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Role of women in potato production and value addition at household processing level

Rashmee Yadav, Amisha Kumari, Smita Tripathi, Neelma Kunwar
Chandra Shekhar Azad University of Agriculture and Technology, Kanpur, Uttar Pradesh, India

Abstract
Women play a pivotal role in ensuring potato adoption and utilization within the household, as well as in managing diet diversification, food preparation, and household consumption including infant and child feeding. Different preferences of women and men as farmers and consumers are important to ensure sustained adoption of new varieties. In India, potato is cultivated in almost all states under diverse agro-climatic conditions. About 85 per cent of potatoes are cultivated in Indo-Gangetic plains of North India. The states of Uttar Pradesh, West Bengal, Punjab, Bihar and Gujarat accounted for more than 80 per cent share in total production.

Keywords: production, processing level

Introduction

Food processing is the sunrise sector of India. The importance of this industry is not limited only to the contribution to the GDP, but it also provides many other desirable socio-economic benefits such as increased employment opportunities, improvement in income and lifestyle of the rural people leading to reduction of migration of rural masses to cities, and mitigation of huge post harvest and storage losses, specially, in fruits and vegetables. Tremendous potential of Indian potato processing industry has been widely discussed. According to the forecast of Frito-Lay India, potato processing industry in India is on the threshold of rapid growth and is expected to grow to about 345 thousand tonnes by the year 2006 and further to about 1740 thousand tonnes by 2010 from a mere 125 thousand tonnes in 2003. India has wide agro-climatic conditions and areas suitable for adequate and round the year supply of processing quality potatoes. In addition, now India has potato varieties that are bred according to the requirements of the processing industry. The increasing proportion of potato processing in India shall not only avoid glut like situations but also carry forward the potato revolution in India. However, estimation of the requirement of raw material (processing quality potatoes) for potato processing industry is of utmost importance.

Research Methodology

The study was conducted in Kannauj district. Two blocks Kannauj and Chhibramau were selected in this study. Ten villages were selected out of both selected blocks Total 300 farm women were selected. Dependent and independent variables such as age, education, caste, land holding and milch animals were selected. The statistical tools such as mean, rank, Fisher 't' test, Cr were used.

Results

Table 1: Distribution of farm women according to land holding

S. No	Land holding	Frequency	Per cent	Mean±S.D.
1.	Landless	174	58.0	-
2.	Marginal	102	34.0	1.5±0.6
3.	Small	22	7.3	3.7±0.7
4.	Large	2	0.7	5.6±0.9
	Total	300	100.0	2.4±0.8

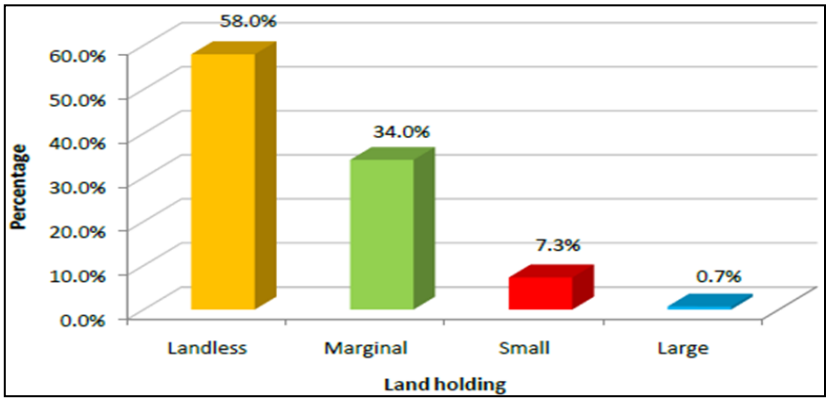

Fig 1

The role which the landless labourers play in the agricultural economy is very crucial and important because the availability of labour is a major constraint in the agricultural land use and cropping patterns of a region. Small and marginal farmers with small amounts of marketable surplus prefer rural markets for the disposal of surplus, as they can save travel and transport costs and achieve higher prices or income contrary to what they would attain if they sold the same small size of surplus in distant, specialized regulated markets. In the case of large farmers, it was observed that they were mostly engaged in storage, marketing and export of potato produce. This gives them good returns as compared to small and marginal farmers.

Table 2: Potato varieties which are being sown in the district

Sl. No.	Registered varieties	Yes	No	Sl.No.	Local varieties	Yes	No
1.	Kufri Chandramukhi	100(33.3)	200(66.7)	1.	Lal Gula	180(60.0)	120(40.0)
2.	Kufri Jyoti	120(40.0)	180(60.0)	2.	S-1 Supar	130(43.3)	170(56.7)
3.	Kufri Badshah	115(38.3)	185(61.7)	3.	Abdulla	227(75.7)	73(24.3)
4.	Kufri Bahar	210(70.0)	90(30.0)	4.	S-2	210(70.0)	90(30.0)
5.	Kufri Lalima	111(37.0)	189(63.0)	5.	S-3	115(38.3)	185(61.7)
6.	Kufri Suttej	95(31.7)	205(68.3)	6.	J.M. 27	200(66.7)	100(33.3)
7.	Kufri Ashoka	180(60.0)	120(40.0)	7.	Jareena	150(50.0)	150(50.0)
8.	Kufri Pukhraj	175(58.3)	125(41.7)	8.	Fulwa	121(40.3)	179(59.7)
9.	Kufri Chipsona-1	122(40.7)	178(59.3)	9.	New Haland	275(91.7)	25(8.3)
10.	Kufri Chipsona-2	120(40.0)	180(60.0)	10.	Kanchan Kufri	250(83.3)	50(16.7)
11.	Kufri Anand	125(41.7)	175(58.3)	11.	G-4	175(58.3)	125(41.7)
				12.	Shri Nath	225(75.0)	75(25.0)
				13.	166	200(66.7)	100(33.3)
				14.	3797	125(41.7)	175(58.3)
	't'	3.674*					

(Figures in parentheses denote the percentage of respective values)

Potatoes are versatile for a wide variety of culinary uses, make a great storage crop and are generally simple to grow. Potatoes satisfy our needs and select varieties are suitable for our climate and situation, because each variety has unique qualities that make it well-suited to a certain place or purpose.

Table 3: Role of women in potato processing at household level

S. No	Processing item	Yes	No	Mean score	Rank
1.	Chips	295 (98.3)	5 (1.7)	1.98	II
2.	Papad	295 (98.3)	5 (1.7)	1.98	II
3.	Potato strips (Kachari)	200 (66.7)	100 (33.3)	1.67	III
4.	Paratha	300 (100.0)	-	2.00	I
5.	Aloo Bhujia dry (sev)	169 (56.3)	131 (43.7)	1.56	IV
6.	Halwa	71 (23.7)	229 (76.3)	1.24	V
7.	Aloo Nariyal Laddu	-	300 (100.0)	1.00	VIII
8.	Potato Dhokla	-	300 (100.0)	1.00	VIII
9.	Aloo Batata	12 (4.0)	288 (96.0)	1.04	VI
10.	Aloo wadi	4 (1.3)	296 (98.7)	1.01	VII

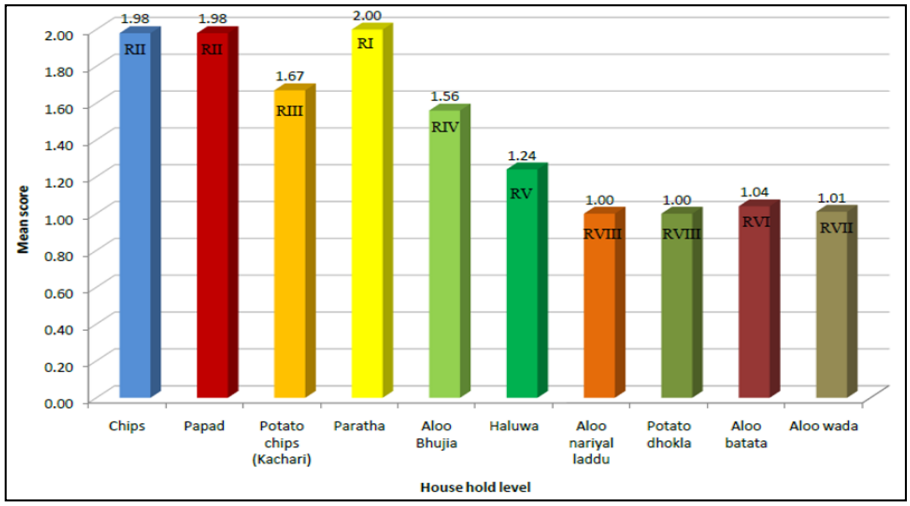

Fig 2

Potato is considered to be one of the traditional food items of India. It is very popular all over the country and there are many food preparations where potato is an important ingredient. With high percentage of water content, its quality is adversely affected with the passage of time. Dehydration process reduces the water contents substantially resulting in enhanced shelf life. In most Indian households, potatoes are used for many purposes round the year. Women generally make dehydrated potato products like potato cubes, sticks, slices, powder, chips, papad, dry aloo bhujia, potato dhokla, aloo nariyal ladoo, etc. Indian women generally do this during Holi festival for the purpose of storing potato products for consumption throughout the year. These products do not get spoilt only that these need to be sun dried from time to time to reduce the moisture content. Dehydration imparts higher shelf life and also reduces size as well as weight resulting in savings in transportation costs. This also enables the consumers to use potatoes during off-season when fresh-ones are either not easily available or they are costly.

Table 4: Rank wise consumer preferences for developed products

S. No	Products	Consumer preference		Rank order
		Yes	No	
1.	Potato soup	30 (10.0)	270 (90.0)	III
2.	Potato and barley soup	36 (12.0)	264 (88.0)	II
3.	Chinese chicken and potato soup	30 (10.0)	270 (90.0)	I
4.	Potato crusted pizza	15 (5.0)	285 (95.0)	II
5.	Dum aloo lakhnavi	120 (40.0)	180 (60.0)	I
6.	Bangbang Batata	90 (30.0)	210 (70.0)	II
7.	Potato Biryani	15 (5.0)	285 (95.0)	III
8.	Twice baked potatoes with broccoli	12 (4.0)	288 (96.0)	III
9.	Aloo 65	120 (40.0)	180 (60.0)	II
10.	Aloo palak	180 (60.0)	120 (40.0)	I
11.	Aloo palak paratha	255 (85.0)	45 (15.0)	I
12.	Honey chilli potato	60 (20.0)	240 (80.0)	II
13.	Stir fried shredded potato	30 (10.0)	270 (90.0)	III
14.	Fried potatoes with mushroom	30 (10.0)	270 (90.0)	III
15.	Stuffed potato idlis	60 (20.0)	240 (80.0)	II
16.	Italian potato salad	45 (15.0)	255 (85.0)	III
17.	Tomato flavoured potato chips	270 (90.0)	30 (10.0)	I
18.	Aloo wadi	75 (25.0)	225 (75.0)	II
19.	Aloo methi papad	75 (25.0)	225 (75.0)	II
20.	Kachari	30 (10.0)	270 (90.0)	III
21.	Sesame, potato and coconut kuih	15 (5.0)	285 (95.0)	III
22.	Aloo ka halwa	30 (10.0)	270 (90.0)	II
23.	Irish potato candy	3 (1.0)	297 (99.0)	III
24.	Potato cake	6 (2.0)	294 (98.0)	III
25.	Potato biscuits	9 (3.0)	291 (97.0)	III

(Figures in parentheses denotes the percentage of respective values)

A consumer chooses for a certain food recipe before consumption he first gains knowledge about its past, texture, nutritive value, health benefits, availability of raw material, ease of cooking, etc. However, emotions have also influenced the food selection of many individuals. The most important factor in consumer choice is emotional aspects versus new product availability due to advances in technology. Out of the 25 recipes developed during this study.

Table 5: Knowledge level of farm women about developed potato products with value addition

S. No	Developed products	Value addition	Protein	Fat	Calcium	Iron	Sodium	Mg	Potassium	Fibre	CHO	Vit D	Vit C	Vit B_6	Vit. B_{12}	Vit A
1.	Potato soup	Milk	195 (65.0)	-	-	-	-	-	-	-	-	240 (80.0)	-	-	-	-
2.	Potato and barley soup	Barley, Carrot	-	-	-	-	-	-	-	30 (10.0)	-	-	-	-	-	6 (2.0)
3.	Chinese chicken and potato soup	Chicken, Turnip	-	150 (50.0)	-	-	-	-	-	75 (25.0)	-	-	-	60 (20.0)	-	-
4.	Potato crusted pizza	Tomato, Cheese	-	135 (45.0)	-	-	-	-	-	-	-	-	30 (10.0)	-	-	-
5.	Dum aloo lakhnavi	Kasoori methi, Paneer	-	-	-	-	-	-	-	-	-	-	-	30 (10.0)	-	-
6.	Bangbang Batata	Garlic, Semolina	-	-	-	-	-	-	30 (10.0)	-	-	-	-	-	-	-
7.	Potato Biryani	Rice, Pudina, Curd	-	-	6 (2.0)	-	30 (10.0)	-	-	-	180 (60.0)	-	-	-	-	-
8.	Twice baked potatoes with broccoli	Potassium, Broccoli, Carrot	-	-	-	-	-	-	6 (2.0)	-	-	-	-	-	-	3 (1.0)
9.	Aloo 65	Corn flour, curd, curry leaves	-	-	-	-	-	30 (10.0)	-	-	-	-	-	-	-	-
10.	Aloo palak	Palak	-	-	-	45 (15.0)	30 (10.0)	-	-	-	-	-	-	-	-	-
11.	Aloo palak paratha	Palak	-	-	-	30 (10.0)	-	-	60 (20.0)	-	-	-	-	-	-	-
12.	Honey chilli potato	Honey, Sesame seeds	-	-	-	-	-	30 (10.0)	15 (5.0)	-	30 (10.0)	-	-	-	-	-
13.	Stir fried shredded potato	Carrot, Capsicum, Soya Sauce	-	-	-	-	9 (3.0)	30 (10.0)	60 (20.0)	12 (4.0)	-	-	6 (2.0)	-	-	-
14.	Fried potatoes with mushroom	Mushroom	240 (80.0)	-	-	-	-	-	-	-	-	-	-	-	-	-
15.	Stuffed potato idlis	Sooji, Urd, Dal, Rai	-	-	-	-	-	60 (20.0)	30 (10.0)	30 (10.0)	-	-	-	-	-	-
16.	Italian potato salad	Olive oil, Parsley	-	30 (10.0)	-	-	-	-	30 (10.0)	-	-	-	6 (2.0)	-	-	-
17.	Tomato flavoured potato chips	Tomato, Peanut Oil	-	-	-	-	-	-	-	-	-	-	30 (10.0)	-	-	-
18.	Aloo wadi	Chickpea, mung dal	-	-	-	45 (15.0)	-	-	-	-	-	-	-	-	-	-
19.	Aloo methi papad	Garlic	-	-	6 (2.0)	-	-	-	-	-	-	-	-	3 (1.0)		
20.	Kachari	Methi	-	-	-	75 (25.0)	-	-	-	-	-	-	-	-	-	-
21.	Sesame, potato and coconut kuih	Sesame seeds, Coconut	-	-	150 (50.0)	75 (25.0)	-	30 (10.0)	-	150 (50.0)	-	-	-	-	-	-
22.	Aloo ka halwa	Milk, Nuts, Ghee	180 (60.0)	186 (62.0)	-	-	-	-	-	-	-	-	-	-	-	-
23.	Irish potato candy	Cream, Coconut	-	30 (10.0)	-	-	-	-	-	-	-	-	-	-	-	-
24.	Potato cake	Clinnamon, Nutmeg	-	-	30 (10.0)	-	-	-	-	-	-	-	-	-	-	-
25.	Potato biscuits	Egg, Wheat flour, milk	180 (60.0)	-	165 (55.0)	-	30 (10.0)	30 (10.0)	-	-	-	90 (30.0)	-	-	-	-

(Figures in parentheses denote the percentage of respective values)

Mostly women were aware about the presence of protein, fat, calcium, iron, iodine, Vitamin C and potassium in potato. But they lacked knowledge about Vitamin D, Vitamin A, Vitamin B_6 and carbohydrate, further to having no knowledge about Vitamin B_{12}. Since the respondents were aware about the fact that all 25 recipes were developed with potato being the major ingredient, so they opined about having a general idea about the value addition of potassium, magnesium, sodium, calcium, protein, fat etc. Most of them gained this knowledge from T.V. advertisements and radio programmes.

Conclusion

The nutritive value of a meal containing potato depends on other components served with them and on the method of preparation. By itself, potato is not fattening and the feeling of satiety that comes from eating potato can actually help people to control their weight. However, preparing and serving potatoes with high fat ingredients raises the caloric value of the diet.

Recommendations

1. Appropriate mechanisms for sharing of germplasm and advanced breeding materials need to be worked out. Exchange of farmers and scientific personnel and training of scientific and technical personnel have to be encouraged among the countries in the region.
2. There is a need to establish a consortium for potato research and development. This should address the emerging problems and provide guidance.

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