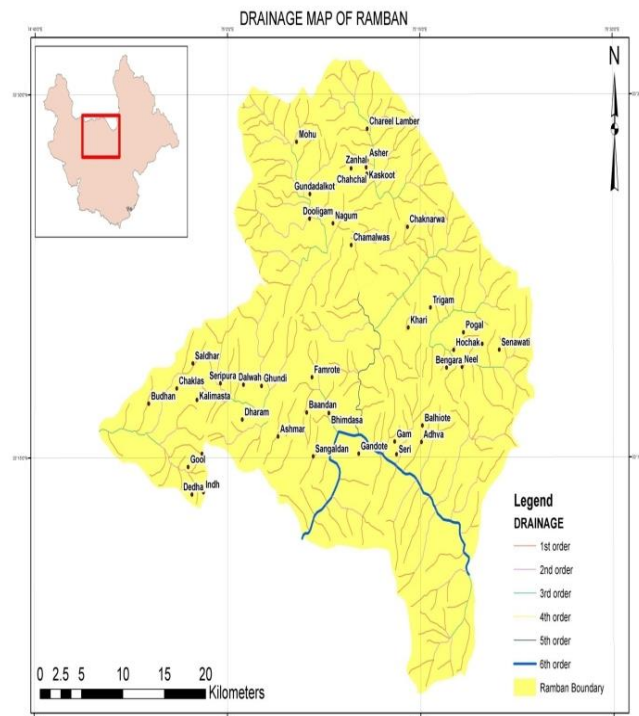


RAMBAN DISTRICT

District Ramban is situated on the foot hills of Siwaliks on the banks of river Chenab in Jammu Province. The District is all mountainous and has a tough terrain. River Chenab passes through the lower part of the district in between steep mountain ranges and is a river of high economic importance. Chenab basin is surrounded by high mountains with a number of ridges, valleys, terraces, gullies, springs and streams. The District is also a gate way to the Valley of Kashmir. It came into existence in the year 2007 and earlier it was a part of the undivided Doda District which had a distinction of being the second largest District of the State because of its gigantic size and exceptionally unique and most difficult Himalayan hilly terrains. The District is mostly rural and only 4% population resides in towns (Ramban, Batote & Banihal).

The total geographical area of the district is 1527.65 Km². It comprises of eleven blocks covering 129 Panchayats and 132 villages. The climate ranges from intermediate in low altitude areas to temperate in high altitude hilly areas. Agriculture is the main source of livelihood in the District likewise in the rest of the state. Horticulture has also assumed importance and makes a handsome contribution towards farmers income. Livestock rearing is an important occupation of the village folks in general and migratory population in particular. Crops are grown from an elevation of 723 meters (Ramban) to 2590 meters (Mahu) above MSL. The Indus river system has carved out a number of valleys in which Agriculture is practiced. The wide range of altitude and topography provides an agro-climatic diversity that enables round the year production of some of the crops such as peas, potato and vegetables. Most of cultivated area is covered under double cropping (Maize- Fodder, Maize -Wheat, Paddy- Fodder/ Oilseeds etc) and cropping intensity is >150%.

Location : Ramban is located at 33° 14' N latitude and 75° 17 ' E longitude . Ramban town which is the District Headquarter is located at an altitude of about 723 meters on the bank of river Chenab and the peak height in the District is 3280 meters. The average elevation of the District is about 1176 meters. The boundary line of the District extends from Patnitop in its South, Assar on its East, Gool on its West and Banihal in the North. The District is separated from Kashmir valley by the Peer Panjal range of mountains .



District Statistics at a Glance:

S. No.	Particulars	Unit	Total
A	Administration Setup		
1.	Administrative Sub-Divisions	No.	4
2.	Tehsils	No.	8
3.	Agriculture Sub Divisions	No.	2
4.	Agri - Circles	No.	65
5.	Agri - Zones	No.	13
6.	CD Blocks	No.	11
7.	Panchayats/ villages	No.	129/132
8.	Villages electrified	No.	113
9.	Villages connected by roads	No.	74
10.	Village having potable water	No.	56
B	Population & Farm Operating Families		
1	Population	Lacs	2.84
(i)	Rural population	%	95.8%
2	Farm Operating Families	Lacs	0.3188
3	Cultivators	Lacs	0.41394
4	Agricultural Labourers	Lacs	0.08810
5	BPL Population	Lacs	0.89482

			(37.73%)
6	SC Population	Lacs	0.01392 (4.91%)
7	ST Population	Lacs	0.39772 (14.02%)
C	Land Use Classification		
1	Total Geographical area	Km ²	1527.65
2	Area as per village papers	Ha	1,13,787
3	Area Under Crops(Food Crops &Vegetables)	Ha	19,195
4	Area under Fruit Crops	Ha	14,209
5	Area Under Social forestry	Ha	1218
6	Area under forest (Batote, Ramban & Mahore Divs)	Km ²	641.71 (53%)
7	Area not available for cultivation	Ha	23089 (20.29%)
8	Land put to Non Agricultural uses	Ha	11780
9	Barren and uncultivable land (Waste land)	Ha	11309
10	Marshy and water logged area	Ha	NA
11	Land under still water	Ha	NA
12	Other uncultivated land excluding fallow land	Ha	10165
(i)	Permanent pastures and other grazing land	Ha	3023
(ii)	Land under miscellaneous tree crops not included in area sown	Ha	2533
(iii)	Culturable waste land	Ha	4609
	Total (i-iii)		10165
13	Fallows Lands		
(i)	Fallow land other fallows than current	Ha	42
(ii)	Current Fallows	Ha	133
	Total (i-ii)	Ha	175
D	Land Use Statistics(Agri)		
1	According to Village Papers	Ha	113787
2	Net Cultivated Area	Ha	19195(17%)
3	Gross cultivated Area	Ha	30000
4	Net Area under Irrigation	Ha	1400(7%)
5	Gross Area under Irrigation	Ha	1830
6	Cropping Intensity	%	>150
7	Area under fruit crops	Ha	14209 (Fresh Fruits 7536 Ha + Dry Fruits 6673 Ha)
E	Size of Land Holdings (2005-06)		
1	Marginal (Upto 1 Ha.)	No.	26586
2	Small (1-2 Ha.)	No.	4700
3	Semi-Medium (2-4 Ha.)	No.	531
4	Medium (4-10 Ha.)	No.	61

5	Large (10 & Above Ha.)	No.	0
6	All Classes	No.	31878
7	Average size of land holding	Ha	0.30
F	Livestock Population	lacs	4.036 (Cattle - 1.472 , Buffaloes - 0.204 Sheep & Goat -1.28,Others - 0.08)

Climate: There are two meteorological observatories at Banihal and Batote at elevations of approximately 1630 and 1585 metres respectively in the district. The climate of the district varies according to its altitude. The meteorological parameters recorded at these observatories may be taken to describe the climate for this district. The district has an intermediate to temperate, extreme type of climate while it is hot and dry in summer and cold and humid in winter. Nights are generally cool being in the foothills of the Himalayas. Winter starts from the middle of November when both day and night temperatures fall rapidly till early February. The temperatures start to rise from March to July and remain steady till September. The period of mid-March to June is of summer season and is followed by southwest monsoon season till September. October to mid-November is of post monsoon season.

Rainfall: Records of rainfall in the district are available for two rain gauge stations viz. Batote, Ramban and Banihal for a period ranging from 12 to 40 years. The details of rainfall at these stations and for the district as a whole are given in Tables 1 and 2. The average annual rainfall in the district is 1330.7 mm. The annual rainfall in the district varies over a large range. The rainfall in southwest monsoon season (June to September) is about 30% of annual normal rainfall, while pre-monsoon months (March to May) contribute 31% of the annual rainfall. March is the month with the highest rainfall with an average of 211.7 mm. The winter months (December to February) contribute about 33% of the annual rainfall. In the period 1951 to 2000, the highest annual rainfall of 155% of the normal was recorded in year 1990, while the lowest was 30% of the normal recorded in 1952. During this period, there were nine years in which the rainfall was less than 80% of the normal. Such a low rainfall occurred in two consecutive years twice and in three consecutive years once. It is seen from Table 2 that annual rainfall was between 1001 mm and 1600 mm in 19 years out of 35 for which whole year data is available.

In high mountains, significant amount of precipitation is received in the form of snow. Snowfall mainly occurred in the winter months; November to March. About 80% of snowfall occurred in the months of December to February.

On an average there are 68 rainy days (i.e. days with rainfall of 2.5 mm or more) in a year in the district. This number varies from 47 at Ramban to 84 at Batote observatory. The heaviest rainfall recorded in 24 hours at any station in the district was 255.4 mm at Batote observatory on 23rd August 1996.

Temperature: The temperatures are high in low altitude areas like Ramban town located in between steep mountains and Chenab river. Temperature and other meteorological conditions depend on the topography of the place. Winter season is from the middle of November to mid-March. Temperatures begin to decrease from the middle of November till early February. January is the coldest month with mean maximum temperature of about 10°C and mean minimum temperature of about 0.5°C. While in the low altitude area like district headquarters Ramban, both the temperatures are 4°C to 6°C high with reference to observatory stations. In association with cold waves, the minimum temperature may sometimes drop to below —10°C on individual days. The day and night temperatures both begin to rise from March and continue till July and remain more or less equal up to August. The day temperature reaches its highest in June or July, which is the hottest month with mean maximum temperature of about 28.0°C and mean minimum temperature is 17.6°C. While at Ramban mean maximum and minimum temperatures are about 34°C and 22°C respectively. On some days, during the period May to July the maximum temperature reaches 35°C in higher altitudes and about 40°C at low altitude area like Ramban. The temperatures are 5°C-10°C lower at high elevated areas with reference to Banihal/Batote. The period of summer and post monsoon season is pleasant with cool atmosphere.

The highest maximum temperature and lowest minimum temperature ever recorded in the district are 36.6 °C on 31st May 1988 at Batote observatory and -13.6°C on 12th December 1964 at Banihal observatory respectively.

Humidity: The atmosphere over the district is generally humid throughout the year. It is slightly less humid during April to June and October to December especially in the afternoons when relative humidity is about 45% but in other months the humidity is around 80%.

Cloudiness: Skies are heavily clouded to overcast during the period January to April. In the winter season, the skies sometimes are obscured in the morning due to lifted fog which clears with the advance of day. Cloudiness decreases thereafter till June and during the period of July and August skies are again heavily clouded to overcast on some days. From September to November skies are lightly clouded. The cloudiness is more in the afternoons than mornings.

Winds: Winds are generally light throughout the year. The district being hilly and mountainous local winds such as anabatic and katabatic winds determine speed and

direction of wind at places. In northern part of the district at Banihal northerly wind is predominant throughout the year except during period June to September when calm condition prevails in the mornings and southerly wind is predominant in the afternoons. While in southern part of the district at Batote northwesterly wind in the mornings and southwesterly wind in the afternoons are predominant. On other occasions especially during the period post May calm condition generally prevails.

Special Weather Phenomena: Thunderstorms occur throughout the year. Its frequency is more in the period March to July and reduces post July with the activity being least in the winter months November to March. Thunderstorms are occasionally accompanied with hails. Dust- storms occur rarely during the months February, March and November in the southern part of the district. Fog is common almost throughout the year with its occurrence being more during the winter months.

Drought and Climate Change effect : The district falls in the drought prone area zone and is prone to drought, dry spell, hailstorms and cloud burst. The effect of climate change is also showing its effect on the climate of the district.

Agro Climatic zones: There are two Agro-climatic zones in the District Viz. Intermediate (Foot Hills) and Temperate (Upper Hills)

Zone No. 1: Intermediate Zone (Low to Mid Altitude) : This Zone lies between low to mid hills from an elevation of **700 meters to 1000 meters above MSL**. This zone surrounded by outer hills/foot hills of Reasi, Ramban & Udhampur Districts. The temperatures are lower than the Sub-Tropical plains and higher than temperate Zone. The annual rainfall of this Zone is slightly higher than the sub-tropical plains and ranges from 1000 mm to 1600 mm.

Geo-morphologically, the area comprises alluvial plains, ridges, valleys, gullies, seasonal and terraces. Intermediate Zone covers about 15% of the area out of which 95% area is unirrigated. The mean annual rainfall in this Agro Climatic Zone is 1330.7 mm. The climate of this Zone is typically monsoonal governed by South-west monsoon and occurrence of western disturbances during the winter season. However, this zone falls in weaker monsoon zone also called monsoon shadow zone. The zone includes large areas of Chakwa, Thopal, Chanderkote, Kunfer Neera, Adhwa, Sildhar, Demote A & B, Kanthi, Seeri, A & B, Gam, Marog, Maitra A & B, Pernote A & B and Kangha Panchayats. The soils are mostly brown hill soils.

This zone experiences near freezing temperature during winter. The summers are less severe but humid and winters are relatively wetter and colder. The area is prone to drought, dry spell, Land Slides, Hail Storms, High Speed Winds and snow fall very rarely. The major sources of irrigation are the khuls & Springs.

Sub Zone: It is represented by outer hills with slightly lower elevations of low to mid altitude intermediate zone. The topography of the area is undulating. It includes low altitude, dry temperate areas of Chanderkote , Kunfer, Neera, Adhwa, Sildhar, Seri A & B , Maitra A & B ,Pernote A& B and Kanga Panchayats .

Zone No. 2 Temperate Zone: (Mid to High Altitude):This zone falls between an elevation ranging from **1000 meters to 2590 meters above MSL**.This Zone is interspersed with series of mountains running parallel to each other, east to west. It includes high altitude areas of Batote, Khari, Rajgarh, Ramban, Banihal Ramssoo, Ukheral,Gool & Sangaldan Blocks . Paddy is also grown on the mountainous valleys and by the sides of rivers and streams. About 95% of the total Paddy area of the District is cultivated in this zone which is exposed to low temperature stress. These low temperature dominant pockets are restricted to the high altitude areas.

The soils are mostly podsols. The area experiences untimely snowfall. Winters are severe and moist and experience snowfall at higher elevations. Summers are pleasantly hot with less rainfall. Temperate Zone covers an area 85% area of the District out of which 95% area is unirrigated. The mean annual rainfall in this Agro Climatic Zone is 680 mm. The climate found in the valleys enclosed in the Middle of Mountains is of a particular type. Altitude determines the degree of coolness and elevation the form of precipitation and summer temperature. Winter is cold and of long duration. When the monsoons are strong, rain is caused. In higher mountains winter is very cold. It lasts from November to March. During these months strong winds bring snow and rain from the Mediterranean depressions. These come over from Iran and Afghanistan. Spring begins after 15th of March when rain falls heavily. It causes landslides. But for sowing of crops this rain is extremely useful. Rainfall in July and August is as high as 30% and with summer temperature, it causes discomfort. The major source of irrigation is the khuls & Springs.

Soil types and range of Land slopes : The soils are mostly sandy loam and clay loam type and are prone to high degree soil erosion . Soils are mostly under developed and the soil depth is medium to low. The important soil types and range of land slope in which crops are cultivated is as under :

Soil Type		Land Slope			
Major Soil Classes	Area (Ha)	0-3 % (Ha)	3-8 % (Ha)	8-25 % (Ha)	25% (Ha)
Clay Loam	14854	4456.00	5199	2970	2229
Sandy Loam	3600	1080.00	1260	720	540
Total	18454	5536.00	6459	3690	2769

Status of irrigation: Very negligible area is under Irrigation in the district which is approximately 6% of the total cultivated area for bringing area under irrigation the farmers are being supplied water lifting devices (Pumpsets) and water conveying pipes (HTPE) on 50% subsidy in order to tap local resources/ springs. The block wise status of irrigation in the district is as under:

Block wise Area under Irrigation

S.No.	Name of Block	Irrigated Area (ha)		Rainfed (Area in ha)	
		Gross Irrigaed Area	Net Irrigated Area	Partially Irrigated / Protective Irrigation	Un-irrigted or Rainfed Area
1	2	3	4	5	6
1	Ramban	332	165	167	4400
2	Ramsoo	218	128	90	2371
3	Bamhal	203	125	78	3659
4	Gool	56	28	28	1282
5	Sangaldaan	113.3	100	13	2386
6	Gundhi	155	78	77	457
7	Rajgarh	208	50	158	984
8	Khari	75	10	65	1375
9	Batote	78	55	23	2104
10	Ukhral	100	20	80	2106
11	Gandhri	105	30	75	1917
	Total	1643.3	789	854	2314

Minor irrigation projects (New / Ongoing) undertaken to enhance irrigation potential in the District under PMKSY:

S.No	Name of Block/ Sub Division	Discription	Concerned Ministry/ Deptt.	Ongoing Irrigation Infrastructure with Source	Component	Activity	Total No./ Capacity (CUM)	Command Area/ Irrigation Potential (Ha)	Period of Implementation 5/7 year	Estimated Cost (in lacs)	Remarks
1	Banihal	Existing	MOWR / I&FC	Duligam Khul	AIBP	Minor Irrigation	14688	K=77 R=60	5	30.00	Extension & Stabilization of Khul section
2	Banihal	Existing	MOWR / I&FC	Chamiwas Khul	AIBP	Minor Irrigation	3888	K=20 R=20	5	15.00	Extension & Improvement
3	Banihal	Existing	MOWR / I&FC	Chareel Khul	AIBP	Minor Canal	13996	K=100 R=06	5	25.00	Distributory & Improvement
4	Ramsoo	Existing	MOWR / I&FC	Hodq Khul	AIBP	Minor Irrigation	7344	K=44 R=44	5	30.00	Improvement & Remodeling of Khul
5	Ramsoo	Existing	MOWR / I&FC	Sumber Khul	AIBP	Minor Irrigation	7344	K=36 R=25	5	30.00	Remodeling of Khul Section.
6	Ramsoo	Existing	MOWR / I&FC	Chakka Khul	AIBP	Minor Irrigation	6048	K=32 R=25	5	25.00	Extension & Improvement
7	Ramsoo	Existing	MOWR / I&FC	Pherinder Khul	AIBP	Minor Irrigation	13996	K=106 R=85	5	30.00	Extension and Remolding

8	Banihal	New	MOWR / I&FC	Ahama Khul	AIBP	Minor Irrigation	3853	K=22 R=19	5	201.50	Construction of Ahama Khul 0-2400 Mtrs.
9	Banihal	New	MOWR / I&FC	Lower Duligam	AIBP	Minor Irrigation	4656	K=27 R=25	5	101.70	Construction of Khul Section 0- 1800 Mtrs.
10	Banihal	New	MOWR / I&FC	Bankoot Khul	AIBP	Minor Irrigation	4458	K=26 R=19	5	64.00	Construction of Khul Section 0- 1200 Mtrs
11	Banihal	New	MOWR / I&FC	Mahu Khul	AIBP	Minor Irrigation	7776	K=36 R=36	5	134.59	Construction of Khul Sectin 0- 1250 Mtrs.
12	Ramsoo	New	MOWR / I&FC	Sarbagni Khul	AIBP	Minor Irrigation	11216	K=72 R=60	5	135.60	Construction of Khul section 0- 4000 Mtrs.
13	Banihal	New	MOWR / I&FC	Sarbagni Khul	AIBP	Minor Irrigation	7036	K=25 R= 25	5	81.50	Construction of Khul section 0- 1750 Mtrs.
14	Banihal	New	MOWR / I&FC	Arbal Chareel Khul	AIBP	Minor Irrigation	7776	K=36 R=36	5	135.00	Construction of Khul section 0- 1300 Mtrs.
15	Banihal	New	MOWR / I&FC	Krawa Khul	AIBP	Minor Irrigation	7776	K=36 R=36	5	105.00	Construction of Khul section 0- 1000 Mtrs.
16	Banihal	New	MOWR / I&FC	Kaskoot Khul	AIBP	Minor Irrigation	11216	K=72 R=60	5	133.00	Construction of Khul section 0-

											1500 Mtrs.
18	Banihal	New	MOWR / I&FC	Neel Khul	Distt. Plan	Minor Irrigation	24489	K=132 R=120	5	350.00	Construction of Khul section 0- 8000 Mtrs.
	Total							K=907 Ha R=780 Ha		1626.89	
19	Gool	Existing	MOWR / I&FC	Dutter Khul Part 2nd	AIBP	Minor Irrigation	7347	56 Ha K=45 R=35	5	54.38	Extension & Stabilization of Khul Section
20	Gool	On-going	MOWR / I&FC	IInd Khul	NABARD	Minor Canal	13469	105 Ha K=90 R=60	-	-	Const. of Khul Section
21	Gool	On-going	MOWR / I&FC	Khet Canal	AIBP	Medium Canal	318367	1630 Ha K=1630 R=950	-	-	Const. of Canal Section
22	Gool	New	MOWR / I&FC	Ind Khul Part-II	AIBP	Medium Canal	13469	105 Ha K=90 R=60	5	12.00	Extn/ Const. escape Channel
23	Gool	New	MOWR / I&FC	Deeda to Dabber Khul	AIBP	Minor Irrigation	15526	148 Ha K=132 R= 120	5	353.81	Const. of Khul Section 2500 Mtrs.
24	Gool	New	MOWR / I&FC	Maswah Khul	AIBP	Minor Irrigation	4821	42 Ha K=38 R=36	5	141.66	Const. of Khul Section 865 Mtrs.

25	Gool	New	MOWR / I&FC	Moila Khul	AIBP	Minor Irrigatio n	1408	7.60 Ha K=750 R=7	5	21.23	Const. of Khul Section 300 Mtrs.
26	Gool	New	MOWR / I&FC	Dutter Khul Part-Ist	AIBP	Minor Irrigatio n	2449	18 Ha K=14 R=10	5	29.93	Const. of Khul section 800 Mtrs.
27	Gundi- Dharam	Existing	MOWR / I&FC	Dharam Khul	AIBP	Minor Irrigatio n	17142	143 Ha K=100 R=86	5	15.00	Improvemen t & Extension of Khul
28	Gundi- Dharam	Existing	MOWR / I&FC	Kalimasta Khul	AIBP	Minor Irrigatio n	1836	11.30Ha K=8 R=7	5	109.24	Remodeling of Khul Section 1000 Mtrs.
29	Gundi- Dharam	New	MOWR / I&FC	Gagarsula Khul	AIBP	Minor Irrigatio n	17363	140Ha K=120 R= 100	5	275.13	Const. of Khul section 2500 Mtrs.
30	Gundi- Dharam	New	MOWR / I&FC	Jamlan Khul	AIBP	Minor Irrigatio n	1934	12 Ha K= 11 R= 10	5	116.97	Const. of Khul Section 1500 Mtrs.
31	Gundi- Dharam	New	MOWR / I&FC	Basra Khul	AIBP	Minor Irrigatio n	2186	14 Ha K=12 R= 8	5	218.55	Const. of Khul Section 2000 Mtrs.
32	Gundi- Dharam	New	MOWR / I&FC	Gagra to Gundi	AIBP	Minor Irrigatio n	7492	60 Ha K= 48 R=35	5	303.00	Const. of Khul Section 2500 Mtrs.
33	Sangalda an	Existing	MOWR / I&FC	Chachwa Khul	AIBP	Minor Irrigatio n	7347	43 Ha K=40 R= 30	5	7.00	Improvemen t / Stabilization of Khul Section

34	Sangalda an	Existing	MOWR / I&FC	Seria Khul	AIBP	Minor Irrigatio n	3061	22 Ha K= 18 R= 13	5	9.00	Improvemen t/ Extension of Khul Section
35	Sangalda an	Existing	MOWR / I&FC	Karminza Khul	NABARD	Minor Irrigatio n	2694	16 Ha K=14 R= 10	-	3.00	Improvemen t of Khul Section
36	Sangalda an	Existing	MOWR / I&FC	Souli Khul	Distt. Plan	Minor Irrigatio n	4285	32 Ha K=24 R= 14	-	-	-
37	Sangalda an	New	MOWR / I&FC	Simbli Khul	AIBP	Minor Irrigatio n	1367	10 Ha K=8 R= 6	5	122.54	Const. of Khul Section 1000 Mtrs.
	Total							2509.90 Ha K= 2359.50 R= 1537		1792.44	

Farming Systems:

The important livelihood farming systems of both the Agro-Climatic Zones are as under:

Agriculture + Horticulture + Silvi-pasture + Animal/ Sheep Husbandry + Back Yard Poultry + Bee-keeping + Mushroom+Agro-forestry.

Major Crops & Crop Rotations:

The important crop rotations followed in both the Agro-Climatic Zones are as under:

S. No.	Crop Rotation
1.	Maize - Wheat
2.	Maize- Oats
3.	Maize + Potato- Wheat
4.	Maize + Rajmash- Wheat/Mustard
5.	Paddy – Oilseeds (Brown Sarson)
6.	Paddy - Fallow
7.	Vegetable crops round the year
a)	Peas, French Beans, Tomato, Cole crops, Cucurbits, Brinjal & Chillies etc
b)	Garlic ,Onion, Ginger, & Turmeric are Potential spices of some pockets
8.	Fodder cultivation round the year – Maize, Sorghum (Chari), Bajra, Sorghum Sudan Grass Hybrid (SSG) , Oats / Barley, Red clover, lucerne. a. Maize+Cowpea-Lucerne+Oats+Sarson b. Maize+Cowpea-Turnip-Oats+Pea-Cowpea c. M.P. Chari+Cowpea-Oats+Pea-Cowpea

Maize and Rajmash Mix Cropping:

Rajmash is known for its red colour and high nutritive value with quality protein including eight essential amino acids present in it. It has consumer's preference for its taste. It is also called Red Beans or Kidney beans or common beans. It has a low input requirement with capacity to with stand drought in the fragile and harsh climate prevailing in the district. Rajmash in the District is often named as per area of production such as Mau –Mangat Rajmash which are valued as very tasty. It is also grown in many other villages of the district on large scale and over an estimated area of more than 1000 Ha. There is a wide range of local strains / genotypes available in the district with pre dominance of Red colour. Maize + Rajmash mix cropping system is highly remunerative and is the life line of the farming community in economic sense.

Recommended Package of Practices of Mix crop (Maize + Rajmash)

Crop	Mixed cropping of Maize + Rajmash
Common Names	Kidney Bean, Red Bean, Common Bean, Rajmash.
Season	Kharif
Period	13 th April- 15 th May to Sept. Oct. (160 – 180 days)

S.No.	Particulars	Local practice	Recommended Practice
1.	Seed Rate	40 Kgs + 5 Kgs Rajmash (8:1 by seed weight)	20 Kgs maize + 5 Kgs Rajmash
2.	Spacing	Broadcasting	75 x 20 cm for Hybrid 60 x 20 cm for composite
3.	Plant Population	–	65000 per ha. For Hybrids 83000 per ha. For composite
4.	Sowing Practice	1. Mixing the seeds of both the crops & broadcasting. 2. Sowing of Maize seed by broadcasting followed by dibbling of Rajmash seeds at first hoeing i.e 15 DAS	Line sowing of Maize seeds followed by dibbling of Rajmash seeds in between the rows at first hoeing i.e 15 DAS at a depth of 5 cm in the ratio of 2:1 in row spacing.
5.	Seed Treatment	Not practised	<i>Pseudomonas fluorescence</i> 10gm + <i>Trichoderma viride</i> 10gm (Bio-fungicides). for 1kg of seed . Mix 10gm of each in 25ml of water and coat for 1kg of seed 20 - 30 minutes before sowing. It is effective in controlling wide range of soil borne diseases like Anthracnose, leaf spots etc.
6.	Seed Inoculation	Not practised	Inoculation of Rajmash Seeds with Rhizobium Culture @ 5-10 gm/ Kg of seed.
7.	Organic Manure	Application of FYM decomposed in heaps in the open fields @ 10-15 Qtls. per ha.	Application of FYM well decomposed in the compost pits with approved specification @ 10-12 t / ha. Or vermicompost @ 4-5 Tonne /ha. for both Maize and Rajmash crops to be incorporated in the soil 2-3 weeks before sowing.
7.	Soil application	Not practised	<i>Trichoderma viride</i> (bio-fungicide)+ <i>Pseudomonas fluorescens</i> -mix 500gm culture of each in 100 kg FYM or organic manure and broadcast over one acre
8.	Application of Bio fertilizers	Not practised	PSB (Phosphate solubilizing bacteria) 4kg + Azotobacter (3.5kg)+ Zinc Solubilising bacteria (4kg) Mix the recommended quantity of each bio-fertilizer in 40-50 kg of FYM/ Compost or soil and broadcast in the field

9.	Management of Pests & Diseases / IPM	Not practised	<p>For common pests of Maize as Main Crop:</p> <ol style="list-style-type: none"> Cut Worm: Use of Neem powder (Granules) @60-125 Kg / ha. For soil treatment with last ploughing. Blister Beetle: <ol style="list-style-type: none"> Growing of Trap crops such as Bhindi/ marigold/ Sunhemp etc. Mechanical killing of the beetles. <p>For common pests of Rajmash as mixed crop:</p> <p>Aphids:</p> <ol style="list-style-type: none"> Spray <i>Verticillium licanii</i> @ 1.5% WP. Addition of 2 kg Jaggery in the solution is recommended at vegetative stage preferably early in the morning or evening. Yellow Sticky Traps for aphids @ 4-5 Traps / acre. Inundative release of <i>Trichogramma pretiosum</i> @ 4000/acre, 4-5 times from flower initiation at weekly intervals. <p>Gall Weevil :</p> <p>Application of Neem oil 3% and Neem Seed Kernel Extract (NSKE) 5% either alone or in combination @ 6 Lit. / acre</p> <p>Diseases of Rajmash:</p> <p>For Anthracnose/ Leaf Spot:</p> <ol style="list-style-type: none"> Avoid dense sowing Sowing in well drained soils upto 5-7 cm depth. Application of <i>Trichoderma viride</i> and <i>Pseudomonas fluorescence</i> for treatment of these diseases.
10.	Harvesting	Picking of Rajmash pods manually. Main crop is harvested subsequently.	Same practice
11.	Post Harvesting	<ol style="list-style-type: none"> Drying of crop followed by collecting in heaps and threshing by sticks. Winnowing of seeds by using chhajj or blanket 	<ol style="list-style-type: none"> Use of winnowing fans for winnowing of seeds. Cleaning, grading and packing of seeds for proper marketing and value addition.

Maize and Potato Mix Cropping:

In high altitude areas of the district Maize is also grown with Potato as a mixed crop. A Local strain of potato of white colour and small size tubers is grown in this mixed cropping system. This local strain of potato is valued for its taste/consumer preference and is also used for pickling. This cropping system is highly remunerative for the farmers under harsh climate prevailing in the district. A technological breakthrough by promotion of this cropping system can prove a boon to the farmers' income of the area.

Recommendation Package of Practices of Mix Crop (Maize+Potato)

Crop	Mixed cropping of Maize + Potato (Local Practice)
Common Name	White Potato/Hill Potato
Season	Kharif
Period	13th April-15th May to Sep-Oct (160-180 Days)
Zone	Temperate zone (Above 1000 mts from MSL)
Optimum Temperature	15-20 °C. Night temperature above 21°C prevents tuberizing.
Soil Types	Alluvial, Black, Red and Laterite for Potato.
Soil pH	6.5-7.5

S. No.	Particulars	Local Practice	Recommended Practice
1.	Seed Rate	30 Kgs(Maize) + 08 Qtls (Potato)	20 Kgs(Maize) + 08 Qtls (Potato)
2.	Seed Grade (Potato)	Farmers use Potato after cutting tubers.	Tubers of 30-35 gm, 3-5 cm of diameter having 2-3 sprouts should be used preferably.
3.	Spacing	Broadcasting (Maize) Dibbling of Potato Seed randomly	75x20 cm for Hybrid (Maize) 60x20 cm for Composite(Maize) 60x20 cm for Potato
4.	Plant Population	Varies	70-75 Thousands Plants/ha (Maize) 30-35 Thousands Plants/ha (Potato)
5.	Sowing Practice	Sowing of Maize seed by broadcasting followed by dibbling of Potato seed at the same day.	i) Line Sowing of Maize seed followed by dibbling of Potato seed. (Two rows of Maize followed by one row of Potato) ii) Place tubers somewhat deep, particularly in light soil with the cut surface facing downwards.
6.	Seed Treatment	Not Practised	i) Treat the tuber with 0.25% Diathane M-45 for 10 min. ii) For better germination in Maize, treat the seed with Captan or Thiram @ 3 gm/kg of seed. iii) For Head Smut in Maize, treat the seed with Carboxin W.P. at 2.5 gm/kg of seed or Carbendazim 2 gm/kg of seed.
7.	Manure & Fertilizers	Application of FYM decomposed in heaps	i) Apply 150 Qtls well rotten FYM or Compost/ha & incorporate into the soil

		in the open fields @ 10-15 Qtls. per Ha.	thoroughly with the first ploughing. ii) In addition to FYM/Compost application, balanced application of chemical fertilizers is also necessary. For balanced fertilizer, application the soil should be got tested prior to sowing of the crops.
8.	Fertilizer Combination	Not Practised	i) Irrigated Areas: (In Kg/ha) Urea: 145 DAP: 132 MoP: 50 Zinc Sulphate: 25 ii) Un-irrigated Areas: (In kg/ha) Urea: 100 DAP: 90 MoP: 33 Zinc Sulphate: 10 Note: Zinc Sulphate should at least be applied once in three years.
9.	Method of Fertilizer application	Not Practised	i) Mix entire quantity of DAP & MoP along with Zinc Sulphate and 2/3 rd of Urea at the time of sowing as a basal dose. ii) Remaining quantity of Urea may be applied as top dressing in two equal splits- 1 st when the Maize plants are knee high stage and 2 nd before tassel formation.
10.	Weed Control	Generally two hoeing	Two hoeing to the crop should be given, one at 15 days and other at 30 days after sowing. Note: No inter culture should be done after 6 weeks of sowing since this would lead to pruning of fine roots and finally reduced the production.
11.	Application of Bio-fertilizer	Not Practised	PSB (Phosphate Solubilizing Bacteria) 4kgs + Azotobacter 3.5 kgs + Zinc Solubilising Bacteria 4kgs. Mix the recommended quantity of each Bio-fertilizer in 40-50 kg of FYM/Compost or Soil and broadcast in the field.
12.	Management of Pests & Insects	Not Practised	For common pests of Maize as main crop: 1. Cut Worm: i) Mix Chlorpyrifos 1.5% D or Lindane 1.3% D @ 1.25 kg/kanal in the soil with the last ploughing. ii) Where soil application could not be given spray the crop with Chlorpyrifos 30 E.C. @ 150 ml in 50 lit. of water per kanal. Spraying should be direct on the soil surface. 2. Stem Borer:

			<p>i) Uproot the stubbles of previous year's crop and burn.</p> <p>ii) Spray the crop with Methyl Demeton 25 E.C. @ 56.25 ml/kanal in 35 lit. of water</p> <p>Cypermethrin 10 EC @ 5 ml/Kanal or Deltamethrin 2.8 EC @ 10 ml/Kanal or Dichlorvos 100 EC @ 25 ml/Kanal.</p> <p>For common pests of Potato:</p> <p>Cut Worm:</p> <p>i) Deep ploughing of fields before planting.</p> <p>ii) Use Chlorpyrifos 1.5% D @ 20 kg/ha as soil treatment before sowing.</p> <p>iii) Broadcasting of Carbofuron 3G @ 30 kg/ha.</p>
13.	Disease Management	Not Practised	<p>Early Blight (Potato):</p> <ol style="list-style-type: none"> 1. Tubers should be free from disease. Treat the tubers with Mancozeb (300gm/100 lit. Water) before sowing. 2. Spray crop with Zineb/Copper oxychloride or Mancozeb @ 0.25% at 10-15 days interval. 3. Follow high ridging to avoid tuber infection.
14.	Harvesting	Harvest Maize crop first there after secondary crop i.e. Potato Crop.	Same Practice
15.	Yield	Maize: 20-25 Qtls/ha Potato: 15-20 Qtls/ha	Maize: 40-50 Qtls/ha Potato: 35-40 Qtls/ha

Seed Potato:

High altitude, temperate climate, Long day Photoperiod throughout the growing season (May to Oct), absence of insect vectors spreading viral diseases and high soil fertility, which provide congenial conditions for better tuberization in potato are available in the region. These condition are highly conducive for virus and nematode free potato seed.

Green Peas as cash crop:

Green Pea is one of the important vegetable crops grown as a major cash crop in the District. It is grown in the Intermediate Agro-Climatic Zone of the District. Mainly it is grown in villages of Seri, Digdool, Marog, Pernote, Kanga, Neera, Adhwa, Dhalwas, Duksun etc in the area of 350 Ha with an estimated production of 3500 tons and market value of 10-15 Crores.

CULTIVATION OF GREEN PEAS IN DISTRICT RAMBAN

Peas (*Pisum sativum*): Green Pea is one of the important vegetable crops grown as a major cash crop in District Ramban. It is grown in the Intermediate Agro-Climatic Zone of the District. Mainly it is grown in villages of Seri, Digdool, Marog, Pernote, Kanga, Neera, Adhwa, Dhalwas, Duksun etc in the area of 350 Ha with an estimated production of 3500 tons and market value of 10-15 Crores.

Climate: It is cool weather crop and grown best at the optimum mean monthly temperature of 10-18°C. Pods and flowers are damaged more seriously by frost than the leaves and stems. Hot and dry weather interferes with the setting of seed and lowers the quality of pods.

Soil: Peas are grown on a variety of soils ranging from light sandy loam to clay. Best results are obtained on well drained friable loamy soils. It does not perform well on acidic soils and in soils with pH below 5.5.

Varieties:

S. No.	Name of the Variety	Plant Height & Seed Shape	No. of Grains per Pod	Days of Maturity	Average Yield (Q/Ha)	Remarks
01.	P-89	Medium Dwarf Wrinkled	09-10	85-90	150-175	-
02.	Bonneville	Medium Tall Wrinkled	08-09	85	175	-
03.	Arkel	Dwarf Wrinkled	07-08	55-60	150-160	-
04.	Pant Sabji Matar-3	Dwarf Round	07-08	60-65	90-100	-
05.	Azad P-1	Medium Tall Wrinkled	07-08	90-95	100	-
06.	Azad P-2	Tall Wrinkled	06-07	90-95	120	Powdery Mildew Resistant
07.	Azad P-3	Tall Wrinkled	07-08	60-65	80	-
08.	Pusa Pragati	Medium Tall Round	08-09	60-65	70	Powdery Mildew Resistant

Sowing Time:

Intermediate (Low)

Intermediate (High)

Temperate

Mid Sep.- Oct.

Oct.-Nov.

May

Seed rate & Spacing:

Main Crop: 60 kg/ha

Early Crop: 120 kg/ha

20x10 cm

20x5 cm

Manures & Fertilizers:

FYM (t/ha)	Urea (t/ha)	DAP (t/ha)	MOP (t/ha)
20	100	132	85

Apply whole of FYM along with Urea, DAP and MoP at the time of field preparation.

Irrigation: During dry season apply light irrigation at an interval of 10-15 days. One or two irrigation at the time of flowering and fruit set are essential

Staking :

In case of tall varieties it is advisable to provide stakes to plants to harvest better quality pods.

Intercultural Operations:

The field should be kept free from weeds by giving two weeding and hoeing after four and eight weeks of germination. Usually two hands weeding are sufficient. The weeds can also be controlled by application of pre-sowing herbicides fluchloralin @ 0.75 a.i/ha or Pendimethalin @ 1.0 kg a.i/ha.

Harvesting and storage:

Harvesting of green pods must be done at proper maturity stage. Green pods of the early, mid and late varieties are ready for harvest in 50-55, 60-65 and 70-75 days after sowing respectively. The common farmer practice of one time harvest of green pea is to be avoided for getting higher value of produce and 2-3 pickings in early crop and 3-4 in mid season/late crop should be done. Proper storage at low temperature (0C) and relative humidity (88-92%) may prolong the availability duration of green peas for 2-3 weeks and reduce the losses due to fungal diseases.

Insect-pest management in Peas:

Pea leaf miner: Broadcasting of Carbofuran 3G @ 30 kg/ha at the time of land preparation.

Note: Set up of poison bait having 0.05 ml Malathion + 5 g Gur solution in 100 ml of water in a plastic pan 20-25 days after sowing.

Pea pod borer: Spray Carbaryl 50 WP @ 2 g/lit of water at evening hours or Malathion @ 2 ml/lit of water at evening hours.

Note: All matured fruits should be picked before spraying.

Pea thrips: Spray Carbaryl 50 WP @ 2 g/lit of water at evening hours or Malathion @ 2 ml/lit of water at evening hours.

Note: All matured fruits should be picked before spraying.

Pea aphid: Spray Carbaryl 50 WP @ 2 g/lit of water at evening hours or Malathion @ 2 ml/lit of water at evening hours.

Note: All matured fruits should be picked before spraying.

Disease Management in Pea:

Powdery Mildew: White floury appearance on stem, branches, leaves and pods. Severe infection results into stunted growth and reduced yield.

Spray Dinocap 0.05% (50 ml in 100 Lit. water) or wettable Sulphur 0.2% (200g/100 Lit. water) just on the appearance of disease at 10 days interval depending upon disease severity.

Ascochyta Blight: Brown spots appear on foliage and stems of infected plants. The roots of such plants turn brown.

Use healthy seeds for sowing and Treat the seeds with Carbendazim (3g/kg seed).

Spray affected plants with Carbendazim 0.1% (100g/Lit water), Mancozeb or Zineb 0.25% (250g/100 Lit. water).

Wilt & Root Rot: In wilt, the plant wilt without yellowing while in root rot, rotting of roots and collar region starts with yellowing of lower most leaves followed by wilting.

Treat the seed with Carbendazim or Thiram @ 2g/kg seed in problematic field and avoid early sowing in badly infected areas.

Follow 3 year crop rotation in infected held preferably with cereals.

Lesser Millets (Future Of Agriculture /Future Food): Lesser or minor millets are grown in low rainfall areas of the District but have not received adequate attention for their varietal improvement and have a common feature of being capable of growing in very marginal slopy fields without any input and are invariably grown under different conditions. These millets are short duration, drought resistant crops as they need less than 400 mm water in their life cycle and can be sown as midterm correction when the main crop of maize fails due severe drought or insect pests infestation early in the season. They are most ideal to grow in dry land and drought prone areas of the District. They are highly nutritional and provide huge health benefits having higher concentration of proteins, fiber, iron, calcium (micro nutrients) and B vitamins. They are the best answer to drought, hunger, malnutrition and climate change being climate resilient crops. Lesser millets are generally grown as mixed crops or around the field bunds for additional source of income and is sometimes used as green fodder during adverse weather conditions. These Lesser Millets have high nutritional /medicinal value and are highly suitable for cultivation under climate change plan or contingent plan. The

net area under the lesser millets in the District is around 20 to 30 ha and is shrinking due to non-availability of improved varieties and lack of improved technology. Revival of these climate resilient nutri-cereals among farmers through various interventions by tailoring various schemes would lead to doubling the income of millet farmers.

The various lesser millet grown are :

Common Name	Local Name	Scientific Name
Kodo Millet	Kodra, Kodo	<i>Paspalum scrobiculatum</i>
Fox tail Millet/ Italian millet	Kangni, Ping, Kakun	<i>Setaria italica</i>
Proso millet/common millets	Cheena	<i>Panicum miliaceum</i>
Finger Millet	Ragi/ Mandua	<i>Eleusine coracana</i>
Seul/ chaulai	Ramdana	<i>Amaranthus retroflexus</i>
Bajarbhang	Bajarbhang	<i>Hyoscyamus Niger</i>
Buck wheat /Dareu/ Black wheat/pseudo Millet	Dab/ Kuttu/ Trambu	<i>Fagopyrum esculentum</i>
Barnyard Millet	Shole, Salan/ Samak/ Swank	<i>Echinochloa esculenta</i>
Little Millet	Kutki	<i>Panicum sumatrense</i>

The Potential villages for promotion of cultivation of Lesser millets are:

Shagan, Sarbagni, Sumber,Halla ,Gam,Seri,Marog, Balihote, Adhwa, Demote, Ganote, Dund Rath, Jhatgali, Dharman, Ghari, Kumait, Rajgharh,bibrota, chakwa, sawni, Karma, Sana, Sanasar, Bradgadi, Bagana, Gandhri, Batni, Kabi and Sildhar.

Farm Mechanization: The Agriculture land in the district is the typical hilly terrain with little scope for farm mechanization. The total farm power availability of the district is 0.79 KW per ha with a potential of 4.0 KW per ha. Use of power tillers, power weeders (diesel ploughs), reaper-cum-binders, small sized power threshers, battery operated spray pumps, water lifting devices (portable irrigation pump sets), chaff cutters, SS ploughs (light weight) and manually operated soil and water conservation

tool kits is increasing in the district. Farm mechanization is an essential driver for sustaining agriculture growth and addressing scarcity of agriculture labour. There is a positive correlation between farm power and production /productivity.

Irrigation and ground water: Only 7% of the cultivated area is irrigated in the district and there is a vast scope for bringing more area under irrigation keeping in view the water resources of the district. The sources of irrigation in the District are glacier fed perennial nalhas, springs and irrigation canals. The ground water in the District is very low and it is not economical to exploit this resource. However, lift irrigation from the river beds has also a scope to meet the irrigation requirement in some of the areas. Tapping of water from natural springs for irrigation through water conveying pipes has a tremendous Opportunity in the District. In addition, Creation of water harvesting structures has also picked up during the recent years. Micro irrigation and rain guns is the most ideal form of irrigation as per the topography for the area.

Water Harevesting Tanks/Ponds:

In order to provide lifesaving irrigation to crops, during the stress period or at critical stage of the crop, Water harvesting structures of capacity ranging from 50 to 500 m³ as per the individual requirement and watershed characteristics of the area are constructed for effective conservation of water in rainfed / kandi areas. The general shape of the pond is trapezoidal section and the depth of pond varies from 01 m to 03 m. The side slope is generally kept 1.5:1 H:V (Horizontal :Vertical) for proper designing. The catchment area and the command area of the tank depends upon the location of the tank and requires proper planning before designing the structure and capacity of the tank. The lining material may be cement concrete, reinforced cement concrete, brick mortar lining and poly sheet. The thickness of the sheet may vary from 250 to 450 micron (@ 250μ for / meter depth of the tank). The bottom of tank is made 9 inches thick concrete. The functional life of the tanks usually is 20-25 years. The tanks have proved very useful to the growers for providing lifesaving irrigation during the stress/ critical periods.

Anardana (Spice): Wild pomegranate is one of those fruits which have got great economic importance in this region. It grows in the vast tract of the hill slopes of the District. Its seeds are sun dried to make Anardana (Spice).

Every year, Anardana worth crores of rupees is collected from the hills and sold at various places throughout the country. Besides Anardana, a huge quantity of the fruit rind, worth crores of rupees, is exported for use in various industries.



Morphology : An erect deciduous spreading shrub or tree, 8 to 10 m high; stem, woody and thorny; girth of main stem, 48 to 78 cm; wood very hard and light yellow; leaves shed in December, new light red leaves appearing in the middle of March. Leaves, opposite, lanceolate, shining from above 5.5 cm long, 1.6 cm broad, having entire margin; petiole thin, 3.8cm long; leaves often clustered on arrested branchlets. Flowers, sessile, ebracteate, complete, actinomorphic, persistent, thick, fleshy, 2.9 cm in diameter; petals, 6; stamens, numerous; ovary inferior. Seeds angular with a fleshy aril which constitutes the edible part; colour varying from red to pinkish white.

Uses: It is mainly used in preparation of Anardana, which is used in making chutney and as a souring agent in various preparations. The price of Anardana in Jammu market which is an important centre for this product is up to Rs. 250.00 per kg. The dried rind yields a fast yellow dye, which is used for dyeing cloth and making hair dye. Dastur (1964) reported that root bark contained 22 per cent of tannins which could be used for tanning and dyeing leather. Kasachava et al. (1973) stated that the fruit rind contains 30 per cent tannins for tanning leather.

The juice of the fresh leaves and young fruits is useful in dysentery, whereas bark contains an alkaloid and punicine, which are highly toxic to tapeworms. The unripe fruits and flower buds are astringent, and are useful in inducing vomiting and the rind of the fruit is given in chronic diarrhoea and dysentery. The juice of the fruit can make a

good squash. The wood of the tree is very hard and durable. It is generally used in making agricultural implements.

Chemical composition of the fruit : The edible portion, which is 62 per cent of the whole fruit, contains 69.5 per cent moisture and 58 per cent extractable juice. The total soluble solids content of the juice is 15.8. The acidity and pectin content of fruit is 5.46 and 0.05 per cent, respectively. The edible portion contains 9.92 per cent total sugars, 7.52 per cent reducing sugars 1.01 per cent non-reducing sugars. The proportion of Vitamin C is 32.86 mg per 100 ml of juice. The tannin content of edible part is 12.67 per cent, while that of rind is 8.25 per cent. The protein content of the edible part is 2.03 per cent.

Flowering and fruiting season : The flowering season of the wild pomegranate in J&K was observed to be from March to last week of May. However, the harvesting season under these conditions was observed to be from last week of August to end of September.

Crop Improvement : The plantation of Anardana requires proper demarcation and preservation by creating closures as the plantation is common to Agriculture land, Community land and forest land. The fruit is frequently attacked by the fruit fly which decreases the quality of the marketable product . This requires control of fruit fly in an integrated manner . Moreover the extraction and drying of grains requires scientific procedures for value addition the total estimated business of Anardana is more than 1000 Qtls in the district with a financial turn over of > Rs. 2.5 crores .

Other Forest Products of Economic Importance : Gucchi (Murales), Kasrod (edible fern used as vegetable/ Pickle), kuth (*Saussuria lappa*- a perennial root crop / cash crop) and Cherengel / Cherengali (*Caralluma tuberculata*- Bitter Edible Medicinal Vegetable).

Bee-keeping: District Ramban, with its diversified Agro climatic condition and multiple flora, is one of the most potential District for bee keeping in the state of J&K . It is one of the high income enterprise which can play a significant role in doubling the farmer's income besides increasing production of Agriculture /Horticulture crops by 20-

30% .The district has also the distinction of being the number one District in the state with highest number of bee colonies (17000) and production of honey (1500 Qtls) . The district has also the distinction of producing best type of white honey from single flora (Plectranthus spp. Locally called sulai). Sulai honey is best known for its aroma and flavour.



Two types of honey bees are reared in the district. One is the traditional Indian bee (*Apis Cerena Indica*) which is being reared in wooden logs /Walls of the houses and is of stationary in nature. The other honey bee which is reared on commercial scale is the Italian bee (*Apis mellifera*) and it is migrated throughout the length and breadth of the country for chase of flora . More than 200 bee keepers are in this enterprise in the District . There is a big potential in this enterprise and the number of bee colonies can be increased 2 to 3 times. The honey production will also increase 2 to 3 times, besides increase in production and productivity of field crops with the increase of bee colonies .

Now a days, bee keeping has become a multi dimensional industry with the value addition of high value components like Bee-Wax, Bee-Venom, Royal Jelly, Queen Bee rearing besides demand of Bee-Colonies as pollinators in orchards and other Agricultural crops for increasing the production of their fruits and seeds . Keeping in view the scope and potential of bee- keeping for the bee keepers off the District, a project has been launched viz. **Bee keeping cluster project Ramban** under Hon'ble CM's initiative in Agriculture under Capex Budget. The project has been started provisionally from the year 2016-17 and will be for a period of 05 year . The estimated cost of the project is Rs1307.29 lacs .

The objectives of the project are :

1. To upgrade the skills of bee keepers as per the latest technology.
2. To support the bee keepers for migratory bee keeping in chase of flora throughout the country.
3. To organize the bee keepers of the district into an FPO / FPC.
4. To Produce quality honey and to tap traditionally produced organic honey from stationery bee colonies (Apis Cereana) on scientific lines.

Outcome : with the implementation of this project the bee keepers are expected to get additional income of 4-5 crores per annum besides it will also provide employment to 500 to 600 unemployed youth.

Beekeeping Status : The status of Beekeeping for the last 10 years of the district is tabulated as under :

S. No.	Year	No. of private Bee keepers	Bee colonies (Nos)		Honey Production (Qtls)		No of Govt. Apiaries
			Departmenta l	Private	Departmental	Private	
1	2006-07	85	20	4275	0.50	213	2
2	2007-08	100	35	3400	0.70	140	2
3	2008-09	100	40	5000	1.00	250	2
4	2009-10	85	38	7500	0.60	450	2
5	2010-11	111	55	8868	0.64	1208	2
6	2011-12	140	70	14957	1.54	900	2
7	2012-13	160	80	15000	1.71	800	2
8	2013-14	185	71	13547	1.73	1300	2
9	2014-15	185	50	16500	1.84	1500	2
10	2015-16	195	54	17000	1.00	1600	2
11	2016-17	200	60	17530	2.00	1720	2
12	2017-18	200	60	19000	2.00 (Trgt)	2000 (Trgt)	2

TABLE -1
NORMALS AND EXTREMES OF RAINFALL
RAMBAN

	No of Year of Data		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	ANNUAL RAINFALL AS % OF NORMAL & YEARS**		HEAVIEST RAINFALL IN 24 HOURS*	
STATION																HIGHEST	LOWEST	AMOUNT (mm)	DATE
Ramban	12	a	116.3	133.7	103.7	67.9	53.6	34.6	119.3	113.0	114.8	37.8	13.2	83.5	991.4	150	40	177.5	24 Sep 1954
		b	5.4	5.5	5.9	3.8	3.1	2.6	6.1	6.1	3.2	1.5	0.7	3.6	47.5	(1966)	(1952)		
Banihal	40	a	156.9	209.8	241.	136.3	92.4	54.2	105.	105.0	65.4	38.1	57.4	100.5	1363.	146	49	205.6	28 Aug 1997
Obsy		b	7.4	8.7	10.2	8.4	6.8	3.8	7.7	6.5	3.9	2.5	3.0	4.6	73.5	(1996)	(1971)		
Batote	23	a	161.0	232.8	289.	137.3	109.	96.5	171.	142.2	79.9	48.7	60.7	108.2	1637.	126	64	255.4	23 Aug 1996
Obsy		b	7.2	8.9	10.3	7.3	7.9	6.4	10.4	8.7	5.4	3.7	3.0	4.6	83.8	(1990)	(1999)		
Ramban (District)		a	144.7	192.1	211. 7	113.8	85.1	61.8	132. 0	120.1	86.7	41.5	43.8	97.4	1330. 7	155	30		
		D	6.7	7.7	8.8	6.5	5.9	4.3	8.1	7.1	4.2	2.6	2.2	4.3	68.4	(1990)	(1952)		

a: Normal rainfall in mm.

b: Average number of rainy days (i.e. days with rainfall 2.5 mm or more)

* Based on all available data.

** Years of occurrence given in brackets.

TABLE - 2
FREQUENCY OF ANNUAL R/F IN THE DISTRICT (DATA 1951 -2000)
RAMBAN

RANGE IN MM	NO. OF YEARS	RANGE IN MM	NO.OF YEARS
301 - 400	1	1201 - 1300	2
401 - 500	0	1301 - 1400	7
501 - 600	1	1401 - 1500	3
601 - 700	1	1501 - 1600	4
701 - 800	1	1601 - 1700	4
801 - 900	1	1701 - 1800	2
901 - 1000	2	1801 - 1900	1
1001-1100	2	1901 - 2000	1
1101 - 1200	1	2001 - 2100	1

(Data available for 35 years)

TABLE - 3
Normals of Temperature and Relative Humidity
(BANIHAL)

MONTH	Mean Maximum Temperature	Mean Minimum Temperature	Highest Maximum ever recorded		Lowest Minimum ever recorded		Relative Humidity %	
	°C	°C	°C	Date	°C	Date	0830 1ST	1730 1ST
January	9.8	-0.4	22.6	18.01.2003	-12.0	25.01.1964	75	57
February	10.8	0.6	25.3	10.02.1993	-10.0	22.02.1984	75	56
March	15.6	4.0	29.0	31.03.2007	-6.4	09.03.1979	72	52
April	21.9	8.3	31.8	30.04.2007	-0.7	16.04.1983	65	46
May	25.3	11.1	35.2	23.05.2000	3.0	01.05.2004	63	46
June	28.7	14.6	36.3	24.06.1993	6.3	15.06.1964	63	45
July	28.3	17.4	34.6	01.07.1964	10.3	03.07.2009	80	61

August	28.0	16.8	32.2	08.08.1979	8.7	25.08.1996	85	64
September	27.0	12.5	33.0	08.09.1994	5.1	25.09.1982	84	59
October	24.1	6.8	32.0	05.10.2000	0.8	02.10.2009	74	48
November	18.9	3.4	27.9	09.11.2008	-2.4	27.11.1997	67	44
December	13.7	1.1	23.8	04.12.1988	-13.6	12.12.1964	63	48
Annual	21.1	8.2	36.3	24.06.1993	-13.6	12.12.1964	72	52

TABLE - 4
Mean Cloud Amount *(Okta of the Sky) and Mean Number
of days of Clear and Overcast Skies
(BANIHAL)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
0830 HOURS 1ST													
a	8	7	7	11	15	14	4	3	11	21	17	13	137
b	10	9	10	6	4	3	10	9	4	2	3	5	68
c	4.1	4.3	4.5	3.4	3	2.3	4.9	4.7	2.8	1.4	2.1	3.2	3.4
1730 HOURS 1ST													
a	8	5	3	4	3	3	1	1	3	13	14	12	66
b	11	10	13	8	7	4	6	6	4	2	3	5	72
c	4.3	4.8	5.2	4.9	4.7	4	4.7	4.8	3.8	2.5	2.5	3.4	4.1

a: Days with clear sky.

b: Days with sky overcast,

c: Mean cloud amount in Okta.

** Okta = Unit equal to area of one eighth of the sky used in specifying cloud amount.

For example: 1 Okta means 1/8th of the sky covered.

TABLE - 5
Mean Wind Speed and Predominant Wind Direction
(BANIHAL)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Wind Speed in km/hr	Data not available												
Direction in morning	C/N	C/N	C/N	C/N	C/N	C	C	C	C	c	C/N	C/N	
Direction in evening	C/N	C/N	C/N	C/N	C/N	C/S/N	C/S	C/S	C/S	C/N	C/N	C/N	

TABLE - 6
Special Weather Phenomena
(BANIHAL)

Mean No. of Days With	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Thunder	0.8	1.8	4.3	6.3	10.7	7.3	4.9	3.4	4.3	2.7	1.3	0.7	48.4
Hail	0.1	0.3	0.7	0.5	0.6	0.2	0.0	0.0	0.0	0.0	0.2	0.0	2.6
Dust-storm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fog	0.1	0.2	0.0	0.0	0.1	0.0	0.2	0.4	0.0	0.0	0.0	0.0	1.0
Squall	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE - 3(a)
Normals of Temperature and Relative Humidity
(BATOTE)

MONTH	Mean Maximum Temperature	Mean Minimum Temperature	Highest Maximum ever recorded		Lowest Minimum ever recorded		Relative Humidity %	
	°C	°C	°C	Date	°C	Date	0830 1ST	1730 1ST
January	10.3	1.2	22.6	30.01.1995	-5.7	15.01.2000	72	66
February	11.5	2.1	23.7	08.02.1993	-7.2	22.02.1984	73	67
March	15.2	5.1	26.8	17.03.2004	-3.0	09.03.1979	70	62
April	21.8	9.8	31.2	30.04.1993	1.2	09.04.1984	59	52

May	25.8	12.9	36.6	31.05.1988	3.2	13.05.1987	58	48
June	28.7	16.2	36.3	09.06.1995	8.0	10.06.1981	61	51
July	26.6	17.9	34.2	01.07.1977	11.0	11.07.1993	81	73
August	26.4	17.6	32.5	01.08.1987	10.8	05.08.1987	84	76
September	25.6	14.4	29.7	12.09.2008	7.8	26.09.1984	76	72
October	23.1	9.4	29.2	03.10.2009	3.1	19.10.1987	62	57
November	18.1	5.5	26.1	09.11.2008	-1.2	28.11.1986	64	57
December	13.6	3.1	22.1	01.12.2008	-3.8	19.12.1986	61	55
Annual	20.7	9.8	36.6	31.05.1988	-7.2	22.02.1984	68	61

TABLE - 4(a)
Mean Cloud Amount “(Okta of the Sky) and Mean Number
of days of Clear and Overcast Skies
(BATOTE)

	Jan	Feb	Ma	Ap	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
0830 HOURS 1ST													
a	10	7	6	12	13	14	3	4	12	23	18	13	136
b	8	8	9	5	4	3	12	7	3	1	2	5	65
c	3.9	4.2	4.3	3.1	2.6	2.2	4.9	4.5	2.6	1.1	1.9	3	3.2
1730 HOURS 1ST													
a	8	4	2	3	3	4	1	0	3	13	15	13	63
b	8	9	10	7	5	3	6	5	3	1	2	5	65
c	4.1	4.9	5.3	4.5	4.3	3.6	4.8	4.6	3.5	2.1	2.1	3.1	3.9

a: Days with clear sky.

b: Days with sky overcast,

c: Mean cloud amount in Okta.

** Okta = Unit equal to area of one eighth of the sky used in specifying cloud amount. For example: 1 Okta means 1/8th of the sky covered.

Table: 7
Block wise Crop Calendar of Major Agriculture Crops in Ramban District

Crops	Name of the C.D. Block											
	Banihal/Khari/Batote/Gool/ Gundi-Dharam			Ramsoo/Ukhral/Rajghar			Ramban			Sangaldan/Gandhri		
	Sowing	Harvesting	Peak Marketing	Sowing	Harvesting	Peak Marketing	Sowing	Harvesting	Peak Marketing	Sowing	Harvesting	Peak Marketing
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Paddy	May-June	Sep-Oct	Oct	May-June	Sep-Oct	Oct	June-July	Oct-Nov	Nov	May-June	Sep-Oct	Oct
Maize	April-May	Sep-Oct	Oct	April-May	Sep-Oct	Oct	May-July	Sep-Oct	Oct	April-May	Sep-Oct	Oct
Rajmash (Mixed Crop with Maize)	April-May	Sep-Oct	Oct	April-May	Sep-Oct	Oct	Oct-Nov	May-June	Oct	April-May	Sep-Oct	Oct
Wheat	Oct-Nov	June	June	Oct-Nov	June	June	June-July	Sep-Oct	June	Oct-Nov	June	June
Moong	May-June	Aug-Sep	Sep	May-June	Aug-Sep	Sep	June-July	Sep-Oct	Oct	May-June	Aug-Sep	Sep
Mustard Seed	Sep-Oct	May-June	June	Oct-Nov	May-June	June	Oct-Nov	April-June	June	Oct-Nov	May-June	June
Potato	May-June	Sep-Oct	Oct	May-June	Sep-Oct	Oct	May-June	Sep-Oct	Oct	May-June	Sep-Oct	Oct
Chilies	April-May	Sep-Oct	Oct	April-May	Sep-Oct	Oct	April-June	Sep-Oct	Oct	April-May	Sep-Oct	Oct
Green Peas	-----	-----	-----	-----	-----	-----	Nov-Dec	March-April	March	Nov-Dec	March-April	March
Other Vegetables (Kharif)	Feb-March	June-July	June	Feb-March	June-July	June	Feb-March	May-June	May	Feb-March	June-July	June
Other Vegetables (Rabi)	Sep-Oct	Jan-Feb	Jan	Sep-Oct	Jan-Feb	Jan	Oct-Nov	Dec-Jan	Jan	Sep-Oct	Jan-Feb	Jan

Block wise nutrient status under Soil Health Card Scheme (Cycle-I, 2015-16 & 2016-17) in respect of District Ramban

A. Macro-nutrients:

S. No.	Name of the Block	Target	Organic Carbon(%)		Nitrogen (Kg/Ha)			Phosphorus (Kg/Ha)			Potash (Kg/Ha)		
			M (<0.75)	H (>0.75)	L (<280)	M (280-560)	H (>560)	L (<10)	M (10-25)	H (>25)	L (<120)	M (120-280)	H (>280)
1	Batote	129	15	114	11	43	75	31	28	70	82	21	26
2	Rajghar	245	32	213	13	48	184	46	43	156	164	52	29
3	Ramban	228	23	205	15	44	169	42	35	151	126	71	31
4	Gandhri	206	26	180	10	52	144	41	42	123	118	62	26
5	Ramsoo	106	19	87	12	36	58	32	28	46	74	18	14
6	Ukhral	118	15	103	11	48	59	38	21	59	87	16	15
7	Neel	89	18	71	9	42	38	17	12	60	62	13	14
8	Khari	155	13	142	13	35	107	44	34	77	109	31	15
9	Banihal	734	115	619	15	108	611	127	98	509	432	226	76
10	Sangaldan	161	19	142	13	34	114	36	28	97	84	38	39
11	Gundi Dharam	124	23	101	14	32	78	22	31	71	79	32	13
12	Gool	143	22	121	9	38	96	31	25	87	72	36	35
Total		2438	340	2098	145	560	1733	507	405	1506	1489	616	333

B. Micro-nutrients:

S · N o ·	Name of the Block	Tar get	Sulphur		Zinc		Copper		Manganese		Iron		pH		Electrical Conductivity (EC 1:2 dS/m)		
			Def. (<10 ppm)	Suff. (>10p pm)	Def. (<0.6ppm)	Suff. (>0.6p pm)	Def. (<0.2p pm)	Suff. (>0.2p pm)	Def. (<2.0p pm)	Suff. (>2.0p pm)	Def. (<4.5p pm)	Suff. (>4.5p pm)	Acid ic (<7. 0)	Alka line (>7. 0)	Sligh t (<2. 0)	Mode rate (2.0- 3.0)	Str ong (>3. 0)
1	Batote	129	36	93	31	98	13	116	32	97	21	108	106	23	92	6	31
2	Rajghar	245	43	202	46	199	19	226	62	183	47	198	196	49	187	7	51
3	Ramban	228	52	176	42	186	17	211	58	170	41	187	185	43	168	5	55
4	Gandhri	206	47	159	48	158	14	192	56	150	39	167	170	36	159	8	39
5	Ramsoo	106	38	68	39	67	12	94	29	77	34	72	77	29	78	7	21
6	Ukhral	118	36	82	40	78	11	107	34	84	38	80	95	23	91	6	21
7	Neel	89	22	67	28	61	8	81	24	65	18	71	75	14	63	5	21
8	Khari	155	34	121	43	112	14	141	43	112	27	128	122	33	113	5	37
9	Banihal	734	182	552	96	638	26	708	198	536	142	592	494	240	601	17	116
10	Sangaldan	161	27	134	38	123	9	152	47	114	29	132	122	39	117	6	38
11	Gundi Dharam	124	34	90	31	93	11	113	49	75	17	107	107	14	96	9	19
12	Gool	143	42	101	36	107	13	130	52	91	19	124	122	21	107	7	29
Total		2438	593	1845	518	1920	167	2271	684	1754	472	1960	1904	534	1872	88	478

Block wise nutrient status under Soil Health Card Scheme (Cycle-I, 2015-16 & 2016-17) in respect of
District Ramban

A. Macro-nutrients(in percentage):

S. No.	Name of the Block	Target	Organic Carbon(%)		Nitrogen (Kg/Ha)			Phosphorus (Kg/Ha)			Potash (Kg/Ha)		
			M(%)	H (%)	L (%)	M(%)	H (%)	L (%)	M(%)	H (%)	L (%)	M(%)	H (%)
1	Batote	129	11.63	88.37	8.53	33.33	58.14	24.03	21.71	54.26	63.57	16.28	20.16
2	Rajghar	245	13.06	86.94	5.31	19.59	75.10	18.78	17.55	63.67	66.94	21.22	11.84
3	Ramban	228	10.09	89.91	6.58	19.30	74.12	18.42	15.35	66.23	55.26	31.14	13.60
4	Gandhri	206	12.62	87.38	4.85	25.24	69.90	19.90	20.39	59.71	57.28	30.10	12.62
5	Ramsoo	106	17.92	82.08	11.3 2	33.96	54.72	30.19	26.42	43.40	69.81	16.98	13.21
6	Ukhral	118	12.71	87.29	9.32	40.68	50.00	32.20	17.80	50.00	73.73	13.56	12.71
7	Neel	89	20.22	79.78	10.1 1	47.19	42.70	19.10	13.48	67.42	69.66	14.61	15.73
8	Khari	155	8.39	91.61	8.39	22.58	69.03	28.39	21.94	49.68	70.32	20.00	9.68
9	Banihal	734	15.67	84.33	2.04	14.71	83.24	17.30	13.35	69.35	58.86	30.79	10.35
10	Sangaldan	161	11.80	88.20	8.07	21.12	70.81	22.36	17.39	60.25	52.17	23.60	24.22
11	Gundi Dharam	124	18.55	81.45	11.2 9	25.81	62.90	17.74	25.00	57.26	63.71	25.81	10.48
12	Gool	143	15.38	84.62	6.29	26.57	67.13	21.68	17.48	60.84	50.35	25.17	24.48
Total		2438	13.95	86.05	5.95	22.97	71.08	20.80	16.61	61.77	61.07	25.27	13.66

B. Micro-nutrients (In %):

S. No	Name of the Block	Target	Sulphur		Zinc		Copper		Manganese		Iron		pH		Electricial Conductivity		
			Def. (%)	Suff. (%)	Def. (%)	Suff. (%)	Def. (%)	Suff. (%)	Def. (%)	Suff. (%)	Def. (%)	Suff. (%)	Acidic (%)	Alkali ne (%)	Slight (%)	Moderate (%)	Strong (%)
1	Batote	129	27.91	72.09	24.03	75.97	10.08	89.92	24.81	75.19	16.28	83.72	82.17	17.83	71.32	4.65	24.03
2	Rajghar	245	17.55	82.45	18.78	81.22	7.76	92.24	25.31	74.69	19.18	80.82	80.00	20.00	76.33	2.86	20.82
3	Ramban	228	22.81	77.19	18.42	81.58	7.46	92.54	25.44	74.56	17.98	82.02	81.14	18.86	73.68	2.19	24.12
4	Gandhri	206	22.82	77.18	23.30	76.70	6.80	93.20	27.18	72.82	18.93	81.07	82.52	17.48	77.18	3.88	18.93
5	Ramsoo	106	35.85	64.15	36.79	63.21	11.32	88.68	27.36	72.64	32.08	67.92	72.64	27.36	73.58	6.60	19.81
6	Ukhral	118	30.51	69.49	33.90	66.10	9.32	90.68	28.81	71.19	32.20	67.80	80.51	19.49	77.12	5.08	17.80
7	Neel	89	24.72	75.28	31.46	68.54	8.99	91.01	26.97	73.03	20.22	79.78	84.27	15.73	70.79	5.62	23.60
8	Khari	155	21.94	78.06	27.74	72.26	9.03	90.97	27.74	72.26	17.42	82.58	78.71	21.29	72.90	3.23	23.87
9	Banihal	734	24.80	75.20	13.08	86.92	3.54	96.46	26.98	73.02	19.35	80.65	67.30	32.70	81.88	2.32	15.80
10	Sangaldan	161	16.77	83.23	23.60	76.40	5.59	94.41	29.19	70.81	18.01	81.99	75.78	24.22	72.67	3.73	23.60
11	Gundi Dharam	124	27.42	72.58	25.00	75.00	8.87	91.13	39.52	60.48	13.71	86.29	86.29	11.29	77.42	7.26	15.32
12	Gool	143	29.37	70.63	25.17	74.83	9.09	90.91	36.36	63.64	13.29	86.71	85.31	14.69	74.83	4.90	20.28
Total		-	24.32	75.68	21.25	78.75	6.85	93.15	28.06	71.94	19.36	80.39	78.10	21.90	76.78	3.61	19.61

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