

Trends and strategies for the development of Horticulture in Kashmir Valley (J&K)

Farouq Ahmed Dar

Asst. Lect., Department of Geography, GDC Poonch, Jammu and Kashmir, India

Abstract

Jammu and Kashmir, particularly, the valley of Kashmir has been rightly described as the “fruit Bowl” of northern India. Kashmir is the land of bewitching beauty with exotic fruits, flora and flowers. Its land environment and climate is most favourable and provides greater facilities to horticulture industry to grow more rapidly. The flourishing horticulture sector of Kashmir valley has changed the Socio-Economy status of people and helped them in reshaping their economy to some extent. In the year 2016-17, In Kashmir valley 161682 hectares of land are under fresh fruits and 58041 hectares of land are under dry fruits. In Jammu division, 79938 hectares of land are under fresh fruits and 38867 hectares of land are under dry fruits. At present, in J&K state a total area of 338528 hectares of land are under horticulture land, out of which 219223 hectare are in Kashmir division and 113805 hectares are in Jammu division. Of this 1.62 lakh hectares of land are under Apple cultivation, 14532 hectares are under pear, 6123 hectares are under Apricot, 89339 hectares are under Walnut, 414 hectares are under Peanut and 7107 hectares of land are under Almond cultivation. The fruit industry of Kashmir provides a countless opportunities for job and employment to raise the standard of living of people.

Keywords: fruit bowl, economy, cultivation, environment, horticulture, flora and fauna, socio-economic status

Introduction

Horticulture deals with the art, science, technology and business of growing plants. It is a type of agriculture in which garden crops such as fruits, flowers and vegetables are grown. The word Horticulture is derived from the Latin word “Hortus” which means ‘garden’ and ‘Cotere’ meaning ‘cultivate’. Although both Horticulture and agriculture have many common practices such as weeding, watering, fertilizing and spraying etc. Horticulture is traditionally divided into two sectors, Pomology (food crops, nuts, vines) and Floriculture (edible roots, stems, seeds and flowers).

Apart from tourism sector, fruit industry plays a vital role so far as state's economy is concerned. In recent years horticulture has emerged as an important sector of J&K. The percentage contribution of horticulture to state gross domestic product is about 21.89% for 2016-2017 year- (Economic survey 2016-17 J&K state). About 6 lakh families are engaged directly or indirectly in this sector. It plays a vital role in providing sustenance to a large number of people. Fruit production in the valley is around 22 lakh metric tons annually out of which Kashmir alone has a capacity to produce 15-19 lakh metric tons every year. Sopore is the main fruit producing district in the valley and accounts about 50% of the total fruit production. (Director of Horticulture J&K).

Study area: Vale of Kashmir

The J&K state was founded by Maharaja Gulab Singh in 1846. It has four heterogeneous regions like Jammu, Kashmir, Ladakh and Gilgit. Total area of state on August 15, 1947 was 2, 22, 236 Sq. Km, of which 78114 Sq. Km is captured by Pakistan and 37555 Sq. Km by China, 5180 Sq. Km were illegally ceded to China by Pakistan under the March, 1963, Sino-Pak Boundary Agreement. Pakistan captured the districts

of Dianer, Baltistan, Gilgit, Muzaffarabad, Kotil, Mirpur, Poonch and Bagh. The China occupied territory is called Aksai Chin (un-inhabited). The state is 640 Kms from North to South and 480 Kms from East to West. The state is divided into various physical regions such as outer plains and hills, Shiwaliks, Middle Himalayas (Kashmir Valley, Pir Panjal Range), Greater Himalayas and the Ladakh region. The state has distinct climatic regions viz. Jammu sub-Tropical, Kashmir valley Temperate and Ladakh sub arctic cold desert. (Khullar: India A comprehensive Geography). The value of Kashmir is an important part of the state. Kashmir valley is famous for its climate, beauty, snow peaks, landscape, tourist spots, meadows, and pastures, picturesque and high attitude. From the numerous valleys situated in the state, Kashmir valley is the biggest one spread over an area of 100 Sq. Km located approximately 1850 meters above the sea level. J&K location is between 32°15'-37°05'N latitude and 72°35'-83°20' E longitude. In case of latitude, J&K matches up with South Carolina, Fez, Damaseus, Baghdad and Peshawar. The standard time in Kashmir is 5.30 hours ahead of Greenwich Mean Time (GMT) and has a difference of half an hour with the local time. It comprises ten districts namely Anantnag, Pulwama, Shopian, Kulgam, Srinagar, Baramulla, Budgam, Kupwara, Ganderbal and Bandipora. The agro-climatic zone of Kashmir is also known as cultivators' paradise. The alluvial plains or river Jhelum are known as Karewas of Kashmir valley. These karewas of Kashmir alley are highly productive for horticultural fruits, agricultural crops and Saffron cultivation. The value of Kashmir has 61% of the cultivable lands under rice cultivation with the yield of 26.13 q/ha as compared to 15.96 q/ha in Jammu division. This region alone accounts more than 74% of total rice production of the state. The soils are well suitable for rice and fruit cultivation and

90% of the area is irrigated. The state is drained by the mightily Indus, Jhelum, Kishanganga, Chenab and their tributaries. The valley has river Jhelum flowing through it along with its tributaries. (Hussain Majid: Geography of Jammu and Kashmir). The economic growth of the state depends largely on the progress of the agricultural sector as well as allied sectors. With the introduction of new

technology, mechanical and scientific tools and virus free plants, the production of food grains and fruits has increased considerably. Besides fresh and dry fruits the value of Kashmir is also known for the high production of Potato, Carrot, Tomato, Cabbage, Cauliflower, Onion, Radish, Brinjal, Groundnut, turnip and Bitter gourd etc.



Fig 1: Map showing different district of J&K State.

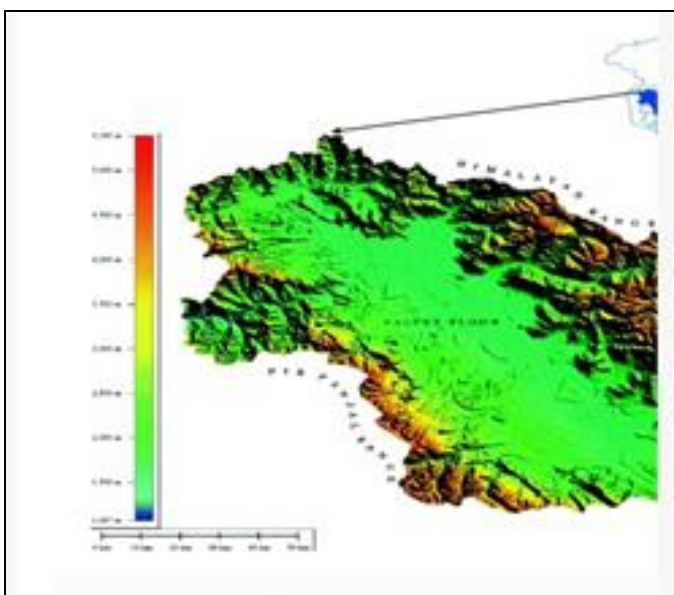


Fig 2: Vale of Kashmir



Fig 3: Fruits and Vegetables availability Map of Jammu and Kashmir

Historical perspective of horticulture in Kashmir

The concept of garden culture as a distinct form of field culture dates back to the medieval farming system. The time of king Lalita Ditya and the period of kings Awantiwaraman and Sultan Zain-ul-Abdin “Badshah” Kashmir has remained the symbol of fruits and flowers. The history of fruit production starts with the cultivation of Apples were reported to have been dates back to even 2000 B.C. Cultivation of Apple got extended during the reign of Lalita Ditya in 1089 A.D. Apples of Kashmir have found mention in Tuzki Jahangiri, where Lawrence in his book, 'The valley of

Kashmir, called the valley as fruit industry. Horticulture started in 1875 in Kashmir valley at Cheshmashahi Srinagar. The Department of Horticulture was established in 1962 which further flourished the horticulture sector in the state. The J&K state has great diversity in geographical conditions and climate which is suitable for the cultivation of all kinds of temperature, tropical and sub-tropical fruits. Besides, medicinal and aromatic plants, well known spices like saffron and black Zeera are also cultivated in some pockets of the state.

New trends in Area and production of horticulture in J&K.

The data of area and production from last ten years shows that there has been a tremendous and considerable change both in production as well as in area in the horticulture sector. The

production and area of horticulture sector (fresh and dry fruits) in district wise analyses of J&K, state has been shown in the following tables.

Table 1. a. Area under Major Horticulture Crops for the year 2006-2007 (Area in Hect.)

S.No	Kind of Fruit	Kashmir Division						Ladakh Region				Jammu Division												Total J&K
		Trimmur	Budgam	Rawalakot	Agreerat	Leemthang	Pulwama	Total	Leh	Kargil	Total	Total Kashmir	Anantnag	Samba	Kathua	Doda	Kulgam	Shrinagar	Poonch	Rajouri	Udhampur	Reasi	Total Jammu	
a. Fresh Fruits																								
1	Apple	8832	12337	28140	15913	23334	28478	147737	464	191	797	147974	4	4	124	2734	3442	2933	1497	484	440	791	12847	129443
2	Pear	1532	1447	454	374	1243	361	4787	1	24	34	4784	4	4	421	1344	434	424	1524	977	744	241	4384	43284
3	Apricot	144	44	134	44	117	74	784	434	1474	274	2842	4	4	24	342	144	122	447	144	234	41	1924	1424
4	Peach	41	41	44	34	274	11	44	2	7	4	444	17	4	44	341	144	44	144	141	341	44	1444	1234
5	Plum	477	444	4	44	474	42	1444	1	1	4	1444	4	2	14	124	12	44	1444	111	144	44	1447	1414
6	Cherry	1444	144	247	127	174	211	2744	4	11	14	2744	4		4	4	7	1	1	4	1	1	22	2744
7	Grape	44	14	11	11	4	4	144	4	7	11	144	21	24	17	4	4	4	1	2	11	4	47	234
8	Other	4	4	17	27	4	4	44	4	4	4	44	174	142	224	42	7	44	241	274	1447	1447	1444	1244
9	Other	4	4	34	24	4	4	44	4	4	4	44	4	4	1	144	4	41	21	21	21	24	441	447
10	Mango	4	4	4	4	4	4	4	4	4	4	4	1244	124	244	4	4	4	4	412	447	744	434	434
11	Ber	4	4	4	4	4	4	4	4	4	4	4	244	174	744	4	4	4	4	413	224	44	744	744
12	Other Fresh	244	144	244	274	344	1	144	4	4	4	144	147	744	144	244	47	274	144	144	144	447	4247	12284
Total Fresh		4384	11747	34774	14744	24344	2344	128444	1477	234	1447	123444	444	4744	1244	4174	2144	3444	7444	7124	1442	1447	41217	124714
b. Dry Fruits																								
1	Walnut	1444	4474	4422	1122	11244	474	4777	44	11	144	4777	4	4	124	1122	1444	2447	474	1477	1412	244	1144	11244
2	Almond	474	1444	44	24	474	744	1442	4	4	4	1444	4	4	14	211	41	47	47	17	14	24	447	14174
3	Other Dry	247	4	4	4	4	4	247	4	4	4	247	4	4	34	4	4	4	247	41	21	2	44	447
Total Dry		1447	1122	1122	1122	11244	1444	4777	74	24	144	4444	4	4	124	1122	1444	2447	474	1477	1412	244	1144	11244
Grand Total		1447	2444	1444	2444	1444	1444	1444	1444	244	1447	123444	444	4744	1244	4174	2144	3444	7444	7124	1442	1447	41217	124714

Source: Directorate of Horticulture, Jammu and Kashmir.

Table 1.b. Production under Major fresh and dry fruits for the year 2006-2007 (production in M.Tones)

S.No	Kind of Fruit	Kashmir						Ladakh			Total Kashmir Division	Jammu	Jammu												Total J&K
		Trimmur	Budgam	Baramulla	Kupwara	Anantnag	Pulwama	Total Kashmir Region	Leh	Kargil			Total Ladakh	Anantnag	Baramulla	Kathua	Doda	Kulgam	Shrinagar	Poonch	Rajouri	Udhampur	Reasi	Total Jammu	
FRESH FRUITS																									
1	Apple	4747	4127	11124	14427	14722	21424	12444	144	144	474	12444	4	4	144	1444	1142	114	244	117	74	1144	122274		
2	Pear	1421	7144	2427	2147	1133	2442	27744	4	4	12	27744	4	15	1444	717	147	144	744	1744	1444	144	1134	4344	
3	Apricot	474	47	144	47	144	1744	244	113	474	144	1444	4	4	42	124	14	14	144	144	227	14	747	1234	
4	Peach	214	47	44	47	174	74	784	4	4	4	784	22	15	171	47	27	144	171	127	227	74	1444	1274	
5	Plum	1444	714	4	47	174	144	244	2	2	4	244	4	1	124	72	21	47	144	142	144	74	2447	474	
6	Cherry	1444	247	742	447	144	1412	1744	4	12	12	1744	4	4	4	4	4	4	4	4	2	4	17	1744	
7	Grape	144	4	4	4	4	4	244	4	7	4	244	17	17	43	4	4	4	1	2	11	4	147	234	
8	Other	4	4	1	1	4	4	4	4	4	4	4	174	1244	144	21	4	11	244	1141	2244	744	1444	1444	
9	Other	4	4	1	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	2	4	17	1744	
10	Mango	4	4	4	4	4	4	4	4	4	4	4	1712	1247	744	4	4	4	4	1211	12	147	1747	1747	
11	Ber	4	4	4	4	4	4	4	4	4	4	4	244	1147	244	4	4	4	4	744	144	74	1444	1444	
12	Other Fresh	144	112	112	144	74	4	474	4	4	4	474	424	144	424	144	124	144	114	114	147	1447	1447	1447	
Total Fresh		4147	4144	11124	14427	14722	21424	12444	474	744	1447	12444	444	4744	1244	4174	2144	3444	7444	7124	1442	1447	41217	124714	
DRY FRUITS																									
1	Walnut	742	424	144	1447	474	144	1244	17	24	127	1247	4	4	144	114	144	144	144	174	244	227	144	1144	
2	Almond	474	114	24	4	114	127	2744	2	2	4	1147	4	4	4	4	4	4	4	4	4	24	1147	1147	
3	Other Dry	144	4	4	4	4	4	144	4	4	4	144	4	4	4	4	4	4	4	4	4	4	144	144	
Total Dry		1447	1122	1122	1122	11244	1444	4777	74	24	144	4444	4	4	124	1122	1444	2447	474	1477	1412	244	1144	11244	
Grand Total		4147	4144	11124	14427	14722	21424	12444	474	744	1447	12444	444	4744	1244	4174	2144	3444	7444	7124	1442	1447	41217	124714	

Source: Directorate of Horticulture, Jammu and Kashmir.

Table 2.a. Area under Major Fresh and Dry Fruits for the year 2011-12 (Area in Hect).

S.No	Kind of Fruit	Spr.	Gundul	Bud.	Bls.	Budgr	Kaps.	Angl.	Kul.	Shps.	Pal.	Leh.	Kargl.	Total		Jmu	Samba	Kathua	Udhampur	Reasi	Doda	Kishtwar	Rambh.	Raj.	Poonch	Total	Total J&K
														Km.	kg.												
A- Fresh Fruits																											
1	Apple	2990	5145	14585	25985	5408	18885	16523	15842	21615	10913	648	300	138839	0	0	846	1008	886	4571	2108	3239	1161	2062	15881	154720	
2	Pear	529	285	1724	617	111	433	981	884	396	662	2	20	6644	1	2	650	681	307	1290	200	492	1344	1607	6574	13218	
3	Apricot	157	93	60	120	56	54	246	121	24	79	867	1415	3292	0	0	36	239	63	313	650	274	299	885	2759	6051	
4	Peach	71	82	51	56	25	37	185	122	6	39	4	5	683	18	10	84	268	129	194	158	124	241	601	1827	2510	
5	Plum	256	143	978	0	8	41	163	204	6	52	1	0	1852	5	5	68	109	75	121	207	87	503	1309	2489	4341	
6	Cherry	1247	680	185	207	65	94	119	69	345	38	2	9	5469	0	0	0	0	0	0	0	0	0	0	28	5488	
7	Grapes	14	128	11	10	0	2	0	7	0	2	1	4	179	32	20	42	14	23	0	6	11	2	0	150	529	
8	Lichi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	162	84	67	0	0	0	0	0	631	631	
9	Citrus	0	0	0	19	0	3	0	0	0	0	0	0	22	2144	1641	2784	1573	1644	69	8	35	3375	360	13633	13655	
10	Olive	0	0	0	84	0	7	0	0	0	0	0	0	91	0	0	2	17	13	242	25	88	22	14	423	514	
11	Mango (G) st.	0	0	0	0	0	0	0	0	0	0	0	0	0	2990	950	2163	424	373	0	0	0	391	0	7291	7291	
12	Mango (D)	0	0	0	0	0	0	0	0	0	0	0	0	0	1741	445	1610	507	427	0	0	0	285	0	5015	5015	
13	Ber	0	0	0	0	0	0	0	0	0	0	0	0	0	2784	3368	744	214	118	0	0	0	624	0	7852	7852	
14	Anola	0	0	0	0	0	0	0	0	0	0	0	0	0	315	351	448	115	160	0	0	0	117	0	1466	1466	
15	Guava	0	0	0	0	0	0	0	0	0	0	0	0	0	647	417	490	324	163	0	0	0	291	10	2342	2342	
16	Kiw.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	12	31	0	45	45	
17	Papaya	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
18	Other Fresh	510	364	725	423	197	187	335	803	240	187	47	95	3613	1870	450	2098	1052	935	840	410	840	2406	2203	13104	16717	
Total Fresh		1774	6920	18319	27521	5876	19743	18552	17552	23632	11972	1572	1848	158675	12611	7821	12419	6636	5313	7648	3783	5212	11822	9681	81510	240185	
B- Dry Fruits																											
1	Walnut	746	4385	6009	3443	1749	12	15718	6091	3335	4096	56	215	46758	0	0	3936	4036	2406	5776	4354	4320	4203	7827	36858	83613	
2	Pecanot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59	41	5	12	0	2	148	284	551	551	
3	Almond	553	88	7034	264	126	390	321	41	21	6315	2	763	15718	0	112	17	19	20	215	97	103	117	0	760	16418	
4	Other Dry	133	121	77	21	100	55	135	27	65	52	7	9	882	58	152	81	144	155	125	134	135	127	111	1222	2024	
Total Dry		1432	4894	14020	3728	1975	457	16174	6159	3421	10463	65	787	63275	58	264	4093	4240	2586	6128	4585	4560	4595	8222	39331	102060	
Grand Total		7206	11514	32339	31249	7845	20260	34726	23711	26453	22435	1637	2635	221950	12669	8085	16812	10876	7699	13976	8368	9772	15617	17273	120841	342791	

Source: Directorate of Horticulture, Jammu and Kashmir

Table 2.b. Production under Major Fresh and Dry Fruits for the year 2015-16 (Production in M. tones).

S.No.	Kind of Fruit	Spr.	Gundul	Bud.	Bls.	Budgr	Kap.	Angt.	Kul.	Shps.	Pal.	Leh.	Krgil	Total Km.	Jmu	Smb	Kathu	Uthup	Reasi	Doda	Kistur	Rmb	Raju	Ponch	Total Jmu	Total J&K
A- FRESH FRUITS																										
1	Apple	27886	46733	85580	663410	73604	211054	128264	143095	236129	114854	5308	1430	1737347	0	0	1029	1068	641	5274	3037	4856	396	2544	18845	1756192
2	Pear	1880	2799	6075	1515	546	4773	5252	3420	1591	3559	9	4	38423	2	1	2190	1108	328	2290	132	1780	2395	6171	16397	47820
3	Apricot	661	259	105	98	93	142	1096	605	121	647	2602	2707	8336	0	0	21	277	108	388	156	603	112	109	1774	10310
4	Peach	50	332	95	51	12	413	1088	592	18	159	8	4	2822	103	0	180	155	96	80	50	103	106	215	1088	3916
5	Plum	877	647	1647	0	22	730	1690	595	30	281	1	0	6568	12	0	132	166	103	89	35	101	380	524	1542	8102
6	Cherry	3115	1534	649	399	103	670	1381	272	3077	247	0	5	11452	0	0	0	0	0	2	8	5	0	0	15	11467
7	Grapes	3	231	303	8	0	28	0	13	0	0	10	4	406	93	2	51	21	12	0	15	6	3	0	203	803
8	Litchi	0	0	0	0	0	0	0	0	0	0	0	0	0	328	52	1245	71	71	0	0	0	0	0	1787	1787
9	Citrus	0	0	0	1	0	178	0	0	0	0	0	0	179	3295	1155	7835	2525	1928	26	12	16	2139	624	19555	19734
10	Olive	0	0	0	1	0	55	0	0	0	0	0	0	56	0	0	0	1	1	14	5	0	0	0	21	77
11	Mango (G)	0	0	0	0	0	0	0	0	0	0	0	0	0	3613	1239	2252	717	121	0	0	0	156	0	8096	8096
12	Mango (D)	0	0	0	0	0	0	0	0	0	0	0	0	0	4290	985	6387	2143	270	0	0	0	687	0	14762	14762
13	Ber	0	0	0	0	0	0	0	0	0	0	0	0	0	4336	5689	1775	441	105	0	0	0	728	0	13074	13074
14	Anola	0	0	0	0	0	0	0	0	0	0	0	0	0	409	688	33	0	82	0	0	0	36	0	1248	1248
15	Guava	0	0	0	0	0	0	0	0	0	0	0	0	0	2479	1003	654	464	594	0	0	0	414	0	5606	5606
16	Kiw.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
17	Papaya	0	0	0	0	0	0	0	0	0	0	0	0	0	147	36	1347	0	0	0	0	0	0	0	1530	1530
18	Other Fresh	1535	1920	1585	2315	1956	2160	2435	1542	1998	1763	95	97	19881	4048	1376	6579	1580	2036	2209	1102	1416	2216	2706	25288	44669
Total Fresh		35407	54455	96039	667798	76336	226243	141266	188134	242964	121518	8033	4251	1813756	23155	12236	10737	6496	18372	4547	8893	9768	12893	130797	1949173	
B- DRY FRUITS																										
1	Walnut	2625	12053	18180	13500	4434	22642	39021	19319	9850	16927	131	11	158693	0	0	5210	1443	5384	6942	5950	7276	3954	13886	50045	208728
2	Almond	89	21	767	3	25	0	761	21	13	1542	1	0	3243	0	0	3	2	5	2	1	0	0	0	15	3258
Total Dry		2714	12074	18947	13503	4459	22642	39782	19340	9863	18469	132	11	161936	0	0	5213	1445	5386	6947	5952	7277	3954	13886	50060	211996
Grand Total		38121	66529	114986	80281	80795	242885	180998	187474	252827	139979	8165	4262	1980312	23155	12236	10737	6496	18372	4547	8893	9768	12893	130797	2161169	

Source: Directorate of Horticulture, Jammu and Kashmir

Table 3.a. Area under Major Fresh and Dry Fruits for the year 2014-15 (Area in Hect).

Table 3.b. Production under Major Fresh and Dry Fruits for the year 2014-15 (Production in M. tones)

S.No.	Kind of Fruit	District																							Total Area	Total J&A
		Sgr.	Gndhrl.	Bnd.	Bls.	Budgr.	Krp.	Angl.	Knf.	Shgn.	Pol.	Lob.	Krgl.	Jan.	Sambha.	Kathun.	Villangra.	Krsai.	Dudla.	Kohlr.	Ranur.	Rjs.	Pench.	Total		
1	Apple	14490	48528	31526	425037	80584	105109	1449397	57518	183412	901882	3498	1045	119110	0	0	1394	1724	1831	13350	9038	5245	1997	2935	34126	1176386
2	Pear	802	1861	2075	8713	438	1499	13258	2463	2717	4815	0	0	0	0	0	1781	2458	219	2648	133	1240	8029	3639	18722	
3	Apricot	170	523	561	1052	56	531	1425	732	183	644	2400	4878	12500	0	0	35	213	43	491	495	573	773	300	4680	3631
4	Peach	575	4643	47	500	22	342	809	904	23	420	7	5	3592	23	10	104	528	52	212	196	151	303	679	1941	5636
5	Plum	451	1184	1166	76	37	414	970	635	52	511	1	1	5408	0	0	5	71	108	65	276	185	88	563	1239	2497
6	Cherry	1650	1110	584	1792	76	526	605	203	2979	406	1	0	9530	0	0	0	0	0	0	0	0	0	0	0	9530
7	Grapes	2	330	43	131	12	5	19	20	0	14	9	4	390	44	21	34	23	1	8	14	6	0	0	193	781
8	Litchi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	458	104	42	0	0	0	0	0	0	1246
9	Custoo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3971	1779	6496	2648	1031	24	9	44	5621	21792
10	Guava	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	1	8	13	2	6	1	0	31	32	
11	Mango (G)	0	0	0	0	0	0	0	0	0	0	0	0	0	5167	580	1025	372	305	0	0	0	197	0	7645	
12	Mango (D)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7060	248	1670	999	480	0	0	0	243	0	10809
13	Bur	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4359	5785	1888	273	57	0	0	0	779	0	13141
14	Amroli	0	0	0	0	0	0	0	0	0	0	0	0	0	0	643	414	560	74	28	0	0	0	0	1368	2768
15	Guava	0	0	0	0	0	0	0	0	0	0	0	0	0	0	986	964	1419	879	246	0	0	0	595	13	5181
16	Kiss	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
17	Papaya	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
18	Starberry	180	2	34	36	7	0	0	0	0	0	35	0	1	295	0	0	0	0	0	0	0	0	0	0	295
19	Phenagraberry	0	1	0	2	1	0	316	0	0	7	0	0	327	0	0	0	0	0	0	0	0	0	0	0	327
20	Liquor	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
21	Quince	0	0	0	0	0	71	0	0	296	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	296
22	Other fruits	170	5402	181	0	0	0	0	101	1267	101	0	0	0	0	0	242	0	0	108	0	0	0	0	0	242
Total Fruit		29679	94027	62072	430360	15348	194880	167940	43407	189513	87748	3005	1043	431076	20390	10190	10202	10262	13961	22648	4088	7898	10777	11462	120078	1346819
B. DIES FRUITS																										
1	Water	1080	4862	1212	4867	2618	10480	22079	3103	1127	12673	0	0	0	0	0	4862	1172	4038	4008	2	3328	4779	11462	10777	1346819
2	Water	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1
3	Water	36	35	3195	367	107	0	1047	18	12	4352	1	1	10812	0	1	1	0	0	0	0	0	0	0	0	10812
4	Water	180	8	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	14
5	Other Fruit	1080	4812	1212	4867	2618	10480	22079	3103	1127	12673	0	0	0	0	0	4862	1172	4038	4008	2	3328	4779	11462	10777	1346819
Grand Total		29679	94291	62113	430360	15353	195248	168240	43426	189762	87763	3005	1043	431076	20399	10193	10252	10267	13966	22648	4088	7898	10777	11462	120078	1346819

Source: Directorate of Horticulture, Jammu and Kashmir.

Table 4.a. Area under Major Fresh and Dry Fruits for the year 2015-16 (Area in Hect).

S.No	Kind of Fruit	District																									
		Agri.	Coultb.	Bud.	Rta.	Budgr.	Kap.	Avagi.	Kal.	Shga.	Pal	Leh.	Kirji	Total Kachari	Jam	Isanba	Karfa	Alany	Atagi	Doda	Kobbi	Budm	Rya	Panch	Am	Total 18A	
1	Apple	1410	6965	12635	12503	6340	19055	14971	18192	21007	14143	796	491	143796	0	0	798	1229	1060	5797	2852	2773	1271	2183	17983	141773	
2	Chai	290	381	1536	660	133	479	1008	932	396	943	3	29	6869	0	16	742	726	306	1400	264	705	1773	7606	1447		
3	Apricot	34	119	27	120	27	58	246	111	44	113	792	1303	3394	0	0	38	272	69	288	655	381	505	696	2903	6057	
4	Peach	103	189	3	56	43	38	259	129	25	76	4	7	932	16	21	83	278	72	110	166	99	273	585	1703	2515	
5	Plum	80	262	453	0	17	46	220	155	36	97	1	1	1368	0	270	70	109	89	170	78	580	1395	2911	4278		
6	Cherry	478	1078	16	211	56	113	123	36	608	65	1	10	2816	0	0	0	0	0	0	0	0	0	0	0	2816	
7	Grape	0	338	1	16	18	1	0	0	0	0	0	0	225	23	13	18	23	23	0	0	0	0	0	0	333	
8	Litchi	0	0	0	0	0	0	0	0	0	0	0	0	343	27	312	96	84	0	0	0	0	0	0	0	872	
9	Guava	0	0	0	0	0	0	0	0	0	0	0	0	23	2310	1480	2098	1030	1808	42	0	80	3573	408	14368		
10	Melon	0	0	0	98	0	7	0	0	0	0	0	0	182	0	0	15	18	248	0	11	300	13	605	707		
11	Mango	0	0	0	0	0	0	0	0	0	0	0	0	8	4823	1271	3934	1048	908	0	0	0	675	0	0	12060	
12	Ber	0	0	0	0	0	0	0	0	0	0	0	0	8	2677	1208	747	0	118	0	0	0	630	0	0	5380	
13	Availi	0	0	0	0	0	0	0	0	0	0	0	0	8	616	301	587	224	108	0	0	0	43	0	0	1987	
14	Guava	0	0	0	0	0	0	0	0	0	0	0	0	8	598	332	547	383	202	0	0	0	318	0	0	2451	
16	Awel	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	1	0	0	0	1	0	7	
17	Papaya	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	
18	Strawbery	27	20	0	122	1	0	0	0	0	0	0	2	176	0	0	0	0	0	0	0	0	0	0	0	176	
19	Pongratia	0	11	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	13	
20	Lourei	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	8	
21	Guava	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	8	
22	Other Fruits	183	111	799	5619	6	11	273	234	164	0	0	0	1112	686	850	1312	777	354	304	38	1142	1559	1977	8075	10740	
Total Fruits		2402	9304	14958	14799	6447	19771	27204	37931	22880	14844	1999	2058	106660	12163	5669	11387	15	4221	2562	1333	2449	9326	7964	50467	241182	
B. Dry Fruits																											
1	Walnut	222	5117	3991	1113	1235	8674	14182	5773	3271	8113	49	15	86655	0	0	3237	4636	2706	6480	4620	5194	4368	7006	38245	89900	
2	Peanut	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	44	50	5	25	0	0	163	128	415	813	
3	Almond	489	43	1447	262	8	13	30	2	15	4668	2	2	4981	0	0	12	19	19	80	0	10	10	0	151	7122	
4	Chickpea	0	0	0	0	0	11	11	0	0	0	0	0	41	0	0	6	0	0	0	0	0	0	0	0	41	
Total Dry		491	5161	5438	1498	1243	8699	14633	5773	3286	8146	51	17	97698	0	0	3293	9	2709	6795	4630	5195	4543	7134	34118	96695	
Grand Total		3293	14485	20408	20994	7600	28460	34627	25568	26168	24925	16500	2007	218203	12163	5669	14680	15	6951	9137	5953	7900	14472	12400	91550	373187	

Source: Directorate of Horticulture, Jammu and Kashmir.

Table 4.b. Production under Major Fresh and Dry Fruits for the year 2015-16 (production in M. Tones)

[illegible]

Source: Directorate of Horticulture, Jammu and Kashmir.

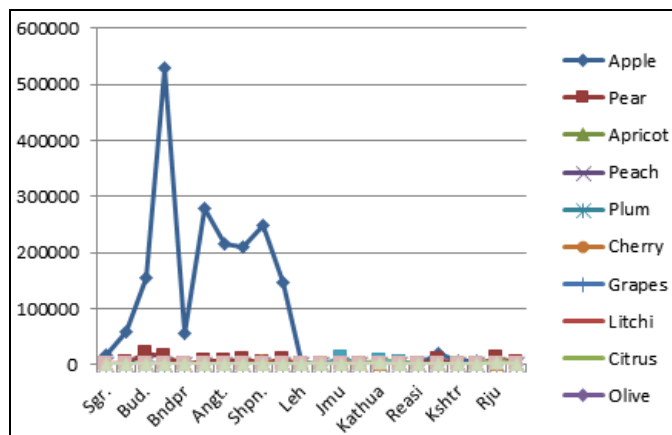


Fig 4: District wise area under fresh fruits in Jammu and Kashmir State for the year 2015-2016 (area in hectares)

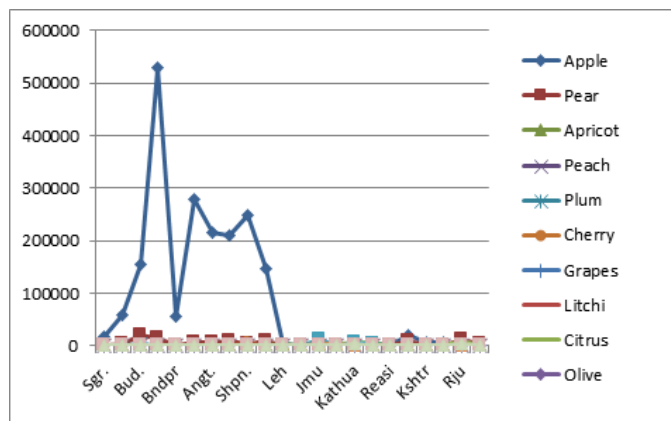
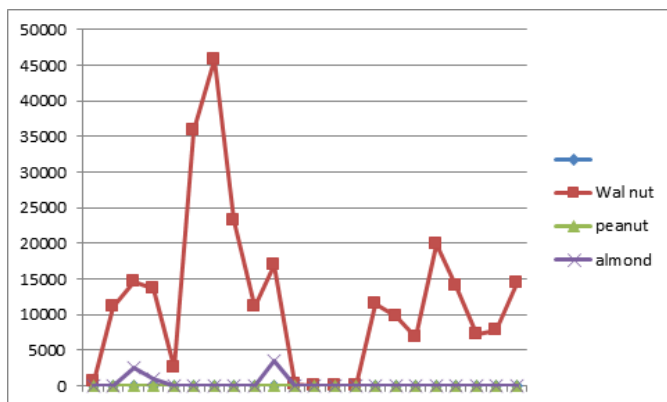
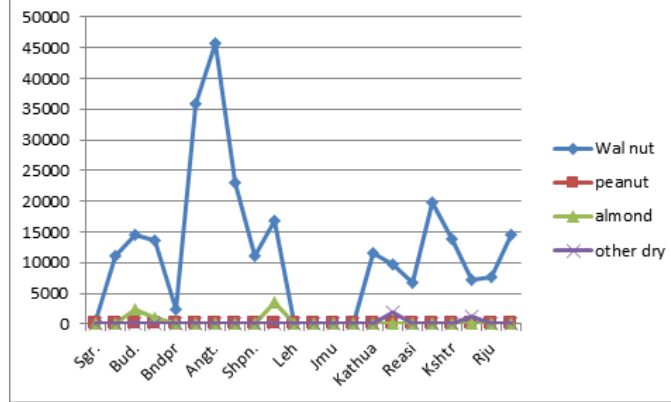


Fig 6: District wise Production of major fresh fruits in Jammu and Kashmir State for the year 2015-2016 (production in mts)



Source: Directorate of Economics and Statistics (J&K) Economic Survey (2015-2016)

Fig 5: District wise area under Dry fruits in Jammu and Kashmir State for the year 2015-2016 (area in hectares)



Source: Directorate of Economics and Statistics (J&K) Economic Survey (2015-2016).

Fig 7: District wise Production of Dry fruits in Jammu and Kashmir State for the year 2015-2016 (production in mts)

Table 5.a. Area under Major fresh and Dry fruits for the year 2016-17 (Area in Hect).																										
S.No	Kind of Fruit	Districts																							Area in hec	
(A) Fresh Fruits	Sgr.	Gdtd	Bdgms.	Rls.	Budpr	Kap.	Angl.	Ksh.	Shpm.	Pl	Leh	Klgt	Total Area	Jmm.	Swaba	Kathua	Udhmpt	Bansi	Doda	Kshtr	Budpr	Raj	Poonch	Total Area	Total H.	
1	Apple	1470	7110	13015	25200	6074	19107	17062	18207	21963	14290	798	526	144828	0	0	810	1230	1101	5913	2880	2840	1281	2091	18146	162971
2	Pear	290	381	1550	600	143	478	1098	943	796	960	3	30	4932	0	17	731	726	307	1389	264	708	1675	1773	7690	14532
3	Apricot	36	119	27	121	37	58	254	111	44	113	792	1516	3224	0	0	38	275	72	291	655	385	508	675	2899	6123
4	Peach	103	188	3	56	42	41	239	131	25	76	4	7	916	16	22	83	280	73	100	166	99	275	585	1089	2615
5	Plum	80	262	454	0	20	46	220	155	36	99	1	1	1373	0	28	72	109	90	101	210	78	580	1397	2665	4038
6	Cherry	475	1078	16	212	52	113	167	39	408	45	1	30	2835	0	0	0	0	0	0	0	0	0	0	0	2835
7	Grapes	0	188	1	16	9	2	0	4	0	1	2	5	228	23	14	16	13	23	0	0	0	4	0	93	321
8	Litchi	0	0	0	0	0	0	0	0	0	0	0	0	0	343	40	371	96	90	0	0	0	0	0	940	940
9	Citrus	0	0	0	11	0	3	0	0	0	0	0	0	34	2400	1480	3038	1640	1882	36	80	3580	406	14542	14556	
10	Olive	0	0	0	10	0	7	0	0	0	0	0	0	17	0	0	0	15	18	241	0	11	31	13	329	346
11	Mango (G)	0	0	0	0	0	0	0	0	0	0	0	0	0	4850	1285	3056	1050	918	0	0	0	680	0	12739	12739
12	Mango (D)	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
13	Ber	0	0	0	0	0	0	0	0	0	0	0	0	0	2677	1208	743	0	118	0	0	0	630	0	5376	5376
14	Amala	0	0	0	0	0	0	0	0	0	0	0	0	0	620	395	593	224	111	0	0	0	44	0	1987	1987
15	Guava	0	0	0	0	0	0	0	0	0	0	0	0	0	675	333	562	385	205	0	0	0	320	0	3480	3480
16	Kiwifruit	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	2	3
17	Papaya	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
18	Strawberry	27	20	0	119	2	0	0	0	0	4	0	3	978	0	0	0	0	0	0	0	0	0	0	0	176
19	Pomegranate	0	11	0	0	1	0	0	0	0	1	0	0	13	0	0	0	0	0	0	0	0	0	0	0	13
20	Loquat	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
21	Quince	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
22	Other Fresh	183	112	91	51	6	11	273	23400	164	6	0	0	1231	686	187	1318	777	371	369	38	1142	1566	2197	8441	9572
Total Fresh		2662	9639	15156	26458	6686	19966	19334	19623	22936	15616	1680	3895	16382	12290	3699	12331	6828	5379	8451	4213	1343	10963	9137	79938	241620
B Dry Fruits																										
1	Walnut	222	1302	3991	3014	1238	8787	14393	5781	5280	6949	49	11	59821	0	0	3271	6540	2706	6480	4650	5210	4370	6991	38318	69339
2	Pistachio	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44	50	6	21	0	0	105	128	474	474
3	Almond	889	63	1667	258	9	13	90	2	15	6668	2	2	6979	0	0	12	19	20	87	0	1	11	0	130	7187
4	Other Dry	0	1	0	30	0	2	11	0	0	0	0	0	41	0	0	0	0	0	0	0	0	0	0	5	48
Total Dry		691	1366	5658	3402	1246	8802	14434	5783	5295	9917	59	17	76941	0	0	3327	6799	2732	6568	4679	5321	4511	7119	38867	90988
Grand Total		3353	14996	20814	29860	7932	28768	33768	25406	28232	25533	1681	2112	24073	12290	3699	15658	11529	8111	13979	8663	18954	15586	14256	118805	338608

Source: Directorate of Horticulture, Jammu and Kashmir.

Table 5.b. Production under Major and dry fruits for the year 2016-17 (production in M. Tones)

S.No	Kind of Fruit	Districts																			(Production in Mts)						
(A) Fresh Fruits	Spr.	Gulab	Bud.	Bt.	Budgr	Spr.	Angt.	Kat.	Shap.	Pal	Leh	Kargil	Total Kas	Jam	Udhm	Kathua	Udhm	Budgr	Bt.	Bud	Kisht	Budm	Kaj	Poonch	Total J&K	Total 18	
1	Apple	17064	97568	132329	380005	64834	273072	188148	207219	237001	139288	4327	1317	1888413	0	0	1589	2800	1794	14827	6700	7300	1802	2309	38421	1726834	
2	Pear	1782	3544	14863	9277	1261	3837	508	7445	3177	8640	9	7	88973	0	22	2648	3300	998	5274	515	1700	15000	4800	38257	88529	
3	Apricot	31	506	186	431	85	337	752	480	62	900	1823	3755	9387	0	0	47	470	101	423	1200	510	700	600	4211	13588	
4	Peach	282	843	0	377	79	303	829	708	38	637	7	5	3489	47	60	114	380	137	225	300	179	540	620	2812	6221	
5	Plum	218	1811	1368	0	19	327	606	789	47	891	1	0	8973	0	75	82	175	180	138	390	130	1360	1750	4249	7812	
6	Cherry	1484	2272	0	3788	42	712	262	109	1413	518	2	6	8283	0	0	0	0	0	0	0	0	0	0	0	8283	
7	Grapes	0	358	0	103	10	5	0	5	0	0	8	5	488	20	22	28	22	2	0	0	0	0	0	153	648	
8	Litchi	0	0	0	0	0	0	0	0	0	0	0	0	1100	69	822	100	164	0	0	0	0	0	0	2315	2315	
9	Citrus	0	0	0	1	0	0	0	0	0	0	0	0	1	5812	2900	7417	6250	1731	44	0	62	9500	625	34191	34192	
10	Olive	0	0	0	1	0	190	0	0	0	0	0	0	191	0	0	0	0	0	0	0	25	2	0	33	224	
11	Mango (G) a.	0	0	0	0	0	0	0	0	0	0	0	0	0	11000	2200	5895	2800	1205	0	0	0	0	1050	24158	24158	
12	Mango (G) b.	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	
13	Bar	0	0	0	0	0	0	0	0	0	0	0	0	0	3800	4200	1720	0	109	0	0	0	950	0	18779	18779	
14	Anar	0	0	0	0	0	0	0	0	0	0	0	0	0	1350	670	888	370	78	0	0	0	140	0	3495	3495	
15	Guava	0	0	0	0	0	0	0	0	0	0	0	0	0	1600	1350	1387	1650	818	0	0	0	2300	0	9153	9153	
16	Kiwi	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	
17	Papaya	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	
18	Strawberry	341	2	0	43	1	0	0	0	0	0	0	1	388	0	0	0	0	0	0	0	0	0	0	0	388	
19	Pomegranate	0	2	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	
20	Loushet	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	
21	Quince	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	
22	Other Fresh	1180	771	715	158	2	1182	287	1136	288	117	0	0	8940	1810	375	3360	0	572	717	45	810	5200	1850	14779	28829	
Total		22376	49580	148779	791688	66314	263983	195632	217985	242064	173953	6279	8113	1788563	26429	11943	36807	18387	7895	21773	8718	18793	34412	12684	17678	284320	
(B) Dry Fruits																											
1	Walnut	606	11155	14178	9978	2883	37423	41763	27279	12924	18184	108	12	178853	0	0	11604	9910	6965	22548	12000	7000	7800	14500	92227	248180	
2	Peanut	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	2	1	0	0	0	62	8	86	86	
3	Almond	18	19	1886	553	8	0	12	1	36	6380	1	1	6388	0	0	3	1	1	0	0	0	0	0	0	6389	6389
4	Other Dry	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	
Total Dry		624	11174	16064	10539	2891	37436	41776	27288	12960	18196	109	13	186443	0	0	11617	9912	6966	22549	12000	7000	7800	14500	92237	248186	
Grand Total		23000	60754	164843	801688	69205	301419	237508	247985	254964	173966	6388	8126	1905006	26429	11943	36820	18387	7895	21773	8718	18793	34412	12684	17678	284326	

Source: Directorate of Horticulture, Jammu and Kashmir.

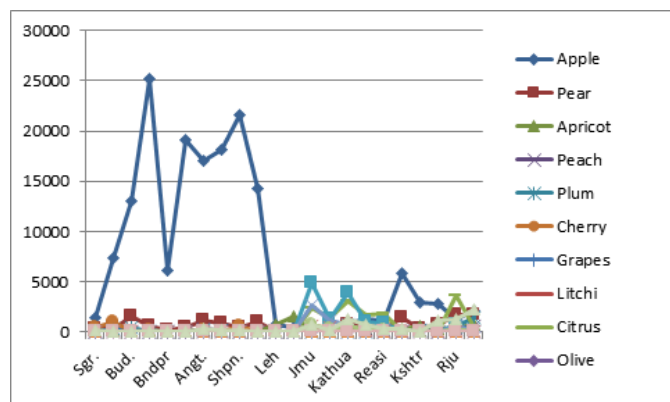


Fig 8: District wise area under fresh fruits in Jammu and Kashmir State for the year 2016-2017 (area in hectares)

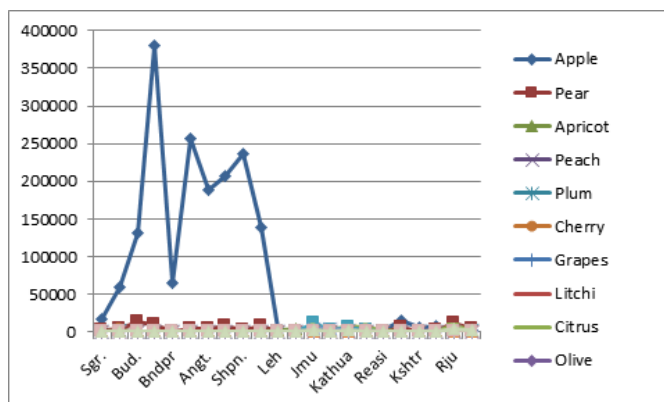
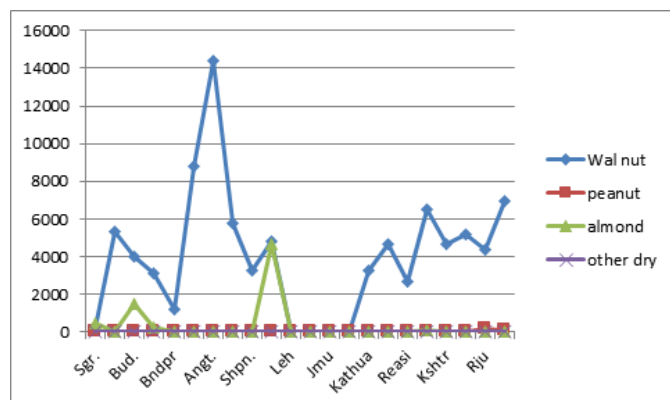
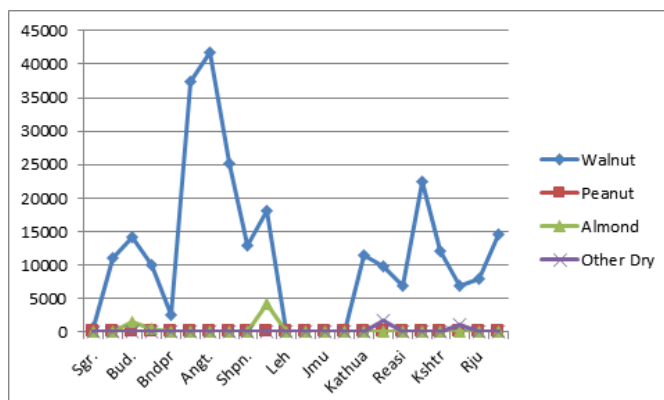


Fig 10: District wise Production of major fresh fruits in Jammu and Kashmir State for the year 2016-2017 (production in mts)



Source: Directorate of Economics and Statistics (J&K) Economic Survey (2016-2017).

Fig 9: District wise area under Dry fruits in Jammu and Kashmir State for the year 2016-2017 (area in hectares)



Source: Directorate of Economics and Statistics (J&K) Economic Survey (2016-2017).

Fig 11: District wise Production of Dry fruits in Jammu and Kashmir State for the year 2016-2017 (production in mts)

Table 2.a and 2.b shows that the area under fruits has increased by 5.23% in the year 2011-12 year whereas the fruit production has increased by 26.5% in the same year. Table 5.a & 5.b depicts that the total production of fresh fruits for the year 2016-17 is 195935 (Mts.) and dry fruits is 275629 (Mts.). Area under fruit industry in J&K state has increased from 2.95 lakh hectares in 2007-2008 to 3.38 lakh hectares in 2015-16. The production is increased from 16.36 lakh (Mts.) in 2007-08 to 24.94 lakh (Mts.) in 2015-16. (Economic survey of J&K state 2015-16). The data depicts that both area and production of horticulture crops seems to be increasingly simultaneously. The state and central government has taken many initiatives towards market intervention such as establishment of fruit mandies, technological support, and research extension, provision for support price, awareness options, publicity inputs and cold storage facilities. Continuous efforts of the Horticulture department, Research organizations, Hi-Tec facilities for storage and agro-climatic conditions makes the investment in horticulture sector with worth increase in area and production.

Role of government programmes in strengthening Horticulture

The state as well as central Govt. has taken various initiatives for strengthening the horticulture sector so that socio-economic status of the people linked with this sector will be improved. The horticulture sector has been streamlined on modern and scientific lines for upgrading its infrastructure on hygienic trends. The various programmes initiated by the state government for the enhancement of horticulture department are discussed below.

1. **Fruit and vegetable mandies:** Fruit and vegetable mandies scheme for the development of horticulture in J&K state was started in the year 1997-1998. On the first phase, fruit markets at shopian, Pulwama, Kulgam and Handwara were constructed and made functional whereas at Baramulla, Kupwara, Batingoo, Batote and Rajouri are under construction. In the second phase, four satellite markets at Poonch, Akhnoor, Doda and Ganderbal were constructed. In the third phase, one terminal market at Jabilpora (Anantnag) had been constructed. At present three main fruit and vegetable markets are operating at Parim-pora-Srinagar, Now-Pora-Sopore and Narwal Jammu.
2. **Plant protection Machinery:** Plant protection machinery is an important component of all the programmes and plays a vital role in improving the production and quality of fruits. The aim of this scheme is providing plant protection machinery tools to the farmers and orchardists on subsidized costs.
3. **Post-Harvest Management:** The horticulture crops such as fruits, flowers, and vegetables require special attention for their harvesting, packaging, storage and processing operations. The department is keenly interesting on development of post-harvest infrastructure like cold storage, pack houses, transport facility and intensive training programme on post-harvest management to maintain the 30% loss productivity of horticulture crops.
4. **Technology Mission:** Technology mission an integrated

development of horticulture was first launched in Sikkim for the IXth five year-plan and then was extended to the states of Jammu & Kashmir, Himachal Pradesh and Uttarakhand during the 10th five year plan. The main aim of this scheme is to establish various governmental programmes to ensure adequate, appropriate, timely and concurrent attention towards the production; quality, post harvesting and consumption plain. The scheme covers all the horticulture crops including floriculture, sericulture and vegetables as well.

5. **Rashtriya Krishi Vikas Yojana:** The RKVY aims at achieving 4% annual growth in the agriculture sector during the XI plan period, by ensuring a holistic development of Agriculture and Allied sectors. The main objectives of the scheme are, to provide flexibility and autonomy to states in the process of planning and executing agriculture and allied sector, to increase public investment in agriculture and allied sectors, to ensure the preparation of agriculture plans for the districts and states based on agro-climatic conditions, technology and natural resources. Under this scheme about Rs 80 crores were spent in J&K during 2012-13 for the development of agriculture and allied sectors. Different measures were taken for the development of infrastructure to increase the agricultural production. ("RKVY- India Development Gateway")

Limitations of horticulture in J&K state

The horticulture sector of J&K state suffers a lot due to the supply of low grade pesticides and fungicides which affects the fruit industry as well. The uneven distribution of rainfall, absence of irrigation facilities and lack of water harvesting measures adversely affects the production and quality of fruits. There is no organized system to produce virus free material, to control leaching nutrients and soil infertility which results in very low yields of orchards.

Future strategies for the development of horticulture sector

The Govt. of J&K has to play a vital role for improving the healthy, virus free, high yielding and quality planting material through its own sources as well as public and private sectors. To boost the horticulture sector, it demands extensive training programmes for growers as well as workers in specified activities such as water management, soil management, nursery management, integrated pest management, layout and maintenance of high density plantation. Post harvest losses of fruits are as high as 30-40 percent, to control these losses pre-harvest treatment and post-harvest management programmes should be used. The horticulture industry of state should have to face competition in the domestic as well as export markets, therefore emphasis should be given to cultivate varieties having high standard export value. Markets related to horticulture should be linked market information service through internet.

The state govt. organized machinery 'cum seed festival' to benefit the farmers and boost the overall agriculture sector of valley in Srinagar. (ANI/Srinagar (J&K), Jul 05, 2017). The event was organized by authorities of Sheri Kashmir

University of Agriculture Science and Technology (SKAUST) in the university campus. During this festival, farmers interacted with the agricultural scientists, who gave them live demonstrations and showed some short films regarding the present technology and schemes. Thousands of people including growers, farmers, and entrepreneurs were present at the event. Both agriculture and horticulture being the backbone of the state economy makes the implementation of such events, necessary.

Conclusion

To enhance the growth of horticulture in Kashmir it needs some critical management inputs such as development of research in genetics, storage, biotechnology, post-harvest handling, integrated systems, marketing and consumer education. Exports, technological setup up-gradation and its associated institutions are the thrust areas for future development of the horticulture sector. The valley of Kashmir can emerge as a major produce of fruit sector due to better market facilities for its agro exports, which are dependent on the domestic as well as foreign competitive technologies. The development in fruit production help in overall growth of the economy, creating job and employment opportunities, upliftment of the small and marginal peasants and farmers with positive implications on income and employment. Horticultural crops should be encouraged by hybridization of horticultural with non-horticultural crops which will yield more good quality food, more income and better soil health. Development of horticultural sector, needs a set of basic production factors such as post-harvest infrastructure, crop management infrastructure, entrepreneurial management, logistical infrastructure, supporting financial infrastructure, soil infrastructure and water management infrastructure. To encourage the demands of horticultural sector, there is the need to improve the post-harvest operations related to handling, storage and marketing of fresh and processed produce. The project for transfer of technology on vegetative propagation to increase the yield of crops with the help of food and agricultural organization, an organ of United Nations has been implemented.

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