handicrafts	47000
Wheat and Barley	6650
<b>Total</b>	<b>150,129</b>

**Fig.1** An over view of the field



**Fig.2** Fresh onions harvested in September



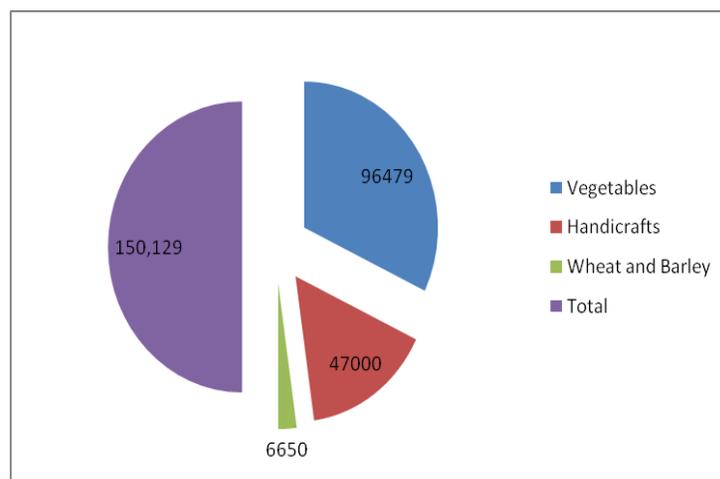
**Fig.3** Tomatoes grown under trenches



**Fig.4** Melons raised under low tunnel



**Fig.5** Pie diagram showing the percentage income from different enterprises



Padma Dolkar earned maximum from Onion, which is usually stored in cellars for winter and spring followed by cabbage, cauliflower, tomato and watermelon. Padma earned an amount of Rs.96, 479 by producing vegetables both in season as well as off season through protected cultivation.

### **Handicrafts**

Apart from this, Padma is involved in various Handicrafts work as well. She is a trained weaver and spinner. She spins wool and pashmina and weaves them into Shawls, woolen cloths and carpets.

During off season (Late Autumn to early spring), she is being called to Handicraft centres where she works hard and earns good amount. She earns about Rs.32000/- through weaving and Rs.12000/- through spinning. Handicrafts fetch her around Rs.47000/-. Padma says that besides doing her household purchases, she also monetary supports her husband. This vegetable production and other allied activities have definitely raised her living standard setting a live example for others to follow (Table 2).

The data in the table 3 shows the total income from Cereals like Wheat and Barley. From six kanals of land on which she cultivates Wheat and Barley she had an income of rupees 6650.

The data in table 4 represents the total income of Padma Dolkar from different activities. Her total income stands at one lakh fifty thousand one hundred twenty nine of which rupees one lakh three thousand one hundred twenty nine comes from agricultural related activities.

Today, she has managed to live her dreams satisfying all her family needs through involvement in different income generating activities. Apart from agriculture she does spinning, weaving, knitting, basketry and

even is a raw mason and constructs small structures at home with her husband. Now she has turned herself into a hardcore vegetable gardener who grows her own nursery and even distributes them among relatives and neighbors.

In conclusion the cold arid Ladakh region owing to low humidity and sunshine is an appropriate place for vegetable seed production. It is also largely free from incidence of disease and insect pests. This provides an immense scope for harnessing these niches that can hugely benefit the local population. It also requires infrastructural support in terms of larger investments (Ali *et. al.* 2012).

Padma now feels that she can bring more area under vegetable cultivation. With technical guidance from KVK-Leh, she wants to construct a greenhouse where she plans to grow capsicum, tomato, brinjal and cucumber during summer and during winter she would use her greenhouse for growing leafy vegetables when nothing grows in the open. She has always used dried vegetables (leafy vegetables dried during summer) for winter consumption and she strongly feels that fresh vegetables in diet are important for nutrition during winter. Though her village has never been suitable for apricot and apple plantation but recently thanks to global warming that old non quality yielding trees in the village have started bearing well. This has made her optimistic and now she also wants to plant Apricot and Apple trees in her compound.

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