

**Republic of India**

**State of Himachal Pradesh, Department of Agriculture**

**THE PREPARATORY SURVEY  
ON  
HIMACHAL PRADESH CROP  
DIVERSIFICATION PROMOTION  
PROJECT PHASE-II (HPCDP II)  
IN  
REPUBLIC OF INDIA**

**FINAL REPORT  
VOLUME-II  
ATTACHMENTS**

**March 2021**

**Japan International Cooperation Agency (JICA)**

**Nippon Koei Co., Ltd.**

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**THE PREPARATORY SURVEY  
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**FINAL REPORT**

**LIST OF VOLUMES**

**VOLUME-I      MAIN REPORT**

Project Location Map, Photographs, Summary, Table of Contents  
List of Abbreviations and Local Terms, Measurement Units and Currency

**Chapter 1 Introduction**

**Chapter 2 Natural and Socio-Economic Status of the Survey Area**

**Chapter 3 Present Condition of Agriculture Sector in the Survey Area**

**Chapter 4 Lessons Learned from Phase I and Overall Review of DPR**

**Chapter 5 Proposed Subprojects and Result of Sample Survey**

**Chapter 6 Outline of the Proposed Project Scope**

**Chapter 7 Implementation Plan**

**Chapter 8 Project Cost**

**Chapter 9 Project Evaluation**

**Chapter 10 Environmental and Social Considerations**

**Chapter 11 Recommendations**

**VOLUME-II      ATTACHMENTS**

**Attachment for Chapter 3**

**Attachment for Chapter 5**

**Attachment for Chapter 6**

**Attachment for Chapter 7**

**Attachment for Chapter 8**

**Attachment for Chapter 9**

**Attachment for Chapter 10**

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FINAL REPORT  
VOLUME-II ATTACHMENTS**

Table of Contents

**Chapter 3 Present Condition of Agriculture Sector in the Survey Area**

Attachment 3.4.1	The collected information from APMCs and CAs	AT 3- 1
Attachment 3.4.2	A State of Distribution of Major Vegetables and Apple in Himachal Pradesh (Estimation)	AT 3- 9
Attachment 3.4.3	Arrival and Price of APMC Markets in Himachal Pradesh by Districts (Ave. 2015-19)	AT 3-13
Attachment 3.4.4	Arrival and Price of Azadpur Market (Ave. 2015-19)	AT 3-31

**Chapter 5 Proposed Subprojects and Result of Sample Survey**

Attachment 5.1.1	Basic Data on Agricultural Components of 296 sub-project	AT 5- 1
Attachment 5.3.1	Photo Album in the sample survey	AT 5-15
Attachment 5.3.2	Typical Land Holding Size in Sub-projects selected in the Sample Survey	AT 5-61
Attachment 5.3.3	Cropping Pattern in Sub-projects selected in the Sample Survey	AT 5-62
Attachment 5.3.4	Annual Farm and Non-Farm Income in Sub-projects selected in the Sample in the Sample Survey	AT 5-63
Attachment 5.3.5	Spread of Farm Machinery, Transportation Means, and Irrigation Facilities etc. in the Sample Survey	AT 5-64
Attachment 5.3.6	Expectation to the Project	AT 5-65
Attachment 5.3.7	Supply of Farm Inputs in the sample survey	AT 5-66
Attachment 5.3.8	Constraints for Food Grains	AT 5-67
Attachment 5.3.9	Constraints for Vegetables	AT 5-68
Attachment 5.3.10	Constraints for Fruit Trees	AT 5-69

**Chapter 6 Outline of the Proposed Project Scope**

Attachment 6.3.1	Long List of Subprojects	AT 6- 1
Attachment 6.5.1	Mandi Modernization Plan	AT 6-23
Attachment 6.6.1	Draft Plan of Overseas Training in Japan	AT 6-24

**Chapter 7 Implementation Plan**

Attachment 7.2.1(a)	Staffing of PMU (Non-eligible)	AT 7- 1
Attachment 7.2.1(b)	Staffing of PMU (Eligible)	AT 7- 4
Attachment 7.2.2	Draft TOR Consultant	AT 7- 6

**Chapter 8 Project Cost**

Attachment 8.2.1 Cost Breakdown of Each Component ..... AT 8- 1  
Attachment 8.2.2 List of Unit Price for Infrastructure Development Component ..... AT 8- 5  
Attachment 8.2.3 List of Unit Price for Farmers’ support Component ..... AT 8-24  
Attachment 8.2.4 List of Unit Price for Institutional Development ..... AT 8-43

**Chapter 9 Project Evaluation**

Attachment 9.3.1 Economic Evaluation ..... AT 9- 1  
Attachment 9.5.1 Crop Budget ..... AT 9- 8  
Attachment 9.5.2 Economic benefit ..... AT 9-11  
Attachment 9.6.1 Cash Flow and Calculation of EIRR and BC ..... AT 9-12  
Attachment 9.7.1 Farm Economic Analysis ..... AT 9-13  
Attachment 9.10.1 Risk Management Framework ..... AT 9-14

**Chapter 10 Environmental and Social Considerations**

Attachment 10.1.1 National State Level Legal Framework for Environmental and Social  
Considerations ..... AT 10- 1  
Attachment 10.2.1 List of Project requiring prior Environment Clearance or Prior Environment  
Permission ..... AT 10- 6  
Attachment 10.2.2 Stages and procedures for EC as per the draft EIA Notification 2020 ..... AT 10-15  
Attachment 10.4.1 Safeguard Flow ..... AT 10-19  
Attachment 10.4.2 Draft ESMS Checklist ..... AT 10-20  
Attachment 10.5.1 Draft Environmental and Social Assessment Framework (ESAF) ..... AT 10-25  
Attachment 10.5.2 Environmental Monitoring Forms ..... AT 10-66  
Attachment 10.6.1 Environmental Checklist ..... AT 10-74

# *Attachment for Chapter 3*

*Present Condition of Agriculture Sector  
in the Survey Area*

**Attachment-3.4.1 The collected information from APMCs and CAs:**

Cabbage

Estimated Distribution Volume in % by APMCs

No	APMC Area	Distribution Channel (%)					
		Farmer ⇒ APMC Markets ⇒ Local Markets	Farmer ⇒ APMC Markets ⇒ Outer State	Farmer ⇒ Local Markets/ Consumers	Farmer ⇒ Outer Buyers (Supply to Other States)	Farmer ⇒ Local Processing Industries	From Other States
1	Bilaspur	70	0	20	0	0	10
2	Chamba	6.8	0	0	0	0	93.2
3	Hamirpur	0	0	3	0	0	97
4	Kangra	10	0	30	0	0	60
5	Kullu and L.Spiti	20	50	15	15	0	0
6	Mandi	10	28	0	57	0	5
7	Shimla & Kinnaur	4	96	1	0	0	0
8	Sirmaur	20	50	15	15	0	0
9	Solan	30	50	0	20	0	0
10	Una	70	0	20	0	0	10

Source: Interview Survey by JICA Survey Team

Estimated Distribution Volume in % by CAs

No	APMC Area	Buying Channel (%)				Selling Channel (%)			
		Farmers to Mandi	Farmer Groups to Mandi	Rural Collectors to Mandi	From Other States	Mandi to Local Retailers	Mandi to Local Middlemen	Mandi to Inter-state Traders	Mandi to Supermarkets /Chain stores/Exporter
1	Bilaspur	5	0	0	95	100	0	0	0
2	Chamba	7	0	0	93	100	0	0	0
3	Hamirpur	0	0	0	100	98	0	2	0
4	Kangra	8	0	0	92	100	0	0	0
5	Kullu and L.Spiti	85	0	0	15	15	0	85	0
6	Mandi	62	0	33	5	9	1	90	0
7	Shimla & Kinnaur	100	0	0	0	4	1	96	0
8	Sirmaur	20	5	75	0	60	30	10	0
9	Solan	20	50	30	0	20	5	65	10
10	Una	65	4	20	11	95	0	5	0

Source: Interview Survey JICA Survey Team

## Capsicum

## Estimated Distribution Volume in % by APMCs

No	APMC Area	Distribution Channel (%)					
		Farmer ⇒ APMC Markets ⇒ Local Markets	Farmer ⇒ APMC Markets ⇒ Outer State	Farmer ⇒ Local Markets/ Consumers	Farmer ⇒ Outer Buyers (Supply to Other States)	Farmer ⇒ Local Processing Industries	From Other States
1	Bilaspur	60	0	22	10	0	8
2	Chamba	1.7	0	0	0	0	98.3
3	Hamirpur	3	0	3	0	0	94
4	Kangra	10	0	30	0	0	60
5	Kullu and L.Spiti	40	50	5	5	0	0
6	Mandi	39	48	4	4	0	5
7	Shimla & Kinnaur	4	96	1	0	0	0
8	Sirmaur	40	50	5	5	0	0
9	Solan	10	60	0	30	0	0
10	Una	30	35	15	10	0	10

Source: Interview Survey by JICA Survey Team

## Estimated Distribution Volume in % by CAs

No	APMC Area	Buying Channel (%)				Selling Channel (%)			
		Farmers to Mandi	Farmer Groups to Mandi	Rural Collectors to Mandi	From Other States	Mandi to Local Retailers	Mandi to Local Middlemen	Mandi to Inter-state Traders	Mandi to Supermarkets /Chain stores/Exporter
1	Bilaspur	10	5	0	85	100	0	0	0
2	Chamba	2	0	0	98	100	0	0	0
3	Hamirpur	3	0	0	97	95	0	5	0
4	Kangra	5	0	0	95	100	0	0	0
5	Kullu and L.Spiti	40	0	0	60	50	0	50	0
6	Mandi	80	0	15	5	45	0	55	0
7	Shimla & Kinnaur	100	0	0	0	4	1	95	0
8	Sirmaur	10	2	88	0	10	10	80	0
9	Solan	25	15	60	0	25	15	60	0
10	Una	40	2	30	28	85	7	3	0

Source: Interview Survey by JICA Survey Team

## Cauliflower

## Estimated Distribution Volume in % by APMCs

No	APMC Area	Distribution Channel (%)					
		Farmer ⇒ APMC Markets ⇒ Local Markets	Farmer ⇒ APMC Markets ⇒ Outer State	Farmer ⇒ Local Markets/ Consumers	Farmer ⇒ Outer Buyers (Supply to Other States)	Farmer ⇒ Local Processing Industries	From Other States
1	Bilaspur	75	0	20	5	0	0
2	Chamba	6.7	0	0	0	0	93.3
3	Hamirpur	10	0	10	0	0	80
4	Kangra	10	0	30	0	0	60
5	Kullu and L.Spiti	10	60	5	20	0	5
6	Mandi	29	29	0	37	0	5
7	Shimla & Kinnaur	3	96	1	0	0	0
8	Sirmaur	10	60	5	20	0	5
9	Solan	30	60	0	10	0	0
10	Una	60	0	20	20	0	0

Source: Interview Survey by JICA Survey Team

## Estimated Distribution Volume in % by CAs

No	APMC Area	Buying Channel (%)				Selling Channel (%)			
		Farmers to Mandi	Farmer Groups to Mandi	Rural Collectors to Mandi	From Other States	Mandi to Local Retailers	Mandi to Local Middlemen	Mandi to Inter-state Traders	Mandi to Supermarkets /Chain stores/Exporter
1	Bilaspur	5	3	92	0	100	0	0	0
2	Chamba	7	0	0	93	100	0	0	0
3	Hamirpur	10	0	0	90	95	0	5	0
4	Kangra	5	0	0	95	100	0	0	0
5	Kullu and L.Spiti	90	0	0	10	10	0	90	0
6	Mandi	65	5	25	5	30	0	70	0
7	Shimla & Kinnaur	100	0	0	0	4	0	96	0
8	Sirmaur	35	3.5	61.5	0	90	8	2	0
9	Solan	20	20	60	0	20	10	70	0
10	Una	60	40	25	21	95	0	5	0

Source: Interview Survey by JICA Survey Team



French bean

Estimated Distribution Volume in % by APMCs

No	APMC Area	Distribution Channel (%)					
		Farmer ⇒ APMC Markets ⇒ Local Markets	Farmer ⇒ APMC Markets ⇒ Outer State	Farmer ⇒ Local Markets/ Consumers	Farmer ⇒ Outer Buyers (Supply to Other States)	Farmer ⇒ Local Processing Industries	From Other States
1	Bilaspur	65	0	30	0	0	5
2	Chamba	1.6	0	0	0	0	98.4
3	Hamirpur	0	0	2	0	0	98
4	Kangra	5	0	40	0	0	55
5	Kullu and L.Spiti	30	50	10	10	0	0
6	Mandi	19	38	0	38	0	5
7	Shimla & Kinnaur	5	95	1	0	0	0
8	Sirmaur	30	50	10	10	0	0
9	Solan	10	60	0	30	0	0
10	Una	15	70	10	0	0	5

Source: Interview Survey by JICA Survey Team

Estimated Distribution Volume in % by CAs

No	APMC Area	Buying Channel (%)				Selling Channel (%)			
		Farmers to Mandi	Farmer Groups to Mandi	Rural Collectors to Mandi	From Other States	Mandi to Local Retailers	Mandi to Local Middlemen	Mandi to Inter-state Traders	Mandi to Supermarkets /Chain stores/Exporter
1	Bilaspur	10	0	0	90	100	0	0	0
2	Chamba	2	0	0	98	100	0	0	0
3	Hamirpur	0	0	0	100	100	0	0	0
4	Kangra	6	0	0	94	100	0	0	0
5	Kullu and L.Spiti	60	0	0	40	45	0	0	55
6	Mandi	81	0	14	5	20	0	80	0
7	Shimla & Kinnaur	100	0	0	0	4	1	95	0
8	Sirmaur	5	1	94	0	65	25	10	0
9	Solan	25	20	55	0	25	20	50	5
10	Una	45	3	25	27	90	0	10	0

Source: Interview Survey by JICA Survey Team

Peas

Estimated Distribution Volume in % by APMCs

No	APMC Area	Distribution Channel (%)					
		Farmer ⇒ APMC Markets ⇒ Local Markets	Farmer ⇒ APMC Markets ⇒ Outer State	Farmer ⇒ Local Markets/ Consumers	Farmer ⇒ Outer Buyers (Supply to Other States)	Farmer ⇒ Local Processing Industries	From Other States
1	Bilaspur	60	0	37	3	0	0
2	Chamba	2.1	0	0	0	0	97.9
3	Hamirpur	2	0	5	0	0	93
4	Kangra	5	0	30	0	0	65
5	Kullu and L.Spiti	30	50	10	10	0	0
6	Mandi	15	30	0	50	0	5
7	Shimla & Kinnaur	4.5	95	0.5	0	0	0
8	Sirmaur	30	50	20	0	0	0
9	Solan	30	50	20	0	0	0
10	Una	15	30	15	0	0	40

Source: Interview Survey by JICA Survey Team

Estimated Distribution Volume in % by CAs

No	APMC Area	Buying Channel (%)				Selling Channel (%)			
		Farmers to Mandi	Farmer Groups to Mandi	Rural Collectors to Mandi	From Other States	Mandi to Local Retailers	Mandi to Local Middlemen	Mandi to Inter-state Traders	Mandi to Supermarkets /Chain stores/Exporter
1	Bilaspur	3	0	97	0	95	0	5	0
2	Chamba	2	0	0	98	100	0	0	0
3	Hamirpur	5	0	0	95	100	0	0	0
4	Kangra	3	0	0	97	100	0	0	0
5	Kullu and L.Spiti	85	0	0	15	15	0	85	0
6	Mandi	32	0	63	5	16	0	84	0
7	Shimla & Kinnaur	100	0	0	0	4	1	95	0
8	Sirmaur	20	2	78	0	80	20	0	0
9	Solan	20	30	50	0	10	10	60	10
10	Una	50	4	26	20	70	3	27	0

Source: Interview Survey by JICA Survey Team

## Potato

## Estimated Distribution Volume in % by APMCs

No	APMC Area	Distribution Channel (%)					
		Farmer ⇒ APMC Markets ⇒ Local Markets	Farmer ⇒ APMC Markets ⇒ Outer State	Farmer ⇒ Local Markets/ Consumers	Farmer ⇒ Outer Buyers (Supply to Other States)	Farmer ⇒ Local Processing Industries	From Other States
1	Bilaspur	40	0	60	0	0	0
2	Chamba	29.5	0	0	0	0	70.5
3	Hamirpur	0	0	0	0	0	100
4	Kangra	10	0	30	0	0	60
5	Kullu and L.Spiti	30	50	10	10	0	0
6	Mandi	25	10	0	60	0	5
7	Shimla & Kinnaur	5	94	1	0	0	0
8	Sirmaur	25	0	30	45	0	0
9	Solan	30	30	0	40	0	0
10	Una	25	0	30	45	0	0

Source: Interview Survey by JICA Survey Team

## Estimated Distribution Volume in % by CAs

No	APMC Area	Buying Channel (%)				Selling Channel (%)			
		Farmers to Mandi	Farmer Groups to Mandi	Rural Collectors to Mandi	From Other States	Mandi to Local Retailers	Mandi to Local Middlemen	Mandi to Inter-state Traders	Mandi to Supermarkets /Chain stores/Exporter
1	Bilaspur	7	0	93	0	100	0	0	0
2	Chamba	30	0	0	70	100	0	0	0
3	Hamirpur	0	0	0	100	100	0	0	0
4	Kangra	15	0	0	85	100	0	0	0
5	Kullu and L.Spiti	10	0	0	90	90	0	10	0
6	Mandi	64	0	31	5	27	0	73	0
7	Shimla & Kinnaur	100	0	0	0	5	1	94	0
8	Sirmaur	30	3	67	0	90	10	0	0
9	Solan	30	25	45	0	20	10	70	0
10	Una	45	3	37	15	85	5	10	0

Source: Interview Survey by JICA Survey Team

Tomato

Estimated Distribution Volume in % by APMCs

No	APMC Area	Distribution Channel (%)					
		Farmer ⇒ APMC Markets ⇒ Local Markets	Farmer ⇒ APMC Markets ⇒ Outer State	Farmer ⇒ Local Markets/ Consumers	Farmer ⇒ Outer Buyers (Supply to Other States)	Farmer ⇒ Local Processing Industries	From Other States
1	Bilaspur	60	10	20	10	0	0
2	Chamba	14	0	0	0	0	86
3	Hamirpur	8	0	10	0	0	82
4	Kangra	10	5	25	0	0	65
5	Kullu and L.Spiti	25	45	10	15	5	0
6	Mandi	10	25	0	60	0	5
7	Shimla & Kinnaur	10	85	5	0	0	0
8	Sirmaur	25	45	10	15	5	0
9	Solan	10	60	0	30	0	0
10	Una	50	20	20	10	0	0

Source: Interview Survey by JICA Survey Team

Estimated Distribution Volume in % by CAs

No	APMC Area	Buying Channel (%)				Selling Channel (%)			
		Farmers to Mandi	Farmer Groups to Mandi	Rural Collectors to Mandi	From Other States	Mandi to Local Retailers	Mandi to Local Middlemen	Mandi to Inter-state Traders	Mandi to Supermarkets /Chain stores/Exporter
1	Bilaspur	30	5	2	63	90	5	5	0
2	Chamba	14	0	0	86	100	0	0	0
3	Hamirpur	8	0	0	92	96	0	4	0
4	Kangra	10	0	0	90	100	0	0	0
5	Kullu and L.Spiti	50	0	0	50	10	0	90	0
6	Mandi	73	0	22	5	12	0	88	0
7	Shimla & Kinnaur	40	20	40	0	10	10	80	0
8	Sirmaur	50	5	45	0	10	10	80	0
9	Solan	40	20	40	0	10	10	80	0
10	Una	46	5	27	22	82	4	14	9

Source: Interview Survey by JICA Survey Team

## Apple

## Estimated Distribution Volume in % by APMCs

No	APMC Area	Distribution Channel (%)					
		Farmer ⇒ APMC Markets ⇒ Local Markets	Farmer ⇒ APMC Markets ⇒ Outer State	Farmer ⇒ Local Markets/ Consumers	Farmer ⇒ Outer Buyers (Supply to Other States)	Farmer ⇒ Local Processing Industries	From Other States
1	Bilaspur	100	0	0	0	0	0
2	Chamba	0.9	0	0	0	0	99.1
3	Hamirpur	0	0	0	0	0	100
4	Kangra	0	0	0	0	0	100
5	Kullu and L.Spiti	1	50	0	45	4	0
6	Mandi	0	33	0	57	10	0
7	Shimla & Kinnaur	1	44	0	66	0	0
8	Sirmaur	25	45	10	15	5	0
9	Solan	10	90	0	0	0	0
10	Una	78	0	15	0	0	7

Source: Interview Survey by JICA Survey Team

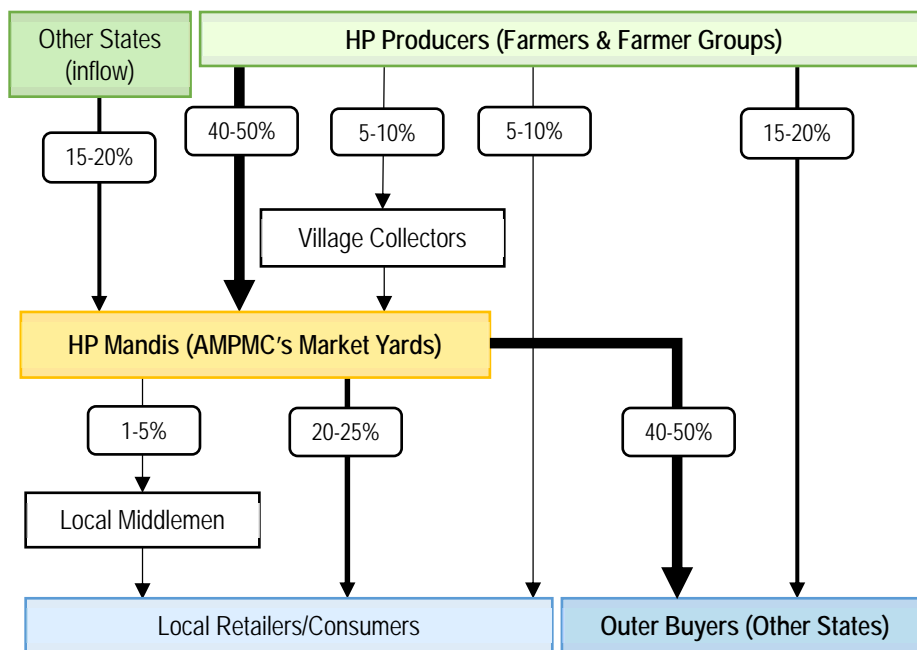
## Estimated Distribution Volume in % by CAs

No	APMC Area	Buying Channel (%)				Selling Channel (%)			
		Farmers to Mandi	Farmer Groups to Mandi	Rural Collectors to Mandi	From Other States	Mandi to Local Retailers	Mandi to Local Middlemen	Mandi to Inter-state Traders	Mandi to Supermarkets /Chain stores/Exporter
1	Bilaspur	0	0	0	100	95	0	5	0
2	Chamba	1	0	0	99	100	0	0	0
3	Hamirpur	0	0	0	100	100	0	0	0
4	Kangra	0	0	0	100	100	0	0	0
5	Kullu and L.Spiti	100	0	0	0	5	0	95	0
6	Mandi	100	0	0	0	0	10	90	0
7	Shimla & Kinnaur	95	0	5	0	2	3	95	0
8	Sirmaur	90	0	5	5	90	10	0	0
9	Solan	95	0	5	0	2	3	95	0
10	Una	2	2	3	93	95	0	5	5

Source: Interview Survey by JICA Survey Team

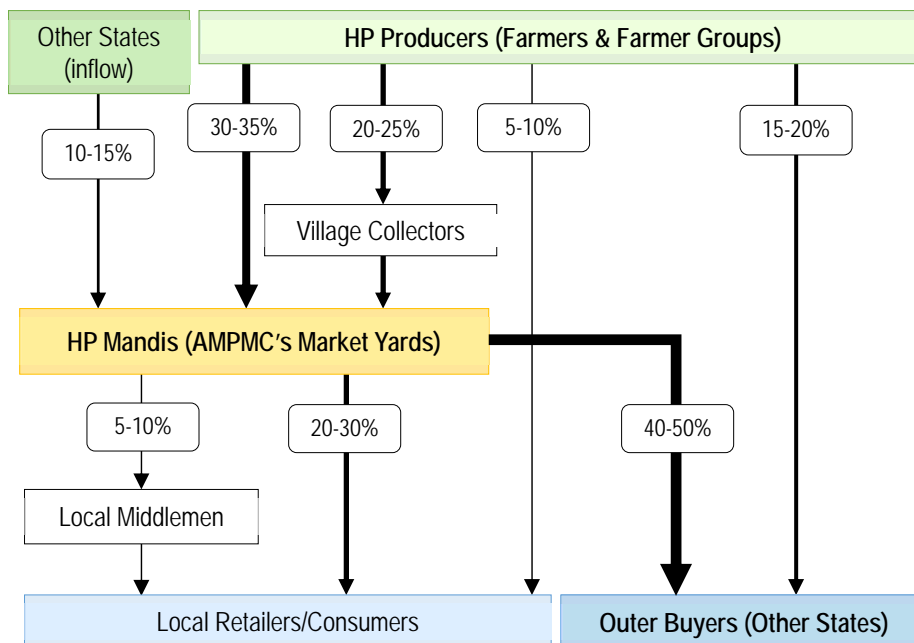
**Attachment 3.4.2 A State of Distribution of Major Vegetables and Apple in Himachal Pradesh (Estimation)**

1. Cabbage



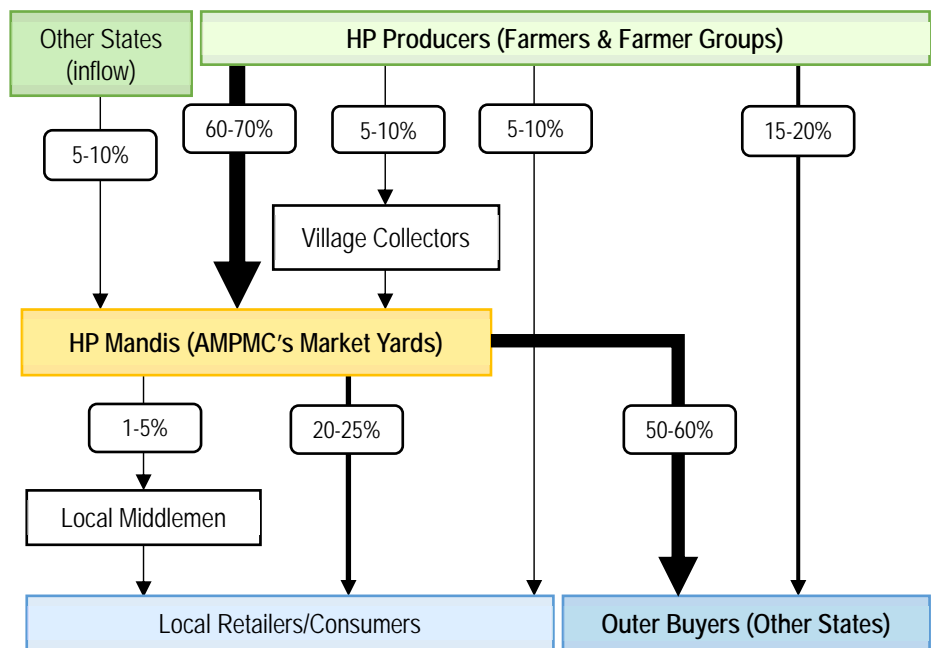
Source: Survey Team based on collected information

2. Capsicum



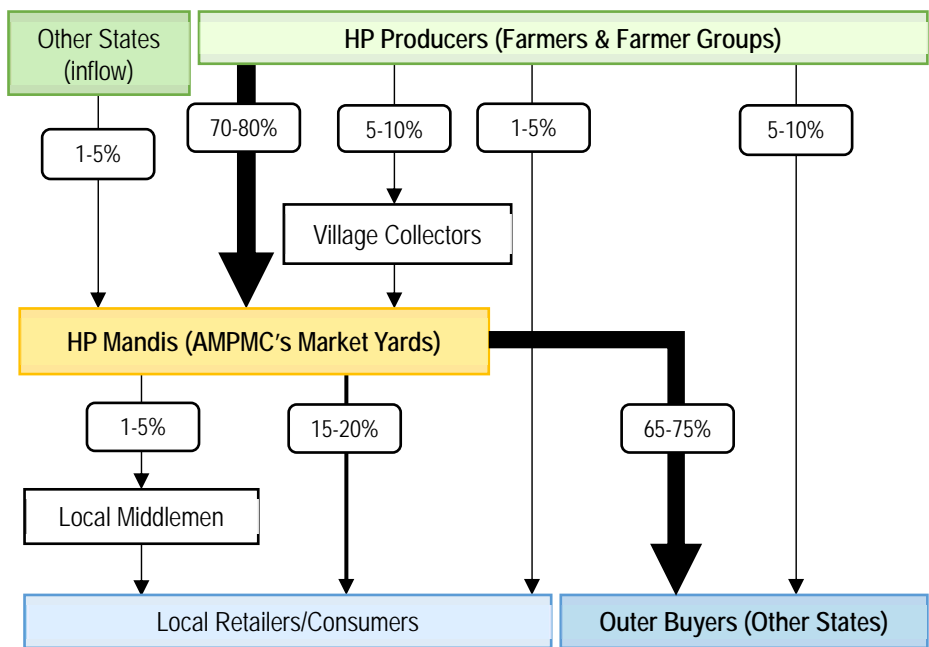
Source: Survey Team based on collected information

3. Cauliflower



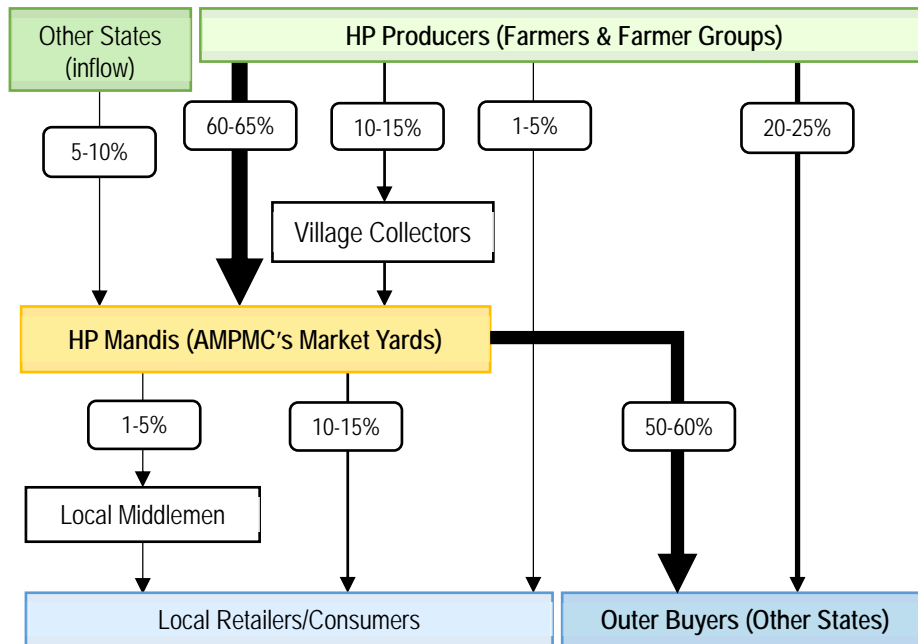
Source: Survey Team based on collected information

4. French bean



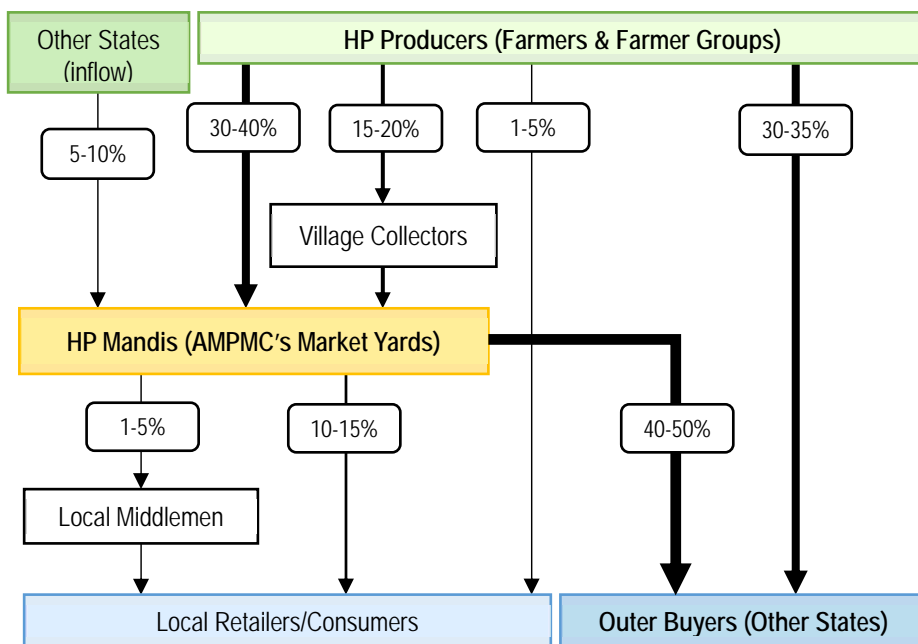
Source: Survey Team based on collected information

5. Peas



Source: Survey Team based on collected information

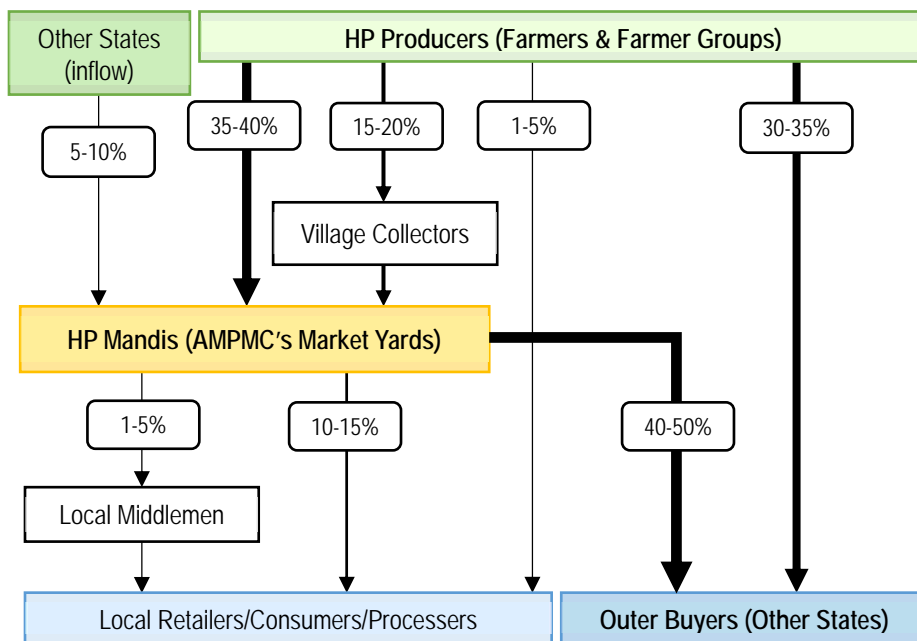
6. Potato



Source: Survey Team based on collected information

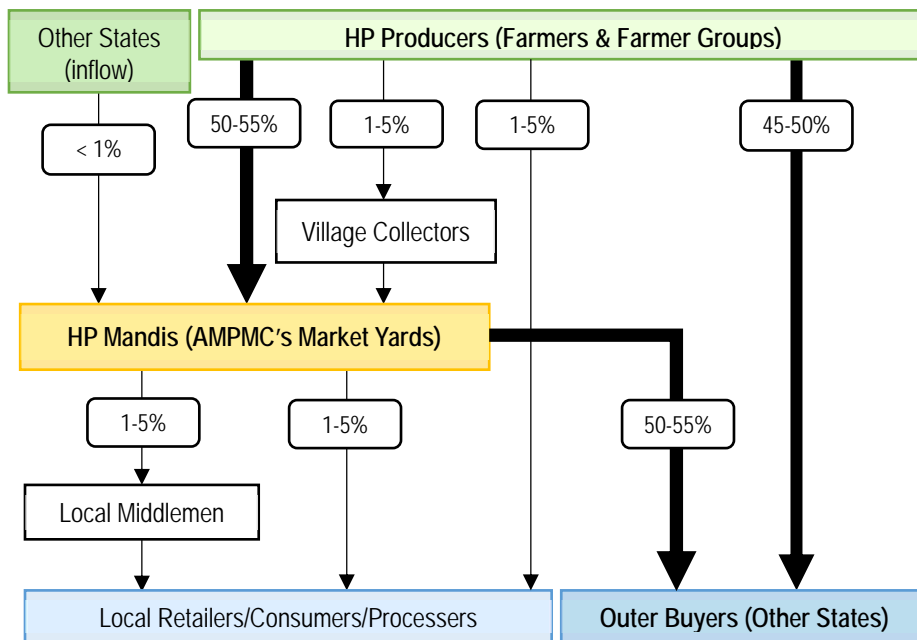


7. Tomato



Source: Survey Team based on collected information

8. Apple



Source: Survey Team based on collected information

Attachment 3.4.3 Arrival and Price of APMC Markets in Himachal Pradesh by District (Ave. 2015-19)

1. Arrival

(1) Cabbage

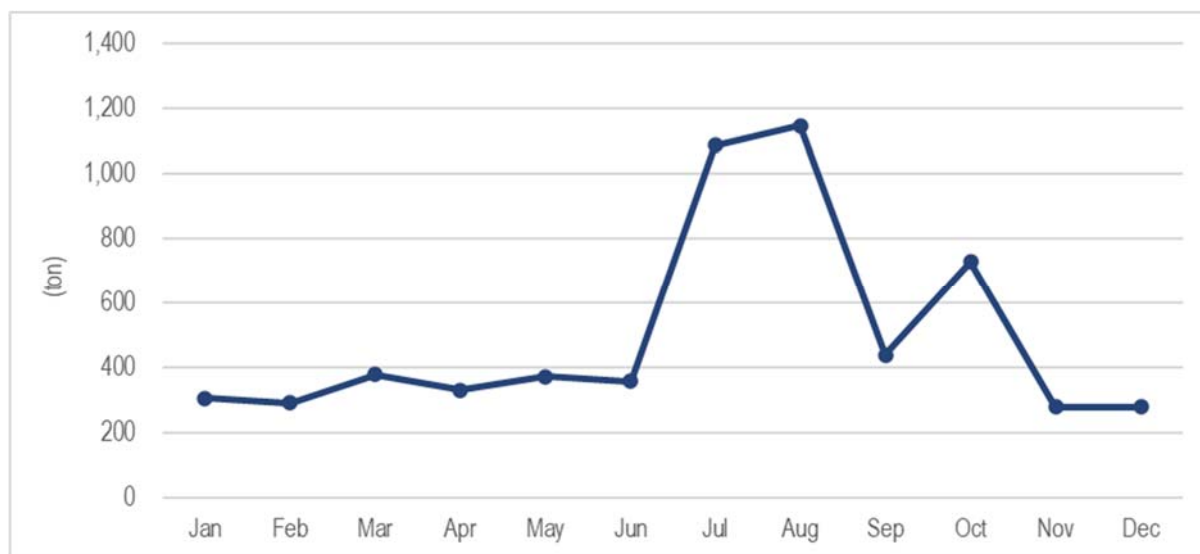
The following table and figure show the average monthly arrival of cabbage in the *mandis* in 2015-19 by districts in Himachal Pradesh:

**Table 1 Monthly Arrival of Cabbage to the *Mandis* by Districts in Himachal Pradesh (Average: 2015-19)**

District	Month												Total	(%)
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Bilaspur	7.5	7.9	7.6	6.8	8.8	7.3	7.4	7.0	4.5	4.9	6.5	7.3	83.5	(1.4)
Chamba	10.9	19.1	51.1	37.4	40.6	21.8	6.6	4.1	1.9	4.8	5.5	16.8	220.6	(3.7)
Hamirpur	15.6	14.9	15.3	13.6	15.2	9.0	12.0	11.6	12.2	10.9	12.4	14.5	157.2	(2.6)
Kangra	91.8	88.4	109.7	100.3	93.2	88.2	80.1	66.2	51.4	45.4	51.1	53.9	919.7	(15.3)
Kullu	21.7	21.1	29.4	31.3	30.7	65.1	139.5	147.6	69.4	53.4	33.3	29.7	672.2	(11.2)
Mandi	57.5	53.2	61.9	46.5	63.9	84.8	197.1	158.8	110.1	153.8	86.4	56.9	1,130.9	(18.9)
Shimla	37.6	15.2	17.3	32.0	64.0	40.9	600.3	659.5	122.0	402.3	54.3	43.3	2,088.7	(34.8)
Sirmaur	5.0	4.8	5.3	3.1	2.8	2.7	1.3	1.5	3.3	2.3	2.9	3.7	38.7	(0.6)
Solan	34.4	34.3	44.8	36.6	36.3	29.6	31.0	79.4	53.1	42.9	19.9	37.4	479.7	(8.0)
Una	23.8	31.7	37.2	22.6	17.0	7.7	10.1	10.6	10.8	8.0	7.6	16.4	203.5	(3.4)
HP Total	305.8	290.6	379.6	330.2	372.5	357.1	1,085.4	1,146.3	438.7	728.7	279.9	279.9	5,994.7	(100.0)
(%)	(5.1)	(4.8)	(6.3)	(5.5)	(6.2)	(6.0)	(18.1)	(19.1)	(7.3)	(12.2)	(4.7)	(4.7)	(100.0)	

Note: Coloured cell:  $\geq 10\%$

Source: <https://agmarknet.gov.in/>



Source: <https://agmarknet.gov.in/>

**Figure 1 Monthly Arrival of Cabbage to the *Mandis* in Himachal Pradesh (Average: 2015-19)**

The annual arrival is about 6,000 tons. Shimla District accounts for the largest share of the arrival followed by Kangra, Kullu and Mandi districts. The peaks of the monthly arrival in Himachal Pradesh have been recorded in July-August and October. Although the monthly arrival tends to decrease during the *rabi* (winter) season months in districts with a small share of the annual arrival, the monthly arrival in Himachal Pradesh is larger during the *kharif* (monsoon) season months as the monthly arrival in districts with a large share of the annual arrival is larger during the months. This implies that cabbage production targeted for large cities like Delhi has been well developed in the districts with a large share of the annual arrival.

## (2) Capsicum

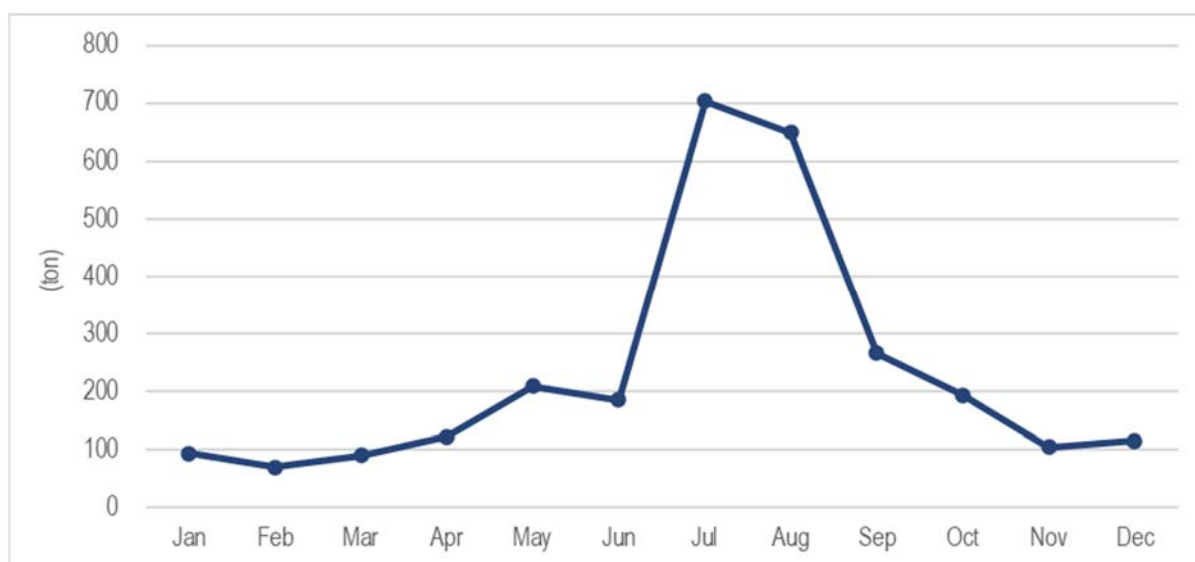
The following table and figure show the average monthly arrival of capsicum in the *mandis* in 2015-19 by districts in Himachal Pradesh:

**Table 2 Monthly Arrival of Capsicum to Mandis by Districts in Himachal Pradesh (Average: 2015-19)**

District	Month												Total	(%)
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Bilaspur	4.8	4.2	5.2	5.1	8.1	7.3	7.1	5.3	4.4	5.4	5.6	6.0	68.5	(2.4)
Chamba	1.2	1.1	1.6	4.1	10.9	7.0	1.9	0.5	0.9	0.9	1.8	1.9	33.8	(1.2)
Hamirpur	3.8	3.5	3.9	5.6	9.8	6.5	5.3	5.3	5.7	4.4	5.0	4.7	63.5	(2.3)
Kangra	21.3	20.0	27.1	36.4	45.1	40.1	30.4	26.3	21.8	20.9	22.2	22.9	334.5	(12.0)
Kullu	7.5	5.9	8.0	7.6	16.7	8.1	19.9	23.3	17.5	15.9	10.0	9.6	150.0	(5.4)
Mandi	15.3	14.3	16.0	25.4	42.0	32.1	40.1	27.3	19.4	14.4	19.7	22.8	288.8	(10.3)
Shimla	25.0	6.4	9.2	10.1	17.3	9.7	83.9	141.3	34.6	63.7	17.3	27.1	445.6	(15.9)
Sirmaur	1.1	1.3	1.3	2.4	4.2	1.7	2.0	2.7	2.3	2.2	1.8	2.2	25.2	(0.9)
Solan	8.5	7.7	10.0	14.4	24.6	55.0	501.6	408.3	151.4	60.6	17.4	12.5	1,272.0	(45.5)
Una	4.9	5.1	6.9	10.5	29.3	17.8	11.3	8.5	7.6	4.5	3.3	5.2	114.9	(4.1)
HP Total	93.4	69.5	89.2	121.6	208.0	185.3	703.5	648.8	265.6	192.9	104.1	114.9	2,796.8	(100.0)
(%)	(3.3)	(2.5)	(3.2)	(4.3)	(7.4)	(6.6)	(25.2)	(23.2)	(9.5)	(6.9)	(3.7)	(4.1)	(100.0)	

Note: Coloured cell:  $\geq 10\%$

Source: <https://agmarknet.gov.in/>



Source: <https://agmarknet.gov.in/>

**Figure 2 Monthly Arrival of Capsicum to the Mandis in Himachal Pradesh (Average: 2015-19)**

The annual arrival is about 2,800 tons. Solan District accounts for the largest share of the arrival followed by Kangra, Mandi and Shimla districts. The peak of the monthly arrival in Himachal Pradesh has been recorded in July-August. This is because the peak in Solan and Shimla districts, which have a large share of the annual arrival, is in the same period, although the peak in the other districts is in May. This implies that capsicum production targeted for large cities has been well developed in Solan and Shimla districts.

## (3) Cauliflower

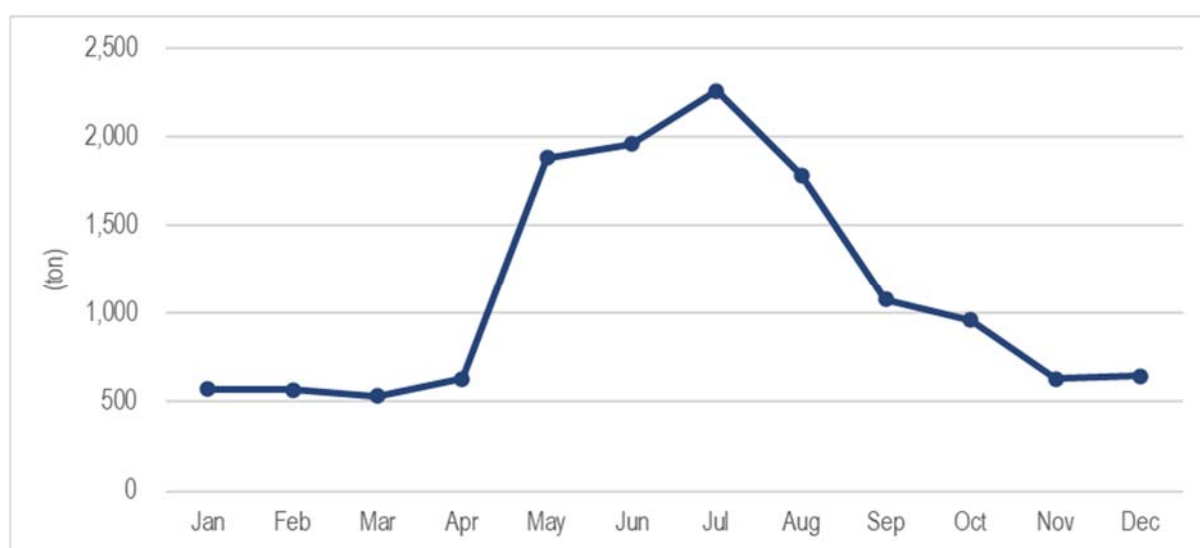
The following table and figure show the average monthly arrival of cauliflower to the *mandis* in 2015-19 by districts in Himachal Pradesh:

Att.3.4.3-3

**Table 3 Monthly Arrival of Cauliflower to the Mandis by Districts in Himachal Pradesh (Average: 2015-19)**

District	Month												Total	(%)
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Bilaspur	20.0	18.1	17.6	12.2	10.1	7.3	9.6	9.7	7.0	9.2	14.4	17.6	152.8	(1.1)
Chamba	17.4	22.1	47.3	35.9	8.5	1.6	0.2	0.4	1.1	5.6	20.1	15.9	176.1	(1.3)
Hamirpur	31.3	30.4	28.3	19.3	18.1	10.0	13.0	14.3	15.1	18.8	26.5	23.0	248.1	(1.8)
Kangra	72.0	65.1	67.4	70.2	61.6	61.0	52.0	51.6	48.8	56.5	82.1	89.8	778.1	(5.8)
Kullu	49.7	48.9	52.5	85.9	417.4	561.4	672.3	948.0	600.6	313.2	104.1	53.9	3,907.9	(29.0)
Mandi	118.1	114.9	100.1	159.8	230.5	241.1	371.4	521.5	280.2	216.5	194.8	220.8	2,769.7	(20.5)
Shimla	46.2	29.5	21.5	123.3	1,052.4	1,011.8	1,069.5	165.5	45.3	207.8	48.2	46.5	3,867.5	(28.7)
Sirmaur	17.5	18.7	15.7	8.5	5.0	3.1	1.3	1.7	3.6	6.5	13.0	16.8	111.4	(0.8)
Solan	92.7	96.4	90.0	58.8	47.9	36.3	43.1	48.8	54.2	94.5	70.8	69.7	803.2	(6.0)
Una	106.8	123.1	90.3	55.7	30.2	25.2	26.2	22.4	22.0	34.1	55.5	92.4	683.9	(5.1)
HP Total	571.7	567.2	530.7	629.6	1,881.7	1,958.8	2,258.6	1,783.9	1,077.9	962.7	629.5	646.4	13,498.7	(100.0)
(%)	(4.2)	(4.2)	(3.9)	(4.7)	(13.9)	(14.5)	(16.7)	(13.2)	(8.0)	(7.1)	(4.7)	(4.8)		

Note: Coloured cell:  $\geq 10\%$   
Source: <https://agmarknet.gov.in/>



Source: <https://agmarknet.gov.in/>

**Figure 3 Monthly Arrival of Cauliflower to the Mandis in Himachal Pradesh (Average: 2015-19)**

The annual arrival is about 13,500 tons. Kullu, Mandi and Shimla districts capture almost the whole arrival in Himachal Pradesh. The peak of the monthly arrival in Himachal Pradesh has been recorded in May-August. Same as the case of cabbage, the monthly arrival in Himachal Pradesh is larger during the *kharif* season months, and the monthly arrival in the districts with a large share of the annual arrival tends to be larger during these months. This implies that cauliflower production targeted to be distributed to large cities like Delhi during lean market season has been well developed in the districts.

#### (4) French Bean (Fresh)

The following table and figure show the average monthly arrival of french bean to the *mandis* in 2015-19 by districts in Himachal Pradesh:

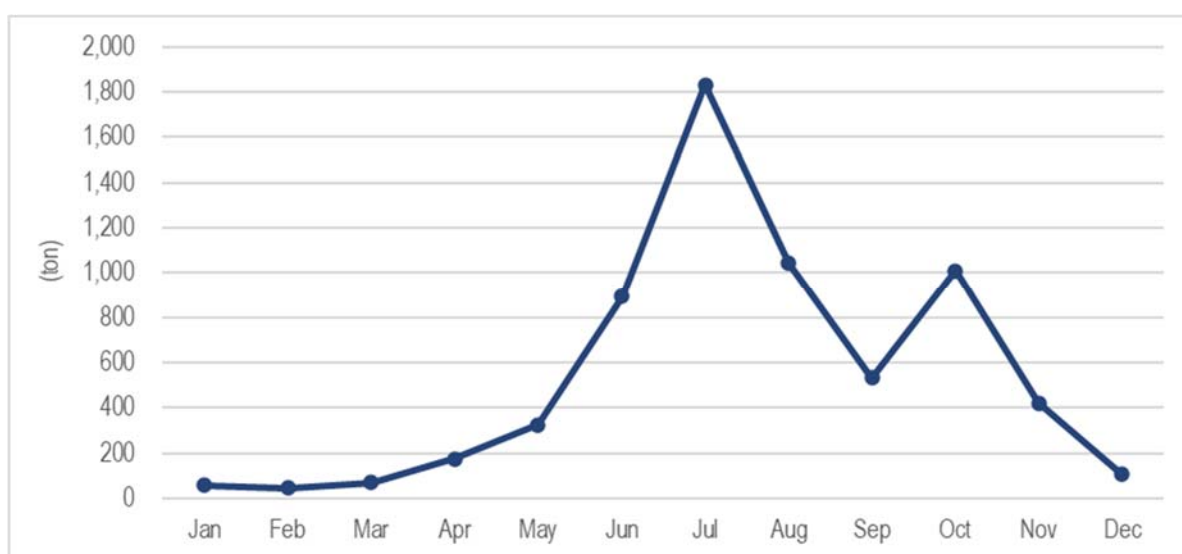
**Table 4 Monthly Arrival of French Bean to the Mandis by Districts in Himachal Pradesh (Average: 2015-19)**

District	Month												Total	(%)
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Bilaspur	0.0	0.2	0.1	0.3	0.3	0.2	1.1	1.4	0.3	0.0	0.5	0.2	4.6	(0.1)
Chamba	1.6	1.4	1.7	4.8	5.0	0.2	2.4	0.1	0.0	0.0	0.8	2.7	20.7	(0.3)

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District	Month												Total	(%)
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Hamirpur	1.8	1.2	2.0	3.6	3.8	2.2	4.3	4.5	3.5	3.7	3.6	3.0	37.2	(0.6)
Kangra	16.6	19.3	21.3	26.1	27.8	23.3	24.1	21.0	28.8	27.8	23.7	30.8	290.6	(4.5)
Kullu	5.5	4.5	4.9	6.2	7.3	8.2	21.4	36.2	27.2	21.5	10.8	7.6	161.3	(2.5)
Mandi	6.2	4.9	5.9	10.6	10.5	29.6	69.0	54.8	30.0	25.6	26.8	12.7	286.6	(4.4)
Shimla	14.8	2.8	6.0	76.8	110.9	586.5	1,473.6	744.5	329.9	660.9	190.4	24.3	4,221.4	(64.7)
Sirmaur	0.7	0.5	0.5	0.9	0.8	1.0	1.7	1.3	1.4	1.3	1.0	0.7	11.8	(0.2)
Solan	4.1	2.9	6.5	11.3	77.1	216.2	197.9	140.1	95.2	261.2	155.9	18.0	1,186.4	(18.2)
Una	6.9	8.0	22.1	35.6	84.0	26.0	37.7	40.3	15.6	9.7	8.3	7.1	301.3	(4.6)
HP Total	58.2	45.7	71.0	176.2	327.5	893.4	1,833.2	1,044.2	531.9	1,011.7	421.8	107.1	6,521.9	(100.0)
(%)	(0.9)	(0.7)	(1.1)	(2.7)	(5.0)	(13.7)	(28.1)	(16.0)	(8.2)	(15.5)	(6.5)	(1.6)	(100.0)	

Note: Coloured cell:  $\geq 10\%$   
Source: <https://agmarknet.gov.in/>



Source: <https://agmarknet.gov.in/>

**Figure 4 Monthly Arrival of French Bean to the Mandis in Himachal Pradesh (Average: 2015-19)**

The annual arrival is about 6,500 tons. Shimla District accounts for the largest share of the arrival followed by Solan District. The share of the other districts is minimal. The peak of the monthly arrival in Himachal Pradesh has been recorded in June-August and October. Whilst the monthly arrival tends to increase during the *khari*f season months in many districts, the arrival is high during the last month before the *khari*f season in Chamba and Una districts. The arrival in Kangra District is relatively stable throughout the year.

**(5) Garlic**

The following table and figure show the average monthly arrival of Garlic to the *mandis* in 2015-19 by districts in Himachal Pradesh:

**Table 5 Monthly Arrival of Garlic to the Mandis by Districts in Himachal Pradesh (Average: 2015-19)**

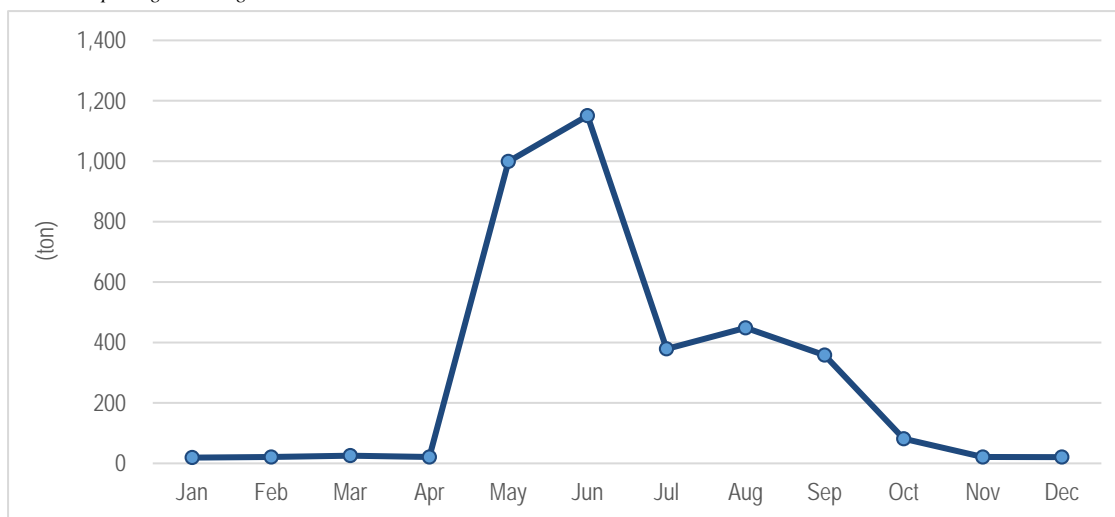
District	Month												Total	(%)	
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.			
Bilaspur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(0.0)
Chamba	0.1	0.3	0.4	0.4	0.5	0.1	0.1	0.0	0.1	0.1	0.1	0.1	2.3	(0.1)	
Hamirpur	3.9	5.1	4.5	1.4	1.5	1.4	2.1	2.1	1.1	3.2	3.0	4.5	33.7	(1.0)	

Att.3.4.3-5

District	Month												Total	(%)
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Kangra	0.0	0.0	0.4	1.7	1.7	2.0	2.0	1.9	2.3	2.0	1.7	1.9	17.6	(0.5)
Kullu	3.8	3.4	3.7	4.1	11.4	7.4	9.6	10.5	7.6	6.1	5.3	5.7	78.4	(2.2)
Mandi	5.8	6.2	7.6	7.1	9.0	7.7	6.4	8.2	4.6	8.5	5.1	3.7	79.9	(2.3)
Shimla	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	(0.0)
Sirmaur	0.0	0.2	0.1	0.1	0.1	0.2	0.0	0.1	0.2	0.2	0.1	0.1	1.4	(0.0)
Solan	3.1	3.2	6.3	4.8	973.7	1,131.1	357.8	425.2	341.7	60.8	5.1	4.2	3,316.9	(93.6)
Una	2.5	2.5	2.3	1.5	1.3	0.8	0.6	0.5	0.6	0.7	0.6	0.7	14.5	(0.4)
HP Total	19.1	20.9	25.4	20.9	999.2	1,150.6	378.7	448.5	358.2	81.5	20.9	20.8	3,544.6	(100.0)
(%)	(0.5)	(0.6)	(0.7)	(0.6)	(28.2)	(32.5)	(10.7)	(12.7)	(10.1)	(2.3)	(0.6)	(0.6)	(100.0)	

Note: Coloured cell:  $\geq 10\%$

Source: <https://agmarknet.gov.in/>



Source: <https://agmarknet.gov.in/>

**Figure 5 Monthly Arrival of Garlic to the Mandis in Himachal Pradesh (Average: 2015-19)**

The annual arrival is about 3,500 tons. Solan District accounts for the largest share of the arrival whilst the share of the other districts is quite minimal. The peak of the monthly arrival in Himachal Pradesh has been recorded in May-June which directly reflects the arrival of Solan District. As garlic has a steady demand throughout the year as an essential spice crop to Indian people, it seems that many non-farming families also grow it in their kitchen gardens. The table implies that garlic production targeted for large cities like Delhi has been well developed only in Solan district.

**(6) Okra**

The following table and figure show the average monthly arrival of okra to the *mandis* in 2015-19 by districts in Himachal Pradesh:

**Table 6 Monthly Arrival of Okra to the Mandis by Districts in Himachal Pradesh (Average: 2015-19)**

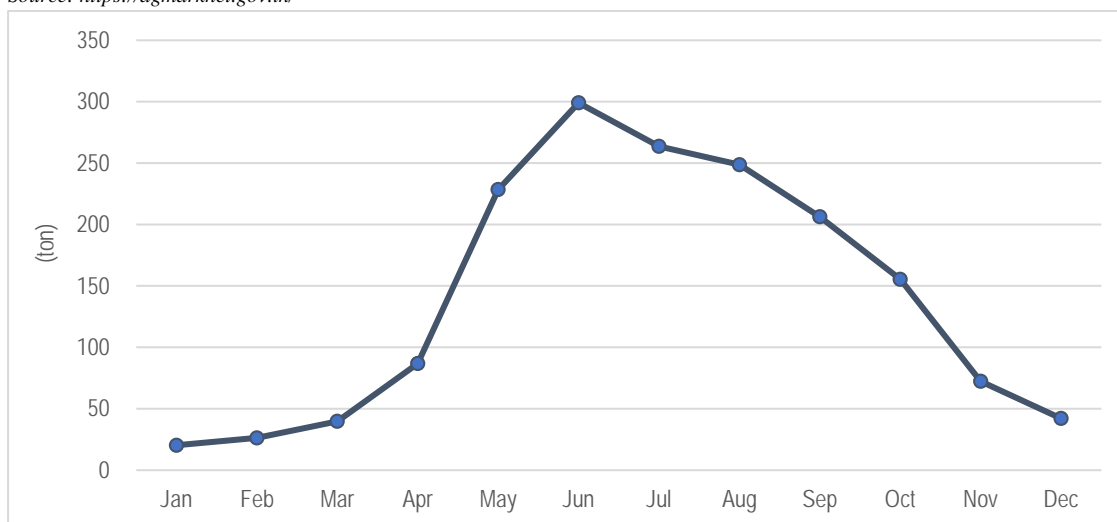
District	Month												Total	(%)
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Bilaspur	0.3	0.4	0.6	1.2	3.5	5.8	5.1	4.6	3.7	11.5	1.9	0.8	39.4	(2.3)
Chamba	0.7	1.1	2.9	5.9	15.9	21.9	14.9	7.4	28.9	7.0	2.8	0.8	110.1	(6.5)
Hamirpur	0.6	1.0	3.4	6.2	15.6	16.5	15.7	14.6	11.6	6.2	2.8	0.4	94.5	(5.6)
Kangra	4.8	6.5	13.8	31.5	55.6	72.7	61.4	61.9	52.1	43.2	16.5	5.0	425.0	(25.2)
Kullu	4.5	6.0	4.3	7.7	10.4	8.9	9.0	9.5	8.9	10.6	9.9	7.2	96.8	(5.7)
Mandi	4.2	5.9	7.7	19.2	54.0	61.9	51.8	79.5	40.2	37.4	13.8	4.6	380.2	(22.5)
Shimla	0.0	0.0	0.0	0.0	0.2	13.3	19.4	15.8	19.1	17.5	13.5	15.7	114.5	(6.8)
Sirmaur	0.0	0.1	0.3	0.3	4.8	7.1	4.9	5.4	5.0	3.0	0.6	0.0	31.5	(1.9)
Solan	5.0	4.5	5.8	9.9	22.7	26.3	20.6	13.7	16.4	14.1	10.1	6.9	155.8	(9.2)
Una	0.2	0.5	1.1	4.8	45.6	64.7	60.9	36.2	20.4	4.9	0.5	0.8	240.7	(14.3)

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District	Month												Total	(%)
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
HP Total	20.2	26.2	39.7	86.7	228.4	299.1	263.6	248.7	206.3	155.4	72.3	42.0	1,688.6	(100.0)
(%)	(1.2)	(1.6)	(2.4)	(5.1)	(13.5)	(17.7)	(15.6)	(14.7)	(12.2)	(9.2)	(4.3)	(2.5)	(100.0)	

Note: Coloured cell:  $\geq 10\%$

Source: <https://agmarknet.gov.in/>



Source: <https://agmarknet.gov.in/>

**Figure 6 Monthly Arrival of Okura to the Mandis in Himachal Pradesh (Average: 2015-19)**

The annual arrival is about 1,500 tons. The arrival is the smallest among the crops discussed in this paper. Kangra, Mandi and Una districts capture the large share of arrival in Himachal Pradesh. The monthly arrival is high during the *kharif* season months in all districts. The peak of the monthly arrival in Himachal Pradesh has been recorded in May-September. The market price in all districts largely remains higher than the price in Azadpur market throughout the year. It seems that the marketing to other provinces is limited even from the 3 districts, except for during a limited period in Una District.

**(7) Onion**

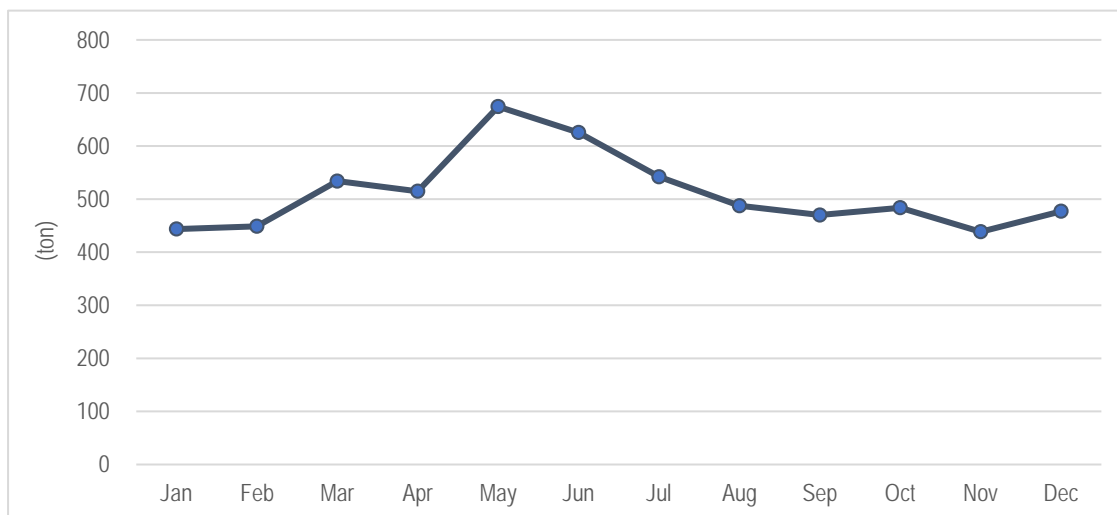
The following table and figure show the average monthly arrival of onion to the *mandis* in 2015-19 by districts in Himachal Pradesh:

**Table 7 Monthly Arrival of Onion to the Mandis by Districts in Himachal Pradesh (Average: 2015-19)**

District	Month												Total	(%)
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Bilaspur	22.7	23.3	23.0	24.3	28.7	28.2	35.3	33.9	27.1	28.9	27.6	27.4	330.5	(5.4)
Chamba	9.2	10.0	18.0	20.3	31.9	24.0	18.2	11.9	12.3	13.3	13.6	14.7	197.2	(3.2)
Hamirpur	30.4	30.5	33.2	26.5	43.3	43.2	35.4	32.5	27.0	24.1	27.9	26.9	380.9	(6.2)
Kangra	62.5	59.6	77.4	85.9	97.4	92.1	77.1	75.4	68.8	73.1	71.3	67.5	908.1	(14.8)
Kullu	51.7	43.6	48.3	61.2	76.2	78.5	58.9	57.7	51.1	48.0	46.5	49.8	671.5	(10.9)
Mandi	83.9	82.5	91.4	91.5	108.1	98.4	82.7	79.9	78.3	117.2	93.7	84.3	1,091.9	(17.8)
Shimla	0.0	0.0	0.0	0.0	1.7	50.9	47.1	37.7	44.0	42.2	33.8	41.4	299.0	(4.9)
Sirmaur	8.4	7.9	9.8	8.8	12.0	12.0	9.8	7.7	9.3	10.0	9.1	8.2	112.8	(1.8)
Solan	94.6	106.2	145.5	133.9	153.9	106.8	75.5	72.4	98.3	85.1	77.9	97.1	1,247.1	(20.3)
Una	80.2	85.4	87.4	62.4	121.4	91.5	102.1	78.4	53.7	42.0	37.3	59.8	901.3	(14.7)
HP Total	443.6	448.8	533.9	514.8	674.5	625.4	542.0	487.6	470.0	483.8	438.6	477.2	6,140.3	(100.0)
(%)	(7.2)	(7.3)	(8.7)	(8.4)	(11.0)	(10.2)	(8.8)	(7.9)	(7.7)	(7.9)	(7.1)	(7.8)	(100.0)	

Note: Coloured cell:  $\geq 10\%$

Source: <https://agmarknet.gov.in/>



Source: <https://agmarknet.gov.in/>

**Figure 7 Monthly Arrival of Onion to the Mandis in Himachal Pradesh (Average: 2015-19)**

The annual arrival is about 6,150 tons. Though onion has a steady demand throughout the year as a daily-use vegetable crop to Indian people, the arrival is relatively small. Different from other vegetables discussed in this paper, the share is evenly distributed among many districts and stable throughout the year, whilst a small peak of the monthly arrival in Himachal Pradesh has been recorded in May-June. The market price in all districts remains higher than the price in Azadpur market throughout the year. It implies that the marketed amount to other provinces is limited.

#### (8) Peas (Fresh)

The following table and figure show the average monthly arrival of peas to the *mandis* in 2015-19 by districts in Himachal Pradesh:

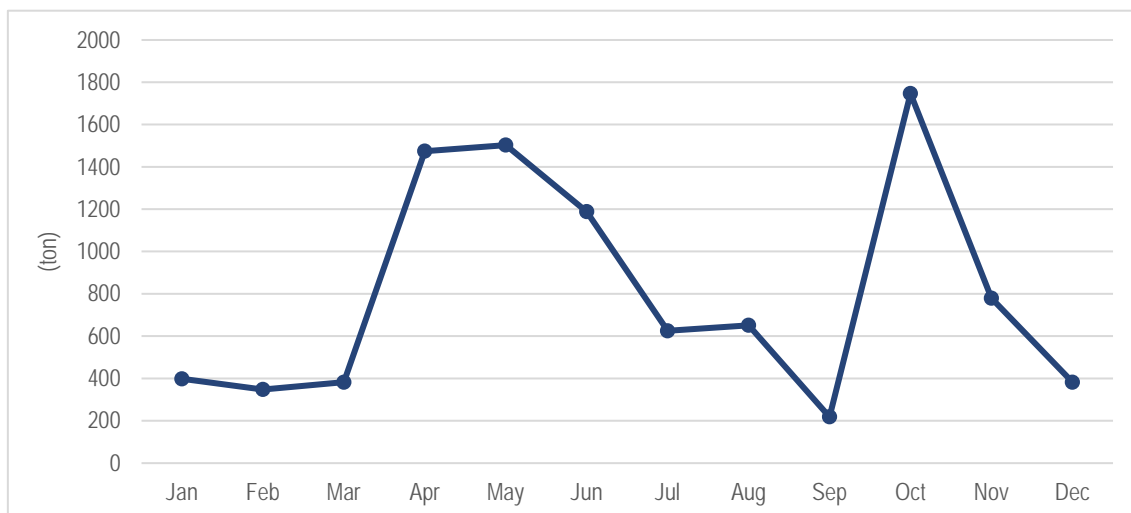
**Table 8 Monthly Arrival of Peas to the Mandis by Districts in Himachal Pradesh (Average: 2015-19)**

District	Month												Total	(%)	
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.			
Bilaspur	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	0.0	(0.0)
Chamba	0.2	0.6	0.9	0.4	1.9	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	4.7	(0.0)
Hamirpur	23.8	25.6	22.7	9.9	9.0	4.9	4.1	5.1	2.8	19.3	11.1	34.1	172.4	(1.8)	
Kangra	190.7	180.4	102.3	56.2	8.5	5.0	11.5	4.3	12.2	15.0	100.7	189.5	876.2	(9.0)	
Kullu	27.2	24.4	57.3	411.6	523.1	191.8	247.4	282.9	93.9	116.0	42.4	18.8	2,036.8	(21.0)	
Mandi	10.6	16.1	106.1	502.5	666.0	313.4	168.7	246.4	47.2	683.6	226.3	13.3	3,000.0	(30.9)	
Shimla	71.1	26.7	26.1	477.0	277.1	662.4	183.4	105.0	58.3	905.1	385.9	68.0	3,246.1	(33.5)	
Sirmaur	8.1	8.1	5.2	1.1	0.6	0.2	0.1	0.1	0.1	0.5	1.5	4.8	30.4	(0.3)	
Solan	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	(0.0)	
Una	66.1	65.7	61.4	15.5	16.6	9.9	9.4	7.4	3.8	7.1	10.9	53.4	327.2	(3.4)	
HP Total	397.8	347.6	382.0	1,474.2	1,502.8	1,188.1	624.7	651.1	218.2	1,746.7	778.7	381.9	9,693.7	(100.0)	
(%)	(4.1)	(3.6)	(3.9)	(15.2)	(15.5)	(12.3)	(6.4)	(6.7)	(2.3)	(18.0)	(8.0)	(3.9)	(100.0)		

Note: Coloured cell:  $\geq 10\%$

Source: <https://agmarknet.gov.in/>





Source: <https://agmarknet.gov.in/>

**Figure 8 Monthly Arrival of Peas to the Mandis in Himachal Pradesh (Average: 2015-19)**

The annual arrival is about 11,600 tons. Shimla District accounts for the largest share of the arrival followed by Mandi and Kullu districts. The peak of the monthly arrival in Himachal Pradesh has been recorded in April-June and October. The monthly arrival in districts with a small share of the annual arrival tends to be larger during the *rabi* season months as shown by the reverse trend in figure above. This implies that peas production targeted for large cities like Delhi has been well developed in and around Shimla, Mandi and Kullu districts.

### (9) Potato

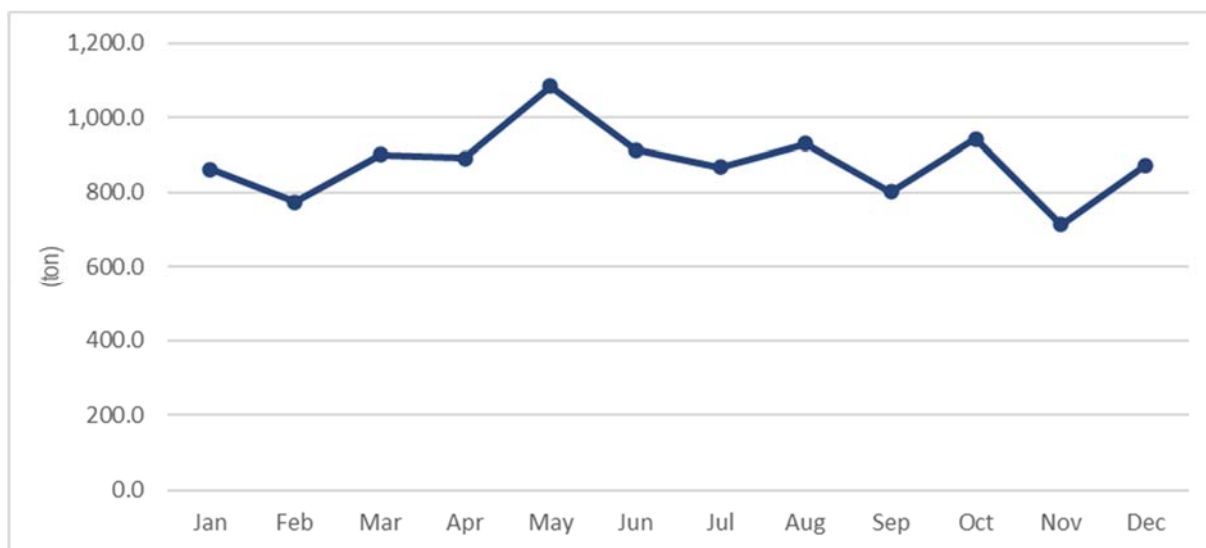
The following table and figure show the average monthly arrival of potato to the *mandis* in 2015-19 by districts in Himachal Pradesh:

**Table 9 Monthly Arrival of Potato to the Mandis by Districts in Himachal Pradesh (Average: 2015-19)**

District	Month												Total	(%)
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Bilaspur	28.3	28.0	24.3	27.9	37.6	33.8	39.2	33.9	36.9	38.3	31.4	32.5	392.1	(3.7)
Chamba	39.9	36.1	54.0	68.9	68.2	38.2	21.9	15.2	20.9	27.5	34.6	48.8	474.2	(4.5)
Hamirpur	52.9	50.5	48.4	49.5	56.4	59.9	60.5	61.3	53.3	51.5	54.6	56.3	655.1	(6.2)
Kangra	78.8	70.0	87.0	94.1	106.2	103.5	84.7	87.0	81.2	85.1	89.2	94.2	1,061.0	(10.0)
Kullu	63.7	54.8	56.3	65.6	82.8	96.3	83.1	78.8	73.6	65.8	53.0	59.1	832.9	(7.9)
Mandi	122.9	117.7	123.9	118.1	144.0	132.6	135.9	125.4	113.0	181.1	134.2	111.6	1,560.4	(14.8)
Shimla	84.6	40.0	63.6	46.8	87.7	78.0	84.1	195.8	64.1	230.5	78.5	109.9	1,163.6	(11.0)
Sirmaur	37.0	30.8	25.3	22.7	25.0	29.1	26.3	22.9	24.1	26.7	28.1	31.2	329.2	(3.1)
Solan	179.5	188.9	261.8	264.0	223.1	163.8	147.3	161.5	153.2	146.7	128.0	180.8	2,198.6	(20.8)
Una	175.2	157.9	155.6	134.6	253.0	178.1	185.2	148.3	180.7	90.7	82.9	148.5	1,890.7	(17.9)
HP Total	862.8	774.7	900.2	892.2	1,084.0	913.3	868.2	930.1	801.0	943.9	714.5	872.9	10,557.8	(100.0)
(%)	(8.2)	(7.3)	(8.5)	(8.5)	(10.3)	(8.7)	(8.2)	(8.8)	(7.6)	(8.9)	(6.8)	(8.3)	(100.0)	

Note: Coloured cell:  $\geq 10\%$

Source: <https://agmarknet.gov.in/>



Source: <https://agmarknet.gov.in/>

**Figure 9 Monthly Arrival of Potato to the Mandis in Himachal Pradesh (Average: 2015-19)**

The annual arrival is about 10,500 tons. Different from the other vegetables discussed in the paper but like onion, the share is evenly distributed among many districts, and the monthly arrival in Himachal Pradesh does not fluctuate much throughout the year. Potato also has a steady demand throughout the year as a daily-use vegetable crop to Indian people. Whilst the monthly arrival in Chamba, Solan and Una districts records a higher amount from the late *rabi* season to the early *kharif* season, the arrival in Mandi and Shimla districts records a higher amount from the middle to the end of the *kharif* season.

#### (10) Tomato

The following table and figure show the average monthly arrival of tomato to the *mandis* in 2015-19 by districts in Himachal Pradesh:

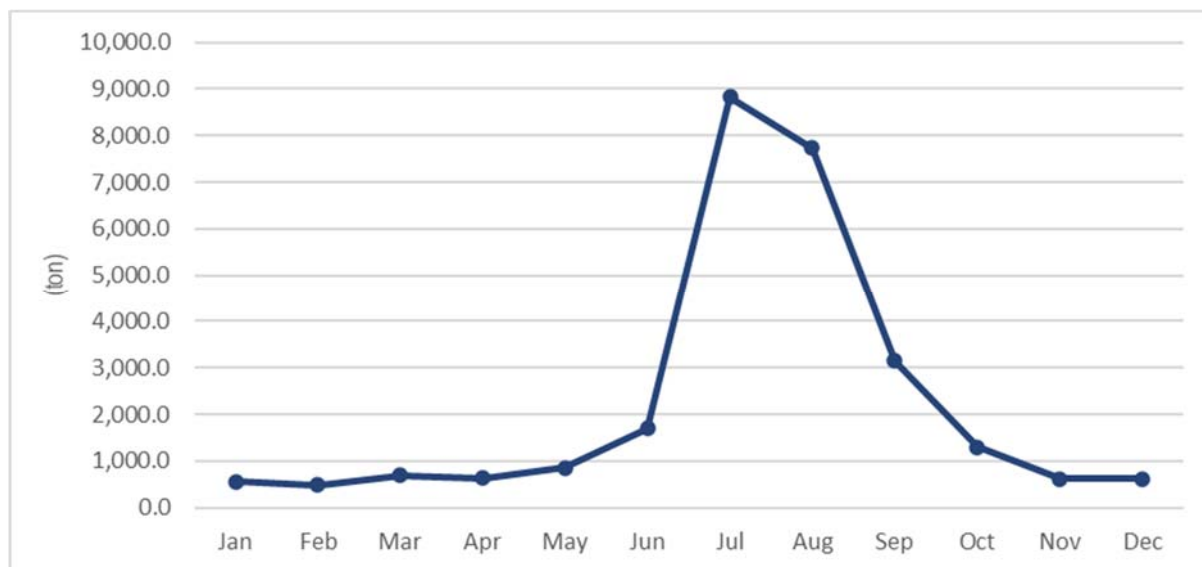
**Table 10 Monthly Arrival of Tomato to the Mandis by Districts in Himachal Pradesh (Average: 2015-19)**

District	Month												Total	(%)
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Bilaspur	8.7	8.5	9.5	9.0	11.6	9.1	9.9	9.1	16.7	26.2	15.7	11.9	145.9	(0.5)
Chamba	19.8	20.6	30.8	36.6	57.5	41.4	5.3	2.1	14.6	22.5	22.7	25.9	299.8	(1.1)
Hamirpur	28.8	27.5	28.2	27.1	33.6	32.7	38.3	34.0	36.7	34.3	33.4	33.5	388.1	(1.4)
Kangra	85.1	75.2	93.2	110.4	125.7	125.6	101.6	100.4	93.3	105.5	108.5	117.0	1,241.5	(4.6)
Kullu	56.6	51.3	63.4	63.2	75.3	180.6	1,034.4	782.0	882.2	154.5	49.4	52.5	3,445.4	(12.7)
Mandi	85.7	85.2	88.4	155.8	110.6	278.9	1,668.3	1,749.3	383.5	146.0	102.1	92.1	4,945.9	(18.2)
Shimla	0.0	0.0	36.0	27.7	31.1	62.6	201.6	266.5	24.8	23.2	27.6	29.3	730.4	(2.7)
Sirmaur	159.2	84.7	152.3	49.9	123.2	186.5	180.0	73.0	22.9	96.0	87.8	85.9	1,301.4	(4.8)
Solan	73.8	86.9	117.0	120.3	162.6	693.2	5,529.8	4,675.9	1,629.0	662.7	145.4	130.7	14,027.3	(51.6)
Una	46.2	52.4	73.2	39.2	126.9	83.7	58.4	45.0	49.3	33.4	27.8	42.3	677.8	(2.5)
HP Total	563.9	492.3	692.0	639.2	858.1	1,694.3	8,827.6	7,737.3	3,153.0	1,304.3	620.4	621.1	27,203.5	(100.0)
(%)	(2.1)	(1.8)	(2.5)	(2.3)	(3.2)	(6.2)	(32.5)	(28.4)	(11.6)	(4.8)	(2.3)	(2.3)	(100.0)	

Note: Coloured cell:  $\geq 10\%$

Source: <https://agmarknet.gov.in/>

Att.3.4.3-10



Source: <https://agmarknet.gov.in/>

**Figure 10 Monthly Arrival of Tomato to the Mandis in Himachal Pradesh (Average: 2015-19)**

The annual arrival is about 27,200 tons which is the largest amount amongst the selected vegetables for this analysis. Solan District accounts for more than half of the arrival followed by Kullu and Mandi districts. The total share of the three districts accounts for more than 80% of the arrival in Himachal Pradesh. The peak of the monthly arrival in Himachal Pradesh has been recorded during the mid-*kharif* season, i.e., July-August, and this corresponds to the peak in the above three districts. This implies that tomato transaction to be marketed to large cities like Delhi in the districts enters the high season.

### (11) Apple

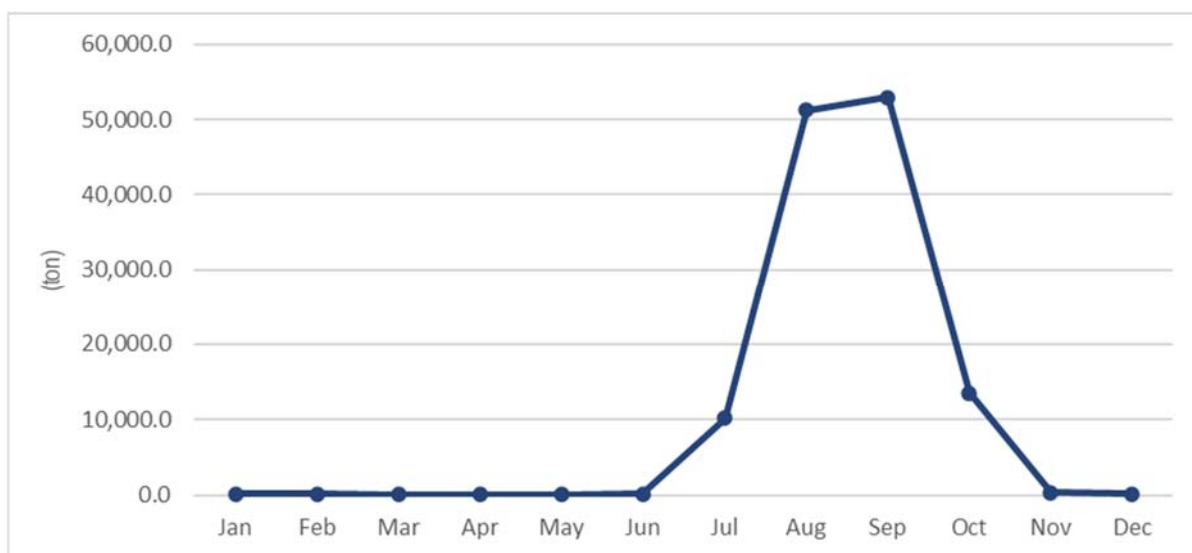
The following table and figure show the average monthly arrival of apple to the *mandis* in 2015-19 by districts in Himachal Pradesh:

**Table 11 Monthly Arrival of Apple to the Mandis by Districts in Himachal Pradesh (Average: 2015-19)**

District	Month												Total	(%)
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.		
Bilaspur	1.1	1.2	0.8	0.5	1.0	0.3	2.1	3.3	4.0	3.2	2.1	1.8	21.4	(0.0)
Chamba	0.1	0.5	0.0	0.1	0.1	0.0	0.2	0.2	0.6	0.5	0.7	0.2	3.2	(0.0)
Hamirpur	4.5	4.4	5.1	3.2	2.4	1.6	2.9	15.0	24.7	17.8	10.7	6.0	98.3	(0.1)
Kangra	34.1	31.3	34.9	35.1	38.8	37.0	38.1	77.4	87.6	79.1	53.0	48.0	594.4	(0.5)
Kullu	0.1	0.0	0.0	0.0	0.0	0.8	913.8	10,403.5	12,574.1	2,490.2	11.8	0.3	26,394.6	(20.5)
Mandi	10.4	6.6	5.9	7.8	3.0	2.7	166.5	1,062.2	1,408.5	311.4	21.1	10.4	3,016.5	(2.3)
Shimla	0.0	0.0	0.0	0.0	0.2	61.8	7,016.0	22,164.8	22,093.5	5,880.2	37.9	0.0	57,254.4	(44.5)
Sirmaur	4.1	1.7	1.4	0.8	0.6	0.1	1.0	7.3	12.5	11.0	5.5	4.6	50.6	(0.0)
Solan	26.0	39.6	26.1	13.9	10.3	8.7	2,038.1	17,470.7	16,677.2	4,659.3	149.8	22.8	41,142.5	(31.9)
Una	14.8	12.2	11.0	6.2	4.6	3.4	5.0	25.5	57.2	41.2	17.9	18.8	217.8	(0.2)
HP Total	95.2	97.5	85.2	67.6	61.0	116.4	10,183.7	51,229.9	52,939.9	13,493.9	310.5	112.9	128,793	(100.0)
(%)	(0.1)	(0.1)	(0.1)	(0.1)	(0.0)	(0.1)	(7.9)	(39.8)	(41.1)	(10.5)	(0.2)	(0.1)	(100.0)	

Note: Coloured cell:  $\geq 10\%$

Source: <https://agmarknet.gov.in/>



Source: <https://agmarknet.gov.in/>

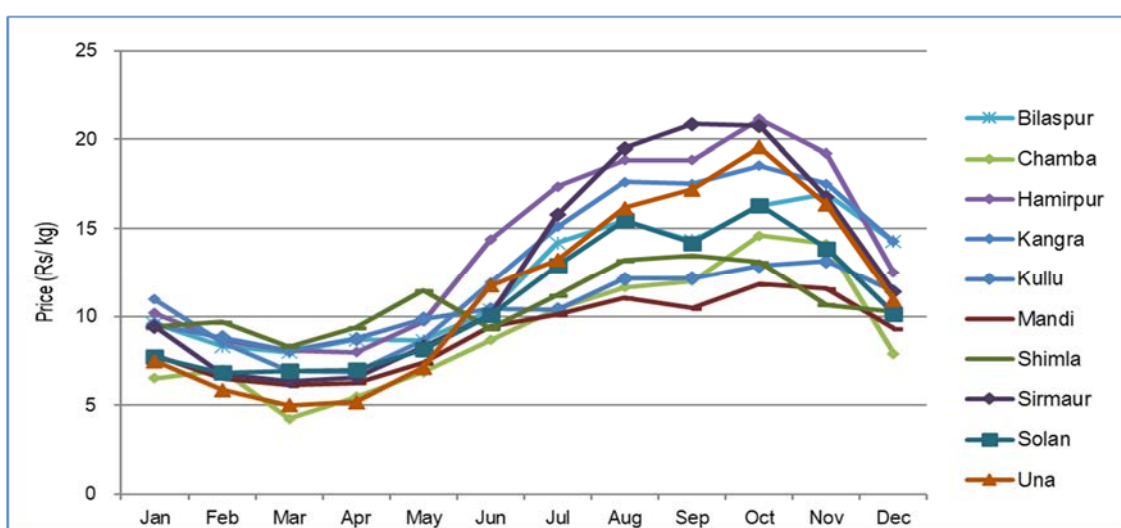
**Figure 11 Monthly Arrival of Apple to the Mandis in Himachal Pradesh (Average: 2015-19)**

Apple is the most famous agricultural produce representing Himachal Pradesh. The annual arrival is about 128,800 tons which is the largest amount in the selected vegetables and fruits for this analysis. Kullu, Shimla and Solan districts account for almost all the share of the arrival, whilst the share of the other districts is minimal. The peak of the monthly arrival in Himachal Pradesh has been recorded in August-September. The peak in all districts is almost in the same period, as it is difficult to control the harvest season in case of fruits, different from common vegetables.

## 2. Price

### (1) Cabbage

The following figure shows the change of the average monthly market price of cabbage in the *mandis* in 2015-19 by districts in Himachal Pradesh:



Source: <https://agmarknet.gov.in/>

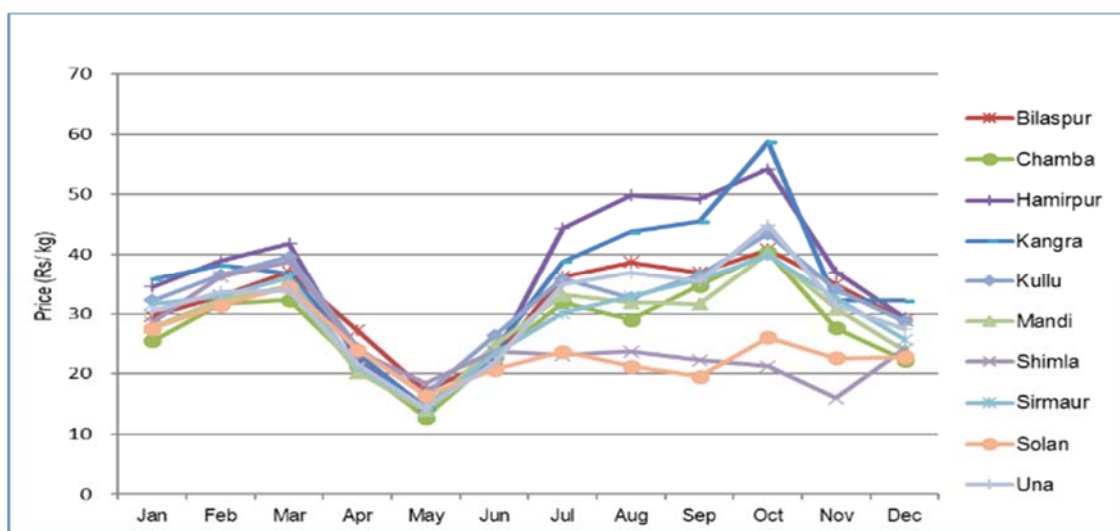
**Figure 12 Monthly Market Price of Cabbage by Districts in Himachal Pradesh (Average: 2015-19)**

**Att.3.4.3-12**

The market price changes between INR 5/kg and INR 20/kg. The price bottoms out in March-April, whilst it peaks in August-October. The price change shows a similar trend in all districts. The price difference between districts becomes wider during the high price season, as the price in the districts with a large share of the annual arrival in Himachal Pradesh, i.e., Kullu, Mandi and Shimula except for Kangra, stays at lower level than the other districts during the season. A low-price season corresponds to a high-arrival season in most districts.

**(2) Capsicum**

The following figure shows the change of the average monthly market price of capsicum in the *mandis* in 2015-19 by districts in Himachal Pradesh:



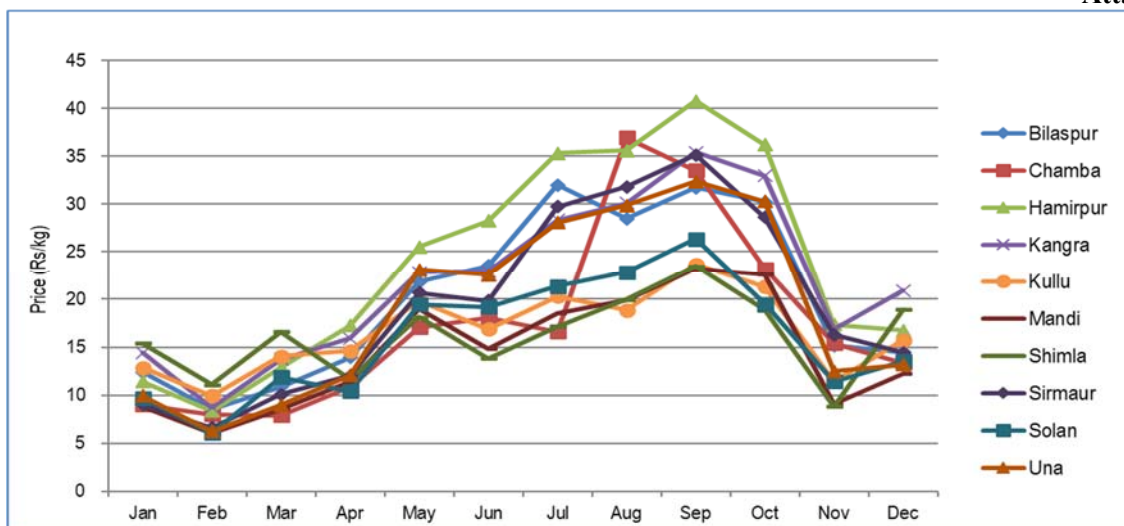
Source: <https://agmarknet.gov.in/>

**Figure 13 Monthly Market Price of Capsicum by Districts in Himachal Pradesh (Average: 2015-19)**

The market price changes between INR 10/kg and INR 60/kg. The price fluctuation range is wider than the range of cabbage. The price bottoms out in May, whilst it peaks in March and October. The price change shows a similar trend in all districts. However, the price increase in October remains inconspicuous in Shimla and Solan districts. The price difference between districts becomes wider in July-October. As a higher amount of arrival is recorded in the two districts during the period, the lower price is influenced by the price for inter-state distribution destined for major cities. On one hand, the price drops in May as influenced by the peaked arrival in many districts due to high harvesting of most local producers. In contrast, the price increase in March and October is caused by off-harvesting of the producers.

**(3) Cauliflower**

The following figure shows the change of the average monthly market price of cauliflower in the *mandis* in 2015-19 by districts in Himachal Pradesh:



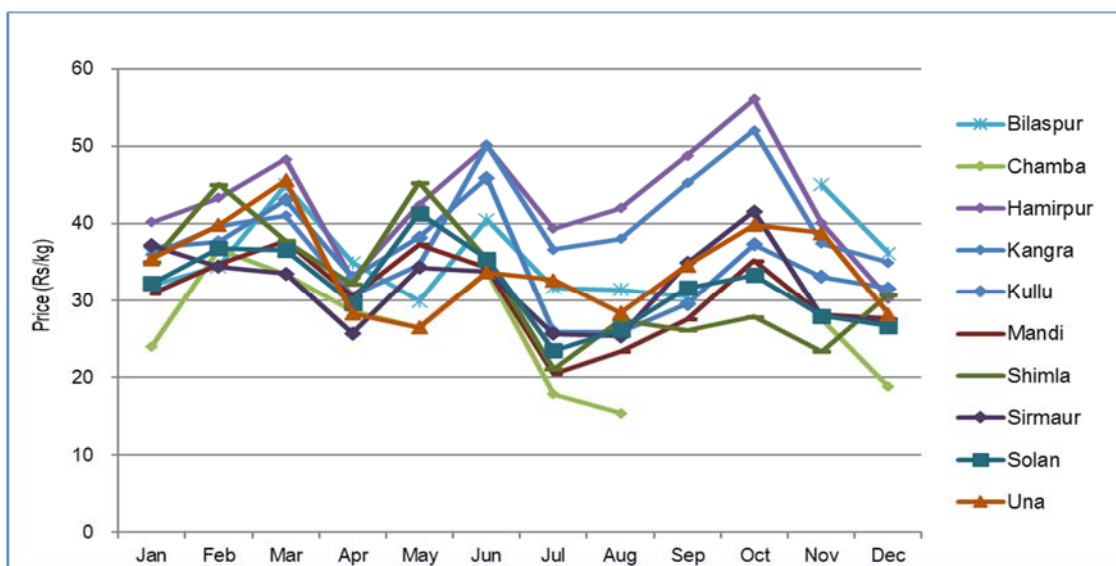
Source: <https://agmarknet.gov.in/>

**Figure 14 Monthly Market Price of Cauliflower by Districts in Himachal Pradesh (Average: 2015-19)**

The market price changes between INR 5/kg and INR 40/kg. The price fluctuation range is wide even though it is less than the range for capsicum. The price change pattern is like the pattern for cabbage, whilst the times of the bottom and peak prices are about one month ahead the time for cabbage. Also, like cabbage, the peak price is relatively lower in districts with a larger share of the annual arrival in Himachal Pradesh, i.e., Kullu, Mandi, and Shimla districts.

**(4) French Bean (Fresh)**

The following figure shows the change of the average monthly market price of French bean in the *mandis* in 2015-19 by districts in Himachal Pradesh:



Source: <https://agmarknet.gov.in/>

**Figure 15 Monthly Market Price of French Bean by Districts in Himachal Pradesh (Average: 2015-19)**

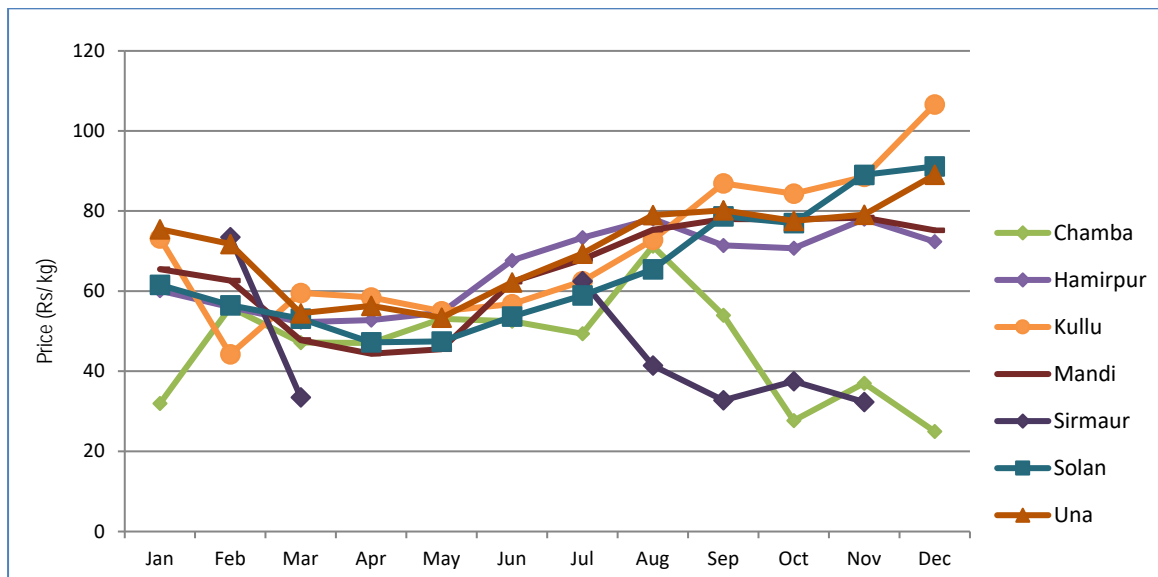
The market price changes between INR 20/kg and INR 50/kg. The price fluctuates within several months and has three times of peaks in a year, i.e., in March, June and October. The price change shows a similar trend in

Att.3.4.3-14

all districts. The price change pattern is due to the nature of French bean, which is short maturing and flexible cropping season in open field.

**(5) Garlic**

The following figure shows the change of the average monthly market price of garlic in the *mandis* in 2015-19 by districts in Himachal Pradesh:



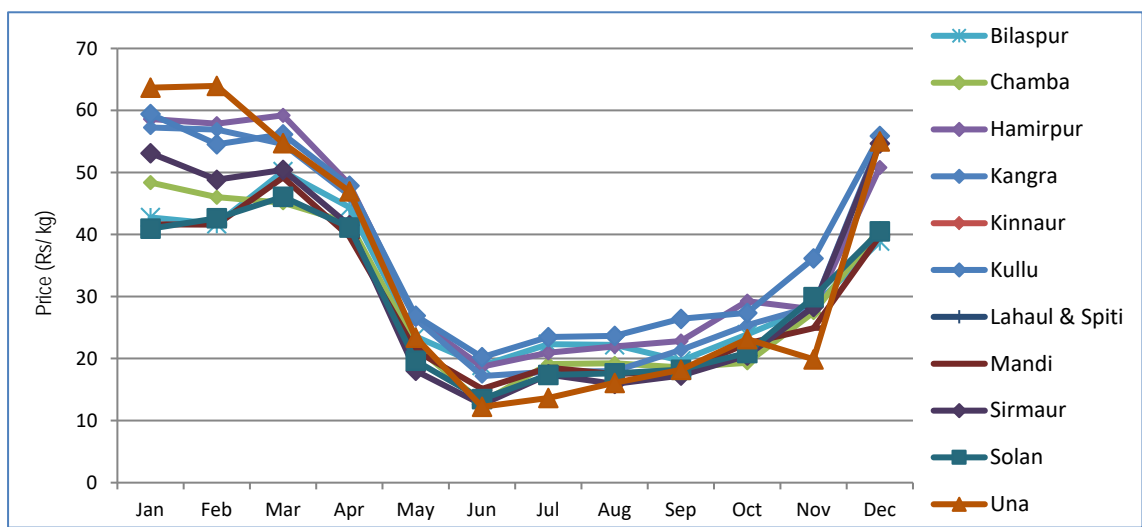
Source: <https://agmarknet.gov.in/>

**Figure 16 Monthly Market Price of Garlic by Districts in Himachal Pradesh (Average: 2015-19)**

The market price changes between INR 40/kg and INR 100/kg. The price bottoms out in April-May, whilst it peaks in the end of the year. The price change shows a similar trend in all districts. The figures in Chamba and Sirmaur show an outlier trend due to missing data in many years. A lower price season is mostly synchronised with a higher arrival season in contrast to many other vegetable crops discussed in the paper.

**(6) Okra**

The following figure shows the change of the average monthly market price of Okra in the *mandis* in 2015-19 by districts in Himachal Pradesh:



Source: <https://agmarknet.gov.in/>



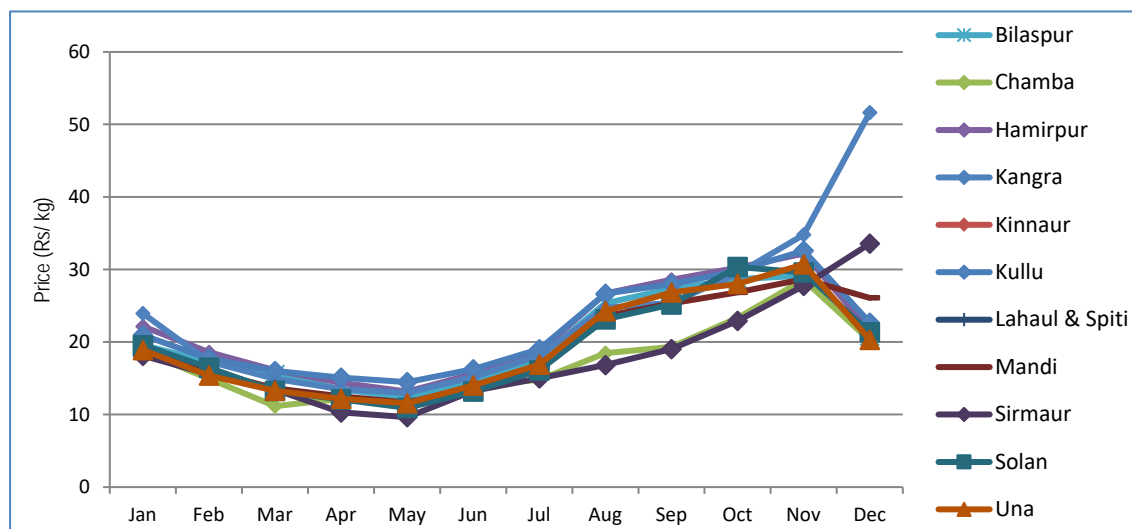
Att.3.4.3-15

**Figure 17 Monthly Market Price of Okra by Districts in Himachal Pradesh (Average: 2015-19)**

The market price changes between INR 10/kg and INR 60/kg. The price fluctuation range is relatively wider. The price bottoms out in June, whilst it peaks in January-March. The price change shows a similar trend in all districts. The price trend changes obviously in inverse relation to the arrival trend in contrast to many other vegetable crops discussed in the paper.

**(7) Onion**

The following figure shows the change of the average monthly market price of Onion in the *mandis* in 2015-19 by districts in Himachal Pradesh:



(Source) <https://agmarknet.gov.in/>

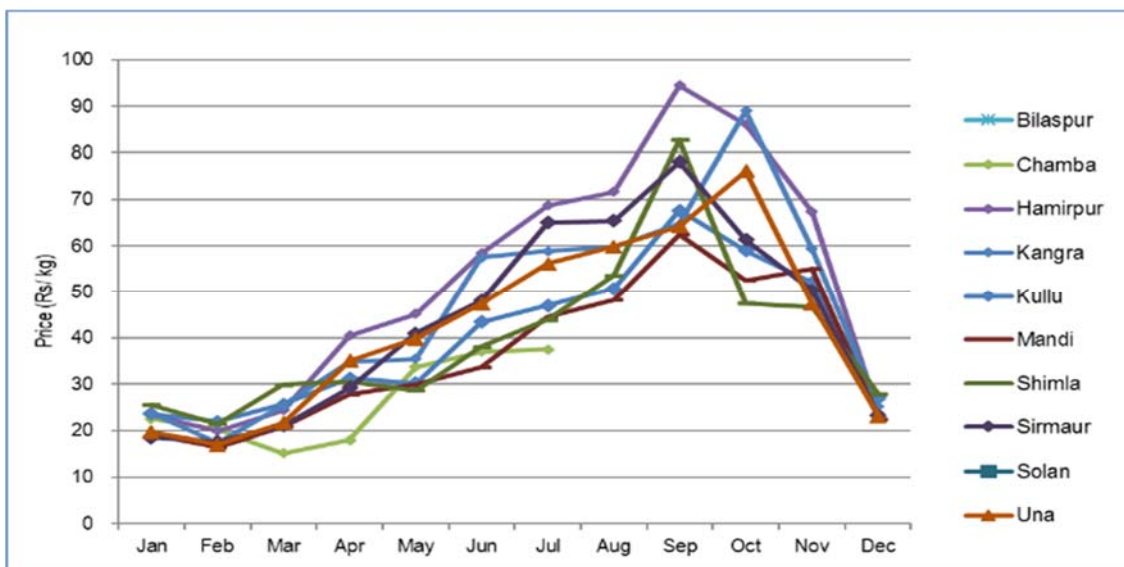
**Figure 18 Monthly Market Price of Onion by Districts in Himachal Pradesh (Average: 2015-19)**

The market price changes between INR 10/kg and INR 30/kg. The price fluctuation range is small compared with the other vegetables as same as potato. The price difference between districts is also small throughout the year. The price bottoms out in May, whilst it peaks November. The price trend changes obviously in inverse relation to the arrival trend.

**(8) Peas (Fresh)**

The following figure shows the change of the average monthly market price of peas in the *mandis* in 2015-19 by districts in Himachal Pradesh:





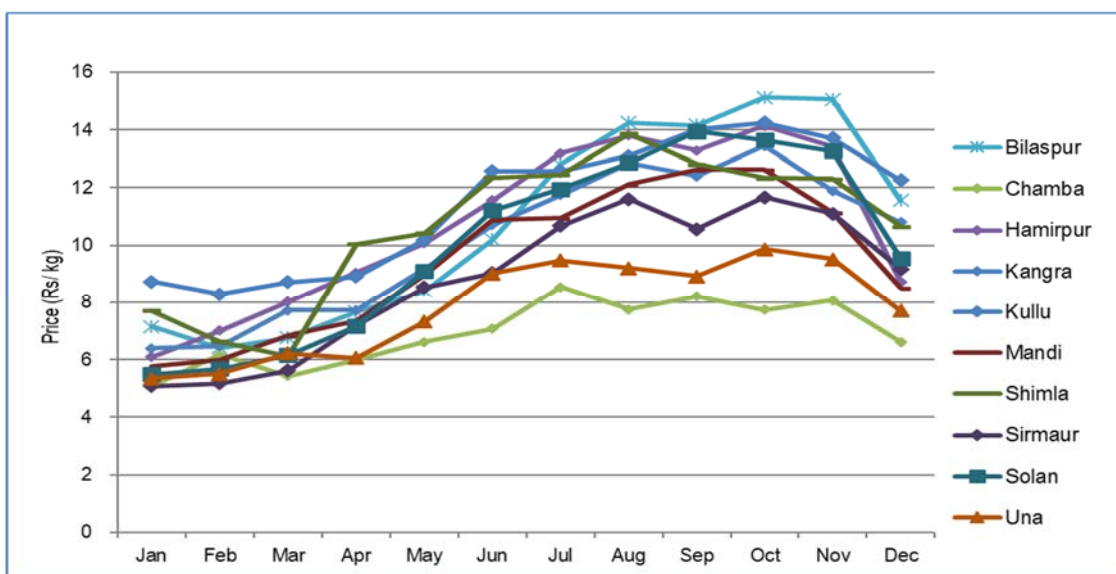
(Source) <https://agmarknet.gov.in/>

**Figure 19 Monthly Market Price of Peas by Districts in Himachal Pradesh (Average: 2015-19)**

The market price changes between INR 20/kg and INR 90/kg. The price fluctuation range is the widest among the selected vegetables. Whilst the arrival increases in the *rabi* season months except for Kullu, Mandi and Shimla districts which account for a large share of the annual arrival in Himachal Pradesh, it is considered that peas are traditionally harvested during the *rabi* season in most areas in Himachal Pradesh. The price bottoms out during the *rabi* season months. Then, it starts to increase before the *kharif* season and peaks in September-October. The price difference between districts becomes wider during the price increasing months and the price in Kullu, Mandi and Shimla districts is lower than in the other districts during these months, same case as for the other selected vegetables.

**(9) Potato**

The following figure shows the change of the average monthly market price of potato in the *mandis* in 2015-19 by districts in Himachal Pradesh:



Source: <https://agmarknet.gov.in/>

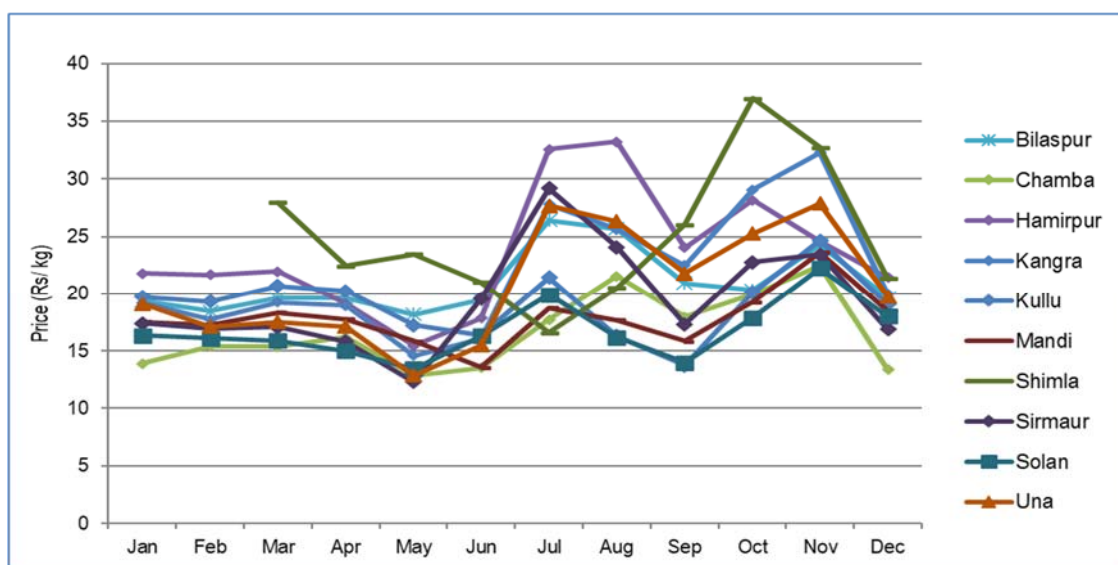
**Figure 20 Monthly Market Price of Potato by Districts in Himachal Pradesh (Average: 2015-19)**

**Att.3.4.3-17**

The market price changes between INR 5/kg and INR 15/kg. The price fluctuation range is small compared with the other selected vegetables. The price decreases during the *rabi* season months whilst it increases during the *kharif* season months like for many other vegetables. It is considered that potato is also harvested mainly during the *rabi* season in most areas in Himachal Pradesh. The price difference between districts becomes wider during the price increasing months, same case as for the other selected vegetables. However, the price in the districts with a large share of the annual arrival in Himachal Pradesh is not necessarily lower than the price in the other districts. This implies that the price is largely influenced by supply and demand trends in the local market as the share of inter-state distribution in the total marketed amount in Himachal Pradesh is relatively small in the case of potato.

**(10) Tomato**

The following figure shows the change of the average monthly market price of tomato in the *mandis* in 2015-19 by districts in Himachal Pradesh:



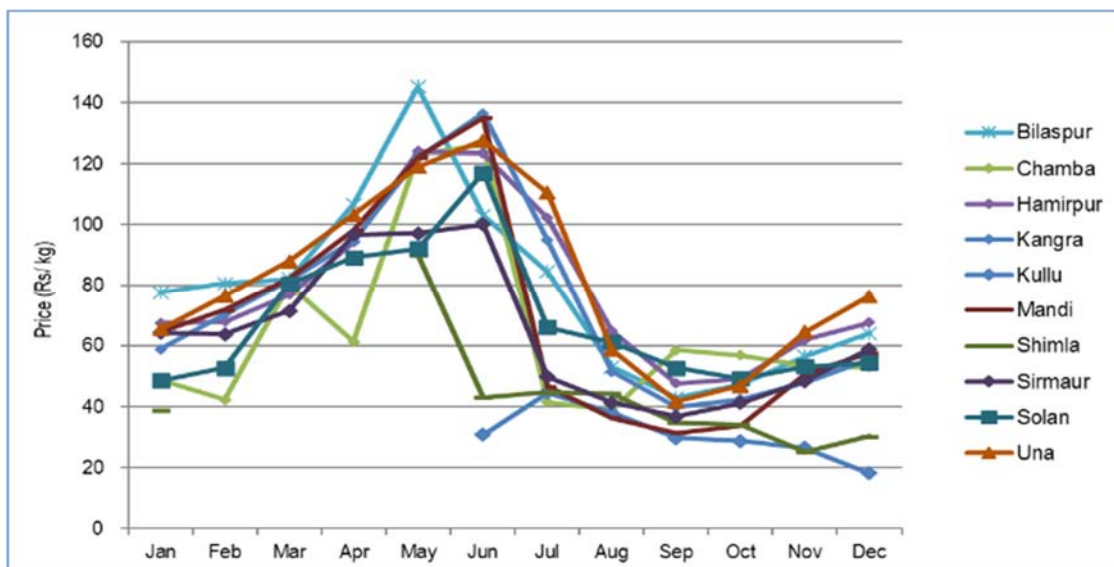
Source: <https://agmarknet.gov.in/>

**Figure 21 Monthly Market Price of Tomato by Districts in Himachal Pradesh (Average: 2015-19)**

The market price changes between INR 15/kg and INR 35/kg. Although the price is stable from the *rabi* season to the summer season, it starts to increase during the *kharif* season months. The price drops once in September in many districts. This time is the end of the high-arrival season in Kullu, Mandi and Solan districts which account for a large share of the annual arrival in Himachal Pradesh. It seems that a substantial amount of surplus transacted for inter-state distribution flows into the local market in September. The price in the three districts is lower than the price in the other districts even in the high-arrival season, same case as for the other selected vegetables.

**(11) Apple**

The following figure shows the change of the average monthly market price of apple in the *mandis* in 2015-19 by districts in Himachal Pradesh:



Source: <https://agmarknet.gov.in/>

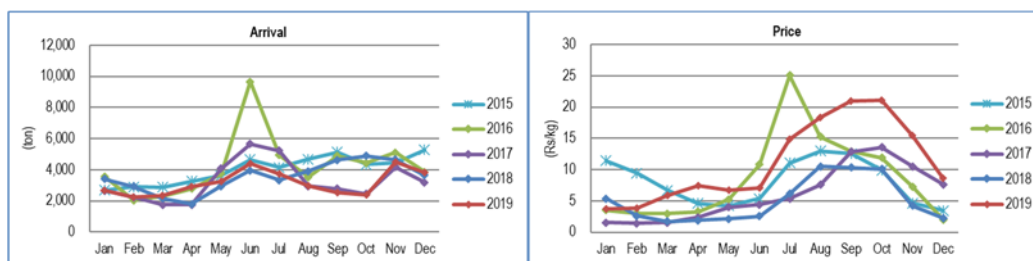
**Figure 22 Monthly Market Price of Apple by Districts in Himachal Pradesh (Average: 2015-19)**

The market price changes between INR 20/kg and INR 140/kg. The price fluctuation range is very wide compared with the other selected vegetables. The price bottoms out in August-November, and this period corresponds to the high harvesting season. The price peaks in May-June, during which only a small amount of arrival is recorded in Kullu and Shimla districts which account for a large share of the annual arrival in Himachal Pradesh.

**Attachment 3.4.4 Arrival and Price of Azadpur Market (Ave. 2015-19)**

**1. Cabbage**

The annual arrival is about 43,500 tons, whilst the monthly arrival changes between 2,000 tons and 6,000 tons. Whilst the monthly arrival has two peaks in June and November, it tends to be higher during the *kharif* season. The monthly price changes between INR 1.5/kg and INR 20/kg, and it has the peak in August-October. The change patterns of the arrival and price are almost the same every year (the data in June-July in 2016 might be an outlier value) (see the figure below).



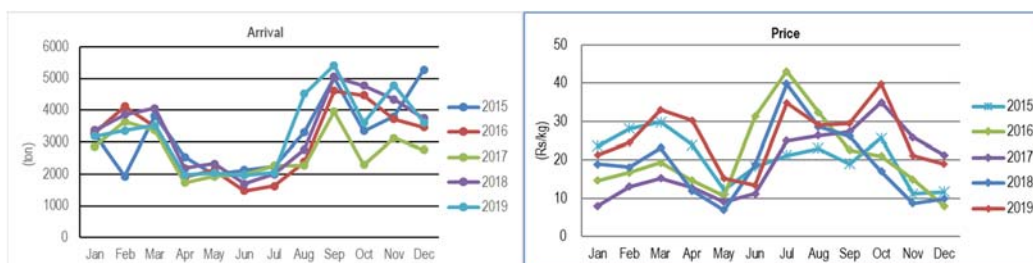
Source: <https://agmarknet.gov.in/>

**Figure 1 Monthly Arrival and Price of Cabbage in Azadpur Mandi (Average: 2015-19)**

Whilst the change pattern of the monthly price in Azadpur *Mandi* almost corresponds with the pattern in the Himachal Pradesh *mandis*, the price in the Himachal Pradesh *mandis* is generally higher than the price in Azadpur *Mandi*. However, the price in the districts with a large share of the annual arrival in Himachal Pradesh is lower than the price in Azadpur *Mandi* during the high arrival season (July-August) of the districts. It implies that farmers in the production centres in Himachal Pradesh grow cabbage by controlling the harvesting time, so that the cabbage can be marketed to Azadpur *Mandi* during the season when the *mandi* records relatively low arrival and high price.

**2. Capsicum**

The annual arrival is about 37,500 tons, whilst the monthly arrival changes between 2,000 tons and 5,000 tons. Although the monthly arrival has the peak in September-November, it tends to be higher during the *rabi* season. The monthly price changes between INR 10/kg and INR 40/kg, and it has a peak in July which is the last period of the low arrival season. A little peak is also seen in March. The change patterns of the arrival and price are almost the same every year (see the figure below).



Source: <https://agmarknet.gov.in/>

**Figure 2 Monthly Arrival and Price of Capsicum in Azadpur Mandi (Average: 2015-19)**

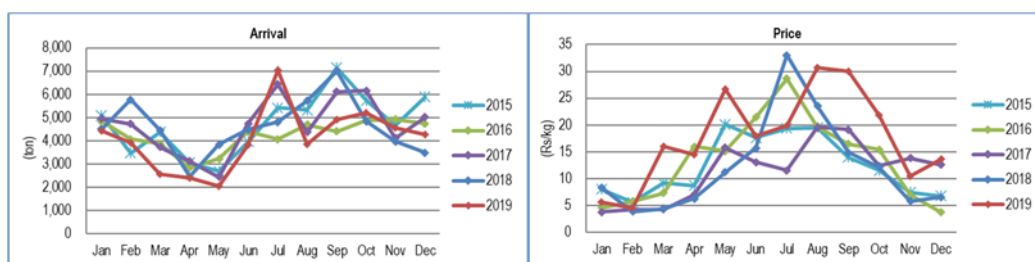
Whilst the change pattern of the monthly price in Azadpur *Mandi* almost corresponds with the pattern in the Himachal Pradesh *mandis*, the price in the Himachal Pradesh *mandis* is generally higher than the price in

**Att.3.4.4-2**

Azadpur *Mandi*. The price in the districts with a large share of the annual arrival in Himachal Pradesh is lower than the price in Azadpur *Mandi* during the high arrival season (July-August) of the districts.

**3. Cauliflower**

The annual arrival is about 53,600 tons, whilst the monthly arrival changes between 2,000 tons and 7,000 tons. Whilst the monthly arrival has the peak in September-October, and even in July sometimes, it tends to be higher during the *kharif* season. The monthly price changes between INR 5/kg and INR 30/kg, and it has a peak in July-August when the arrival is becoming high. The change patterns of the arrival and price do not change much every year (see the following figure).



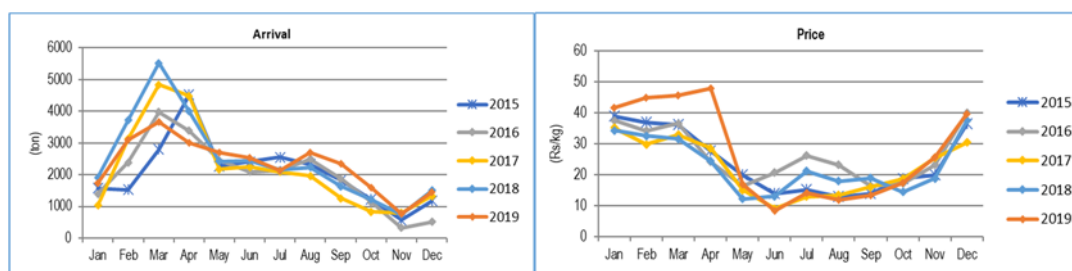
Source: <https://agmarknet.gov.in/>

**Figure 3 Monthly Arrival and Price of Cauliflower in Azadpur *Mandi* (Average: 2015-19)**

Whilst the change pattern of the monthly price in Azadpur *Mandi* almost corresponds with the pattern in the Himachal Pradesh *mandis*, the price in the Himachal Pradesh *mandis* is generally higher than the price in Azadpur *Mandi*. The price in the districts with a large share of the annual arrival in Himachal Pradesh is lower than the price in Azadpur *Mandi* during the high arrival season (May-August) of the districts.

**4. Okra**

The annual arrival is about 26,500 tons, whilst the monthly arrival changes between 1,000 tons and 5,000 tons. The monthly arrival starts to increase in November and comes to the peak in March-April. The monthly price changes between INR 10/kg and INR 50/kg, and it has a high season in December-March. The change patterns of the arrival and price do not change much every year (see the following figure).



Source: <https://agmarknet.gov.in/>

**Figure 4 Monthly Arrival and Price of Okra in Azadpur *Mandi* (Average: 2015-19)**

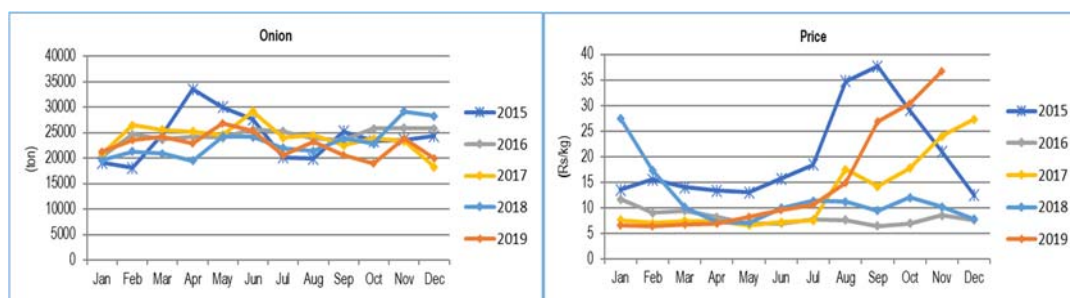
Whilst the change pattern of the monthly price in Azadpur *Mandi* almost corresponds with the pattern in the Himachal Pradesh *mandis*, the price in the Himachal Pradesh *mandis* is generally higher than the price in Azadpur *Mandi*. The price in all districts in Himachal Pradesh is almost same or slightly higher than the price

**Att.3.4.4-3**

in Azadpur *Mandi* throughout the year. It implies that okra produced in Himachal Pradesh are not much marketed to Azadpur *Mandi*.

**5. Onion**

The annual arrival is about 283,900 tons. The amount is the 2<sup>nd</sup> largest after potato among the vegetables discussed in the paper. The monthly arrival is relatively steady throughout the year and it changes between 2,000 tons and 2,600 tons. The change patterns of the arrival do not change much every year. The monthly price changes between INR 5/kg and INR 30/kg. The price is relatively stable among vegetable crops discussed in the paper. The price change pattern is not same every year whilst the price tends to be high in August-December (see the following figure).



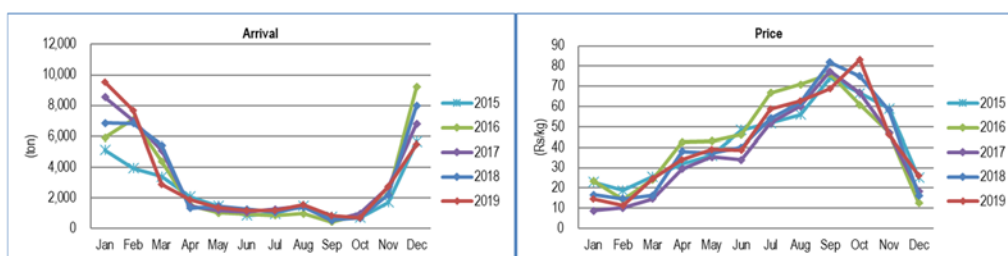
Source: <https://agmarknet.gov.in/>

**Figure 5 Monthly Arrival and Price of Onion in Azadpur Mandi (Average: 2015-19)**

Whilst the change pattern of the monthly price in Azadpur *Mandi* almost corresponds with the pattern in the Himachal Pradesh *mandis*, the price in the Himachal Pradesh *mandis* is higher than the price in Azadpur *Mandi* throughout the year. Though the arrival of the Himachal Pradesh *mandis* records the peak in May-June in general, the price in all districts in the period is even higher. It implies that onion produced in Himachal Pradesh are not much marketed to Azadpur *Mandi*.

**6. Peas (Fresh)**

The annual arrival is about 35,100 tons, whilst the monthly arrival changes seasonally between 500 tons and 9,000 tons. Whilst the monthly arrival has the peak in December-February, it tends to be higher during the *rabi* season. The monthly price also highly changes between INR 10/kg and INR 80/kg, and it has the peak in September-October, immediately before the arrival starts to increase. The change patterns of the arrival and price are almost the same every year (see the following figure).



Source: <https://agmarknet.gov.in/>

**Figure 6 Monthly Arrival and Price of Peas in Azadpur Mandi (Average: 2015-19)**

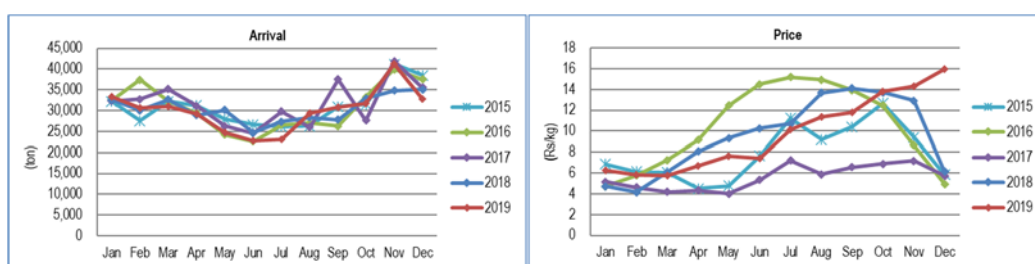


**Att.3.4.4-4**

The change pattern of the monthly price in Azadpur *Mandi* almost corresponds with the pattern in the Himachal Pradesh *mandis*, and the price difference between the Himachal Pradesh *mandis* and Azadpur *Mandi* is small. The price in the districts with a large share of the annual arrival in Himachal Pradesh is lower than the price in Azadpur *Mandi* in March-October, whilst the districts have two high arrival months, i.e., May and October.

**7. Potato**

The annual arrival is about 369,600 tons, whilst the monthly arrival changes between 25,000 tons and 40,000 tons. Whilst the monthly arrival has the peak in November-December, it tends to be higher during the *rabi* season. The monthly price changes between INR 4/kg and INR 16/kg, and it has a peak during the *kharif* season months (July-October). The change patterns of the arrival are almost the same every year, although the price patterns change from year to year (see the following figure).



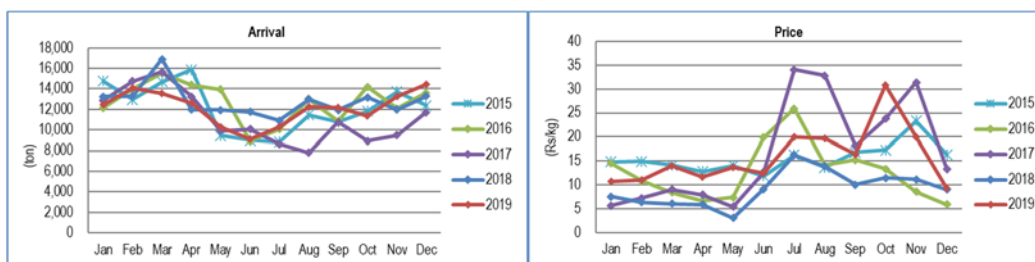
Source: <https://agmarknet.gov.in/>

**Figure 7 Monthly Arrival and Price of Potato in Azadpur Mandi (Average: 2015-19)**

The change pattern of the monthly price in Azadpur *Mandi* almost corresponds with the pattern in the Himachal Pradesh *mandis*, and the price difference between the Himachal Pradesh *mandis* and Azadpur *Mandi* is small. As the peak of the arrival in the Himachal Pradesh *mandis* is May, Himachal Pradesh would be a supply source of potato to Azadpur *Mandi* when the arrival is decreasing. The price in the Himachal Pradesh *mandis* is almost the same as the price in Azadpur *Mandi* throughout the year even in districts with a large share of the annual arrival in Himachal Pradesh.

**8. Tomato**

The annual arrival is about 146,300 tons, whilst the monthly arrival changes between 8,000 tons and 16,000 tons. Whilst the monthly arrival has the peak in February-March, it tends to be higher during the *rabi* season. The monthly price changes between INR 5/kg and INR 35/kg. After the price comes to a peak in July, it then goes down. Then, it increases again and has another peak in October-November. The change patterns of the arrival and price do not change much every year (see the following figure).



Source: <https://agmarknet.gov.in/>

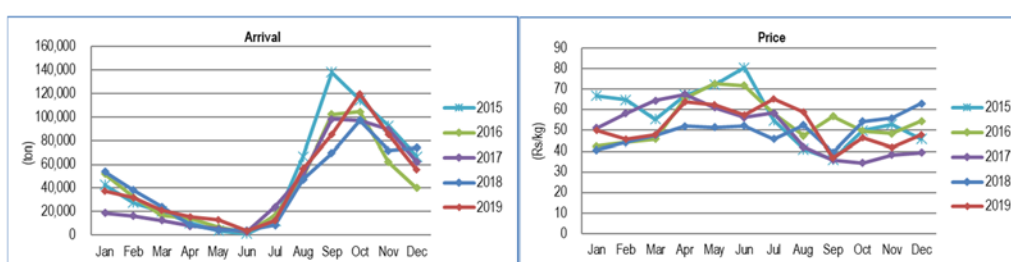
**Figure 8 Monthly Arrival and Price of Tomato in Azadpur Mandi (Average: 2015-19)**

**Att.3.4.4-5**

Whilst the change pattern of the monthly price in Azadpur *Mandi* almost corresponds with the pattern in the Himachal Pradesh *mandis*, the price in the Himachal Pradesh *mandis* is generally higher than the price in Azadpur *Mandi*. The price in the districts with a large share of the annual arrival in Himachal Pradesh is lower than the price in Azadpur *Mandi* during the high arrival season (July-September) of the districts.

**9. Apple**

The annual arrival is about 523,500 tons, whilst the monthly arrival changes seasonally between 2,000 tons and 140,000 tons. Whilst the monthly arrival has the peak in September-October, it tends to be higher during August-December. The monthly price changes between INR 30 and INR 80/kg. The range is relatively small compared with that of the monthly arrival. The change patterns of the arrival and price do not change much every year (see the following figure).



(Source) <https://agmarknet.gov.in/>

**Figure 9 Monthly Arrival and Price of Apple in Azadpur Mandi (Average: 2015-19)**

Whilst the change pattern of the monthly price in Azadpur *Mandi* almost corresponds with the pattern in the Himachal Pradesh *mandis*, the price in the Himachal Pradesh *mandis* is generally higher than the price in Azadpur *Mandi* and seasonally changes with a wider range. The price in the districts with a large share of the annual arrival in Himachal Pradesh is generally lower than the price in Azadpur *Mandi* during the high arrival season (August-September) of the districts.