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RS Spehia
Department of Soil Science and Water Management, Dr. Y S Parmar University of Horticulture and Forestry, Nauni, Solan, Himachal Pradesh, India

ML Verma
Department of Soil Science and Water Management, Dr. Y S Parmar University of Horticulture and Forestry, Nauni, Solan, Himachal Pradesh, India

Correspondence
RS Spehia
Department of Soil Science and Water Management, Dr. Y S Parmar University of Horticulture and Forestry, Nauni, Solan, Himachal Pradesh, India

CAN micro irrigation adoption help in doubling farmers income: A case study of Himachal Pradesh, India

RS Spehia and ML Verma

Abstract
Himachal Pradesh is characterized by low production due to unreliable and sparse water availability. Though, varied agro-climatic conditions hold great potential for producing cash crops, the economic conditions of the farmers has not improved over the years, mainly due to dependence on rain for crop production. However, in recent years, use of micro irrigation is increasing in fruits and vegetable crops in the state giving impetus to the farmers' income. A detailed survey of all the 12 districts was carried out to assess the current status and potential of micro irrigation (MI) in agricultural/horticultural crops in relation to income generation and increase in crop productivity. Based upon the survey, SWOT analysis on potential of micro irrigation was done to suggest suitable recommendations for mass adoption. In depth study on assessment of potential of MI, its preliminary status, economic aspects and technical issues limiting its usage on large scale was done. From the study, it can be concluded that micro-irrigation programme has contributed significantly in increasing income in water scarce areas by increasing water-use efficiency and enhancing income manifold depending upon the acreage under cultivation by diversifying to cash crops from traditional agricultural crops.

Keywords: Micro irrigation, status, problems, income generation, SWOT analysis

Introduction
Agricultural scientists in India are working towards target of doubling the farmers' income by 2022 when it is estimated that by 2025, regions home to some of the largest concentrations of rural poverty in the world in Asia, the Middle-East and Sub-Saharan Africa that constitutes one-third of the world's population, will face absolute water scarcity. In India, net irrigated area increased 226.0 per cent during the period wef 1951-52 to 2013-14 but net sown area increased only by 19.0 per cent for the same period, though cropping intensity increased by 28.0 per cent (Table 1). This shows that in India, agriculture is still a high risk, less productive profession due to its dependency on rains. Therefore, new interventions are needed for atleast doubling the income that can make agriculture an attractive profession and lure back the young educated generation that is drifting away from agriculture. Micro irrigation technologies constitute one such intervention which uses water more efficiently and can be effectively used in water scarce areas. These technologies can improve productivity, raise incomes through crop yields and ensure food security. However, the adoption of micro irrigation technologies is still in nascent stage the world over (Anonymous 2012) [2] Table 2.
In India, government has been marketing micro irrigation technologies for more than three decades by providing substantial subsidies, however, total area under micro irrigation is still about 8.14 m ha (Anonymous 2014) [3] Table 3. Therefore, the newly formulated Irrigation Policy, has put great emphasis on micro-irrigation technologies (drip and sprinklers), and is being promoted through National Mission on Micro Irrigation Scheme (NMMI) and Pradhan Mantri Krishi Sinchai Yojana (PMKSY) wherein an area of 690 mha is proposed to be brought under micro irrigation in India for achieving the target of "Har Khet Ko Paani", but the scheme looks to have hit the roadblock due to poor response to such initiatives from small and marginal farmers, who constitutes majority of workforce in agriculture. This can be attributed to several causes like lack of access to groundwater, crop specificity of the available micro irrigation technologies and lack of technical know-how (Narayanamoorthy 1996a) [4]. However, micro irrigation is often promoted for long-term investments like water saving and sustainable agriculture that do not match with the farmers' main concerns like immediate increased income. Micro irrigation has superior irrigation efficiency over the conventional system of irrigation but only matter of concern is the high initial investment cost and the recovery period depends upon selecting micro irrigation system according to the crop (Narayanamoorthy 1996b) [5] Table 4.

Present Scenario

Himachal Pradesh is situated in the Himalayan region on the northern border of the country and located between Latitude 30° 22' 40" N to 33° 12' 40" N and Longitude 75° 45' 55" E to 79° 04' 20" E. The average rainfall in the state is about 1200 mm, the distribution is highly skewed in a sense that about 80% of the same is received for 4 months period (June to September). Agriculture contributes about 9.4% to the net state domestic product and it is the main source of income and employment in Himachal. About 90% of the population in Himachal depends directly upon agriculture, which provides direct employment to 62% of total workers of state with operational land holding of 9.47 lakh hectares owned by 9.33 lakh farmers out of which small and marginal farmers (up to 2 Ha) constitute about 87.03% of the total land holdings with the average size of the land holding of about 1.04 hectares[7]. Out of 43.90 lakh hectares area under-utilization, only 5.43 lakh hectare is the net sown area with food grains accounting for 84.6 per cent and, horticulture for 2.8 lakh hectares. Due to sharing of land, farmers are using available land judiciously and the cropping intensity is 174 per cent (amongst top five states in India) with 3.90 lakh hectare area cultivated more than once, though only 20.3 per cent area is under assured irrigation (Kumar *et al*. 2006; Anonymous 2017a) [6, 8].

In Himachal Pradesh, apart from small land holdings, limited water availability for irrigation, in addition to factors like erratic rainfall, hailstorms, high velocity winds and frequent dry spells having direct impact on the production/productivity of the crops from year to year which forces farmers to adopt wheat maize rotation. H.P. has typical problems of light textured soils and shallow to medium soil depth which is aggravated by flood irrigation leading to low water-use efficiency. On the other hand, micro Irrigation can be used for most agriculture crops and it offers many unique, agronomic, ecological and economic advantages as compared to conventional irrigation methods. The micro irrigation system has become more of a necessity than an option for the farmers and the total area in different districts under micro irrigation could be brought to about 23591.4 ha in Table 5 (Anonymous 2017a, b) [8, 9]. Due to governmental interventions, farmers have started harvesting of rain water and using it judiciously through micro irrigation system. Micro-irrigation technologies being used in Himachal Pradesh are state-of-the-art sprinkler and drip irrigation systems. These are capital intensive systems as compared to conventional flood/kuhl irrigation that has been in use since ages by the farmers in water surplus areas. The present study, therefore, was conducted to gauge the use and acceptability of MI systems by the farmers and its applicability in their farming systems.

Material and Methods

This study was based on the primary data collected from 360 farmers of the Himachal Pradesh by following multi-stage random sampling procedure. For data comparison the information was arranged into "Before MI adoption" and "After MI adoption scenario". Data on various parameters such as occupation, land holding, cropping pattern, sources of irrigation, cost of cultivation, productivity, income, labour requirement, technology, training, etc. were collected by personal interview method.

Cropping patterns and productivity

In the before-MI adoption scenario, a total of 360 farmers were surveyed and 100 per cent farmers reported growing maize while 73 per cent farmers reported growing wheat. Rest of 27 per cent area was used to produce other crops. The cropping pattern changed with the advent of MI as area under cash crops like tomato, potato, capsicum, cauliflower and peas increased by 18, 19, 15, 11 and 6 per cent, respectively. Moreover, crops like turmeric, cabbage and sugarcane were also grown for the first time by the beneficiaries looking into their economic returns in the local market (Table 6).

On an average, the minimum & maximum net income earned was Rs. 1000/- & Rs. 74000/- and net per cent increase varied from 6 per cent to 517 per cent, respectively, depending upon the crops grown, area under crops and cropping intensity after MI adoption (Table 7). Farmers got shot in the arm by adopting to more remunerative crops after adoption of micro irrigation as they started growing vegetables in addition to traditional maize-wheat rotation. Farmers who were growing rainfed vegetables started growing vegetables which had more water requirement but provided more remuneration. Vegetable sales represented a major portion of farmers' income and it took only 6-12 months to recover the cost of their investment in the subsidized micro irrigation system. The income received by the poorest households made more of a difference for their families because it represented a higher percentage of their overall income.

With the help of micro irrigation farmers can irrigate more land with the available water as compared to surface irrigation. From the study, it is observed that post intervention (after MI adoption), average area under irrigation increased 51 per cent per beneficiary (depending on the additional land availability). The increase in area was mainly because of source augmentation in the form of tanks, wells and lifts irrigation structures. The average increase in irrigated area was 6 bighas (ranging from nil to 27 bigha per beneficiary). The increase varied from nil in cases where already assured source of irrigation existed and were provided with MI structures for water economy to 100% where virtually no source of irrigation was there and the farmer was basically into rainfed subsistence farming.

Based upon the study, SWOT analysis was done to analyze the scope of micro irrigation in Himachal Pradesh.

SWOT Analysis of Micro Irrigation in Himachal Pradesh

Strengths

- The use of micro irrigation in the state has been growing steadily over the past several years with help from central and state government.
- Cropping pattern changed from cereals to cash crops.
- Judicious use of available water led to increase in area of vegetable crops.

Weaknesses

- Not viable in areas of the state where only seasonal water is available.
- Scattered land holdings
- Farmers and officers of the department are not well trained for operation and maintenance of the system.
- The suppliers not ready to go to far-away places for small orders of micro irrigation and may hinder technology adoption.
- Farmer must be aware of the soil texture and irrigation rate before taking up the irrigation through micro irrigation otherwise it will be wastage of water.
- Damage to the system by rodents and wild animals when system is not buried underground.

Opportunities

- Micro irrigation helps in diversification from traditional crops to cash rich crops like vegetable and floricultural crops besides irrigation in traditional crops like wheat where irrigation water is scarce resulting in increased yield.
- Irrigation facilities add to employment chain and entry of micro irrigation companies will provide more job opportunities in the villages.
- Increase in rain water harvesting structures to store water, leading to water availability during lean phase.
- Help in cost cutting of fertilizers when fertilizers are applied through fertigation system and also help prevent pollution of ground water because of leaching of fertilizers.

Threats

- Technological knowhow is required for operation and maintenance of the system.
- Special fertilizers are required for fertigation which are not easily available in the state. Though, the problem can be cured with the use of traditional fertilizers like urea for N, Urea Phosphate for P and MOP for K (white coloured) with only condition to dissolve it completely before applying.
- High cost of installation is big worry as in absence of subsidy it will be difficult for small farmers to adopt the system.

The strengths and opportunities of adoption of micro irrigation system in Himachal Pradesh outweigh weaknesses and threat and therefore, is good option for farmers for increasing yield and quality of crops besides saving precious water with judicious usage.

Micro irrigation system has brought positive changes to the farming community in Himachal Pradesh as the availability of additional water for irrigation allowed to make productive use of their fallow land and enabled them to grow cash crops, plant in the off-season, and increase their income.

Although the future sustainability of the system is yet to be seen, there are many factors like less dependency on labour, increased water use efficiency of available water, lifesaving irrigation etc. indicating that sustainability is likely. The income-generating nature of the system helps to negate the high cost of initial investment and ensure that households will put the time, effort, and finances into its future operation. The study indicated that if micro irrigation is used judiciously the income can be enhanced manifold than mere doubling the income.

Table 1: Gross and net sown/ irrigated area with cropping intensity in India (1951-1952 to 2013-2014)

Year	Area Sown (In `000 Hectare)			Area Irrigated (In `000 Hectare)			Cropping Intensity (%age)
	Gross	Net	Area sown more than once	Gross	Net	Area Irrigated more than once	
1950-51	131893	118746	13147	22563	20853	1710	111.1
1951-52	133234	119400	13834	23180	21049	2131	111.6
1952-53	137675	123442	14233	23305	21122	2183	111.5
1953-54	142480	126806	15674	24363	21869	2494	112.4
1954-55	144087	127845	16242	24948	22088	2860	112.7
1955-56	147311	129156	18155	25642	22758	2884	114.1
1956-57	149492	130848	18644	25707	22533	3174	114.2
1957-58	145832	129080	16752	26628	23156	3472	113.0
1958-59	151629	131828	19801	26948	23401	3547	115.0
1959-60	152824	132939	19885	27454	24037	3417	115.0
1960-61	152772	133199	19573	27980	24661	3319	114.7
1961-62	156209	135399	20810	28460	24884	3576	115.4
1962-63	156760	136341	20419	29453	25665	3788	115.0
1963-64	156963	136483	20480	29707	25888	3819	115.0
1964-65	159229	138120	21109	30705	26600	4105	115.3
1965-66	155276	136198	19078	30901	26344	4557	114.0
1966-67	157355	137232	20123	32683	26907	5776	114.7
1967-68	163736	139876	23860	33207	27193	6014	117.1
1968-69	159529	137313	22216	35483	29009	6474	116.2
1969-70	162265	138695	23570	36974	30197	6777	117.0
1970-71	165791	140863	24928	38195	31103	7092	117.7
1971-72	165186	139721	25465	38430	31546	6884	118.2
1972-73	162150	137144	25006	39055	31834	7221	118.2
1973-74	169872	142416	27456	40283	32546	7737	119.3
1974-75	164191	137791	26400	41741	33709	8032	119.2
1975-76	171296	141652	29644	43363	34593	8770	120.9
1976-77	167334	139476	27858	43552	35149	8403	120.0
1977-78	172232	141953	30279	46080	36546	9534	121.3
1978-79	174802	142981	31821	48307	38059	10248	122.3
1979-80	169589	138903	30686	49214	38524	10690	122.1
1980-81	172630	140288	32342	49775	38720	11055	123.1
1981-82	176750	142120	34630	51412	40503	10909	124.4
1982-83	172748	140813	31935	51830	40691	11139	122.7
1983-84	179560	143211	36349	53824	41949	11875	125.4
1984-85	176330	140901	35429	54529	42145	12384	125.1
1985-86	178464	140901	37563	54283	41865	12418	126.7
1986-87	176405	139578	36827	55759	42569	13190	126.4

1987-88	170738	134085	36653	56036	42892	13144	127.3
1988-89	182277	141891	40386	61125	46148	14977	128.5
1989-90	182269	142339	39930	61852	46702	15150	128.1
1990-91	185742	142870	42872	63204	48024	15180	130.0
1991-92	182241	141632	40609	65680	49868	15812	128.7
1992-93	185618	142645	42973	66761	50296	16465	130.1
1993-94	186595	142419	44176	68254	51339	16915	131.0
1994-95	188053	142960	45093	70646	52999	17647	131.5
1995-96	187471	142197	45274	71352	53402	17950	131.8
1996-97	189502	142931	46571	76026	55112	20914	132.6
1997-98	189988	141945	48043	75670	55210	20460	133.8
1998-99	191649	142753	48896	78670	57436	21234	134.3
1999-00	188396	141063	47333	79216	57531	21685	133.6
2000-01	185340	141336	44004	76187	55205	20982	131.1
2001-02	188014	140734	47280	78371	56936	21435	133.6
2002-03	173889	131943	41946	73055	53897	19159	131.8
2003-04	189661	140708	48953	78042	57057	20985	134.8
2004-05	191103	140642	50461	81078	59229	21849	135.9
2005-06	192737	141162	51575	84280	60837	23442	136.5
2006-07	192381	139823	52558	86753	62744	24009	137.6
2007-08	195223	141016	54207	88058	63189	24869	138.4
2008-09 (P)	195328	141899	53429	88896	63638	25258	137.7
2009-10 (P)	189002	139173	49829	85085	61936	23149	135.8
2010-11 (P)	197563	141563	56000	88933	63659	25274	139.6
2011-12 (P)	195694	140980	54714	91779	65697	26082	138.8
2012-13 (P)	194140	139936	54204	92246	66266	25979	138.7
2013-14 (P)	200859	141428	59431	95772	68100	27672	142.0

Abbr. P: Provisional

Source: Ministry of Agriculture & Farmers Welfare, Govt. of India. (ON1260)

Table 2: Area under micro irrigation system in different countries

Sr No.	Country	Total irrigated area	Sprinkler irrigation	Micro irrigation	Total area under micro irrigation	percentage of total irrigated area	Year of reporting
		(Mha)	Hectares				
1.	USA	24.7	12,348,178.14	1,639,676.11	13,987,854.25	56.5	2009
2.	India	60.9	3,044,940.00	1,897,280.00	4,942,220.00	8.1	2010
3.	China	59.3	2,926,710.00	1,669,270.00	4,595,980.00	7.8	2009
4.	Russia	4.5	2,500,000.00	47,000.00	2,547,000.00	56.6	2008
5.	Brazil	4.45	2,413,008.00	327,866.00	2,740,874.00	61.60	2006
6.	Spain	3.47	782,508.00	1,658,317.00	2,440,825.00	70.3	2011
7.	Italy	2.67	981,163.00	570,568.00	1,551,731.00	58.1	2010
8.	France	2.9	1,379,800.00	103,300.00	1,483,100.00	51.1	2011
9.	South Africa	1.67	920,059.00	365,342.00	1,285,401.00	77	2012
10.	Saudi Arabia	1.62	716,000.00	198,000.00	914,000.00	56.4	2004
11.	Iran	8.7	460,000.00	270,000.00	730,000.00	8.4	2009
12.	Australia	2.545	524,480.00	190,720.00	715,200.00	28.1	2000
13.	Canada	0.87	683,029.00	6,034.00	689,063.00	79.2	2004
14.	Ukraine	2.18	2,450,000.00	52,000.00	2,502,000.00	114.8	2010
15.	Turkey	5.34	500,000.00	150,000.00	650,000.00	12.2	2012
16.	Mexico	6.2	400,000.00	200,000.00	600,000.00	9.7	1999
17.	Korea	1.01	200,000.00	400,000.00	600,000.00	59.4	2009
18.	Egypt	3.42	450,000.00	104,000.00	554,000.00	16.2	2000
19.	Germany	0.54	525,000.00	5,000.00	530,000.00	98.1	2005
20.	Japan	2.5	430,000.00	60,000.00	490,000.00	19.6	2010
21.	Romania	1.5	448,000.00	4,000.00	452,000.00	30.1	2008
22.	Slovak Rep.	0.313	310,000.00	2,650.00	312,650.00	99.9	2000
23.	Israel	0.231	60,000.00	170,000.00	230,000.00	99.6	2000
24.	Morocco	1.65	189,750.00	8,250.00	198,000.00	12	2003
25.	Hungary	0.22	185,000.00	7,000.00	192,000.00	87.3	2008
26.	Syria	1.28	93,000.00	62,000.00	155,000.00	12.1	2000
27.	Great Britain	0.11	105,000.00	6,000.00	111,000.00	100.9	2005
28.	Finland	0.07	60,000.00	10,000.00	70,000.00	100	2010
29.	Portugal	0.63	40,000.00	25,000.00	65,000.00	10.3	1999
30.	Kazakhstan, Rep.	2.13	1,400,000.00	17,000.00	1,417,000.00	66.5	2006
31.	Malawi	0.055	43,193.00	5,450.00	48,643.00	88.4	2000
32.	Chile	1.09	16,000.00	23,000.00	39,000.00	3.6	2006
33.	Chinese Taipei	0.38	18,850.00	8,750.00	27,600.00	7.3	2009
34.	Bulgaria	0.588	21,000.00	3,000.00	24,000.00	4.1	2008

35.	Czech Rep.	0.153	11,000.00	5,000.00	16,000.00	10.5	2007
36.	Philippines	1.52	7,175.00	6,635.00	13,810.00	0.9	2004
37.	Poland	0.1	5,000.00	8,000.00	13,000.00	13	2008
38.	Slovenia	0.0073	8,072.00	733	8,805.00	121	2009
39.	Malaysia	0.38	2,000.00	5,000.00	7,000.00	1.8	2009
40.	Macedonia	0.055	5,000.00	1,000.00	6,000.00	10.9	2008
41.	Lithuania	0.0044	4,463.00	-	4,463.00	101.4	2010
42.	Estonia	0.001	500	500	1,000.00	100	2010
43.	Azerbaijan	1.433	610,000.00	100	610,100.00	42.6	2009
44.	Uzbekistan	4.223	4,300,000.00	2,000.00	4,302,000.00	101.9	2009
45.	Moldova	0.228	145,000.00	15,000.00	160,000.00	70.2	2009
	Total	217.8	42722878.1	10310441.1	53033319.3	24.3	

Source: ref 2.

Table 3: State-wise area under micro irrigation system in India (2014)

SN	State	Total area (ha)
1.	Andhra Pradesh	1221416
2.	Arunachal Pradesh	613
3.	Assam	439
4.	Bihar	102050
5.	Chattishgarh	259741
6.	Goa	1936
7.	Gujarat	912931
8.	Haryana	574809
9.	Himachal Pradesh	2928
10.	Jammu & Kashmir	85
11.	Jharkhand	16222
12.	Karnataka	905802
13.	Kerala	29464
14.	Madhya Pradesh	374372
15.	Maharashtra	1322125
16.	Manipur	77
17.	Meghalaya	0
18.	Mizoram	2152
19.	Nagaland	5205
20.	Odisha	102615
21.	Punjab	44870
22.	Rajasthan	1697586
23.	Sikkim	9085
24.	Tamil Nadu	355752
25.	Telangana	67896
26.	Tripura	492
27.	Uttar Pradesh	36682
28.	Uttrakhand	1147
29.	West Bengal	51180
30.	Others	46500
Grand Total		8146172

Source: Lok Sabha Unstarred Question no. 1733 dt 8.3.16
*small and marginal farmers/other farmers

Table 4: Micro Irrigation Technologies suitable for respective crops

S. No	MI Technology	Crops
1	Pressurized drip systems (inline and on-line drippers, drip taps)	All fruit crops, cotton, castor, fennel, maize, coconut, areacanut, chilly, capsicum, pea, cauliflower, cabbage, Okra, tomatoes, brinjal, gourds, mulberry, sugarcane, water melon, onion, flowers
2	Overhead sprinklers (including sprinkler guns)	Groundnut, wheat; pearl millet; sorghum; cumin; mustard; cow pea; chick pea; sugarcane
3	Micro sprinklers	Potato; groundnut; alfalfa; cardamom
4	Micro tube drips	All horticultural crops

Source: ref 6.

Table 5: District-wise area under micro irrigation in Himachal Pradesh (2017)

S. No.	District	Drip (ha.)	Sprinkler (ha.)	Total Area (ha.)
1.	Bilaspur	25.3	1969.1	1994.4
2	Chamba	17.0	828.2	845.2
3	Hamirpur	6.0	2531.6	2537.6
4	Kangra	96.8	3860.7	3957.5
5	Kinnaur	3.0	425.5	428.5
6	Kullu	97.6	779.9	877.5
7	Lahaul & Spiti	0.0	1191.6	1191.6
8	Mandi	60.0	3400.6	3460.6
9	Shimla	136.0	1031.5	1167.5
10	Sirmour	25.0	2241.3	2266.3
11	Solan	32.8	1887.5	1920.3
12	Una	31.7	2912.7	2944.4
	Grand Total	531.2	23060.2	23591.4

Source: ref 8 and 9.

Table 6: Crop productivity before and after adoption of micro irrigation in Himachal Pradesh, India

Crop	Before adoption - Productivity Levels (qha^{-1})	After adoption- Productivity Levels (qha^{-1})	% Increase in Productivity
Wheat	15.22	19.55	28.40
Maize	18.00	19.00	5.70
Gram	4.50	4.67	3.70
Peas	91.15	104.38	15.00
Potato	86.67	102.50	18.00
Tomato	257.22	290.74	13.00
Cauliflower	206.43	208.95	1.00
Capsicum	204.62	226.75	11.00
French Bean	70.00	84.00	20.00
Okra	90.00	90.00	0.00
Cucumber	200.00	206.67	3.00
Mustard	9.00	12.00	33.00
Ginger	112.50	123.75	10.00
Cabbage	NA	200.00	NA
Paddy	14.92	15.92	7.00
Onion	140.00	146.67	12.00
Garlic	75.00	77.00	3.00
Brinjal	100.00	120.00	20.00
Colocasia	NA	212.50	NA
Turmeric	NA	200.00	NA

Table 7: Increase in income pre and post adoption of MI system in selected crops

Before adoption scenario		After adoption scenario		Increase	Increase
crops grown	Income	crops grown	Income	(Rs)	(%)
Maize, Wheat, Pulses	17500	Maize, Wheat, Tomato, Capsicum	50000	32500	186%
Maize, Wheat, Peas	22000	Maize, Wheat, Tomato, capsicum	71000	49000	223%
Maize, Wheat	17000	Maize, Wheat, Tomato, Peas + potato	57000	40000	235%
Wheat, Maize	7000	Wheat, Maize, Tomato, Cauliflower	27000	20000	286%
Wheat, Potato, Maize	47000	Wheat, Maize, Potato, Cabbage, Capsicum	91000	44000	94%
Wheat, Maize, Orchard (Mango, Papaya)	2000	Wheat, Maize, Orchard (Mango, Papaya), Vegetables (Cucumber, French Beans, Onion, Garlic)	11000	9000	450%
Maize, Tomato, Capsicum, French beans, Cauliflower, Peas	73000	Maize, Tomato, Capsicum, French beans, Cauliflower, Peas	83000	10000	14%
Maize, Wheat	22000	Wheat, Maize, Potato	27000	5000	23%
Maize, Tomato, Capsicum, French beans, Cauliflower, Peas	142000	Maize, Tomato, Capsicum, French beans, Cauliflower, Peas	160000	18000	13%
Rainfed Maize, Wheat, fodder crops	6000	Irrigated Maize, Wheat, Vegetables	17000	11000	183%
Maize, Tomato, French Beans, Peas, Cauliflower, capsicum, Tomato	80000	Maize, Tomato, French Beans, Peas, Cauliflower, capsicum, Tomato	85000	5000	6%
Maize, Tomato, Cauliflower, Capsicum, Peas	194000	Maize, Tomato, Cauliflower, Capsicum, Peas	215000	21000	11%
Wheat, Maize	6000	Wheat, Maize, Cauliflower + Ginger, Onion + Okra	37000	31000	517%
Maize, Wheat	41000	Maize, Wheat	46000	5000	12%
Maize, Wheat	63000	Maize, Wheat, Potato, Onion	83000	20000	32%

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