

North-East Monsoon 2013: An Overview (October - December 2013) *

The year 2013-14 has been exceptionally favourable for agricultural growth in terms of climatic conditions. The North-East monsoon during October-December 2013 was 18 per cent above its long period average (LPA) compared with 21 per cent below LPA same period last year. So was the South-West monsoon during June-September 2013 which was 6 per cent above LPA as against 8 per cent below LPA same period last year. The confluence of these favourable factors along with seamless inter-seasonal transition of rainfall and adequate replenishment of soil moisture and reservoirs have significantly boosted the production of crops. This was evident in the satisfactory progress of sowing. Consequently, as per the second advance estimates, the production of rice, wheat, pulses, oilseeds and cotton during 2013-14 have been estimated to be the highest ever. This augurs well for the anticipated higher off-take of rice and wheat under the National Food Security Act 2013 as well as for bridging the demand-supply gaps of pulses and oilseeds in which the country has not as yet achieved self-sufficiency.

Introduction

North-East monsoon, also called the post monsoon rainfall which occurs during October-December constitutes around 10 per cent of the total rainfall in the country in a year. The other three rainy seasons, namely, South-West monsoon during June-September, pre-monsoon rainfall during March-May and winter rainfall during January-February account for around 75-80 per cent, 11 per cent and 3 per cent of all rainfall in the country every year.

Though source to around 10 per cent of all rainfall in the country, North-East monsoon is an important determinant of *rabi* crops. This is because *rabi* sowing coincides with the North-East monsoon which occurs

during October-December. *Rabi* foodgrains in the past ten years constituted around 49 per cent of total foodgrains production with *rabi* pulses constituting around 65 per cent of total pulses production. The performance of the North-East monsoon during October-December 2013 is being reviewed in this article.

An Overview: North-East Monsoon 2013

Compared with the previous year when the North-East monsoon was 21 per cent below LPA, rainfall during October-December 2013 was 18 per cent above LPA and was much more evenly distributed which augurs well for *rabi* crops 2013-14. *Rabi* crops in 2013-14, particularly wheat, pulses and oilseeds (second advance estimates) are expected to perform very well (Table 1).

Cumulative Rainfall

The all-India cumulative rainfall of 149.5 mm during October-December 2013 was 18 per cent higher than its LPA of 127.2 mm and much higher than the cumulative rainfall of 100.6 mm during the same period last year. However, rainfall during the period over the core region (South Peninsula consisting of five sub-divisions, namely, Tamil Nadu, Coastal

Table 1: Production of *rabi* crops in recent years and years of deficit North-East Monsoon

Years	Deviations in North-East monsoon (per cent)	Growth in <i>rabi</i> foodgrains (per cent)	Growth in wheat (per cent)	(Per cent)	
				Growth in <i>rabi</i> pulses (per cent)	Growth in <i>rabi</i> oilseeds (per cent)
1	2	3	4	5	6
2013-14@	18	4.5	2.2	8.8	8.0
2012-13	-21	0.8	-1.4	12.7	11.5
2011-12	-48	3.6	9.2	-0.9	-13.7
2008-09	-31	5.9	2.7	18.2	9.6
2007-08	-32	2.9	3.6	-11.1	-12.0
2006-07	-21	8.1	9.3	10.3	-8.3
2004-05	-11	-1.2	-4.9	-3.8	19.9
2002-03	-33	-13.1	-9.6	-18.2	-21.2

* Prepared in the Development Studies Division, Department of Economic and Policy Research, Reserve Bank of India.

@: Second Advance Estimates.

Source: IMD and Ministry of Agriculture, GoI.

Table 2: Cumulative Rainfall: Monthly – All India
(in mm)

Months	2013			2012
	Actual	Normal	Deviation (%)	Deviation (%)
1	2	3	4	5
October	129.5	80.6	61 (E)	-28 (D)
November	14.1	29.7	-53 (D)	11 (N)
December	6.3	16.8	-63 (S)	-44 (D)
Northeast Monsoon	149.5	127.2	18 (N)	-21 (D)

Source: IMD.

Andhra Pradesh, Rayalaseema, Kerala and south interior Karnataka) was 14 per cent below LPA. The, core region, in general, receives around 30 per cent of its total annual rainfall during October-December and within this region, Tamil Nadu, receives about 48 per cent of its annual rainfall during the season.

Temporal Distribution

Monthly

The North-East monsoon commenced over the South Peninsula on October 21, 2013 simultaneously after the withdrawal of South-West monsoon. For the season as a whole, rainfall during the period was above LPA. This was mainly due to substantially above normal rainfall at 161 per cent of LPA during October 2013. Rainfall remained subdued during the succeeding months to as low as 47 per cent and 38

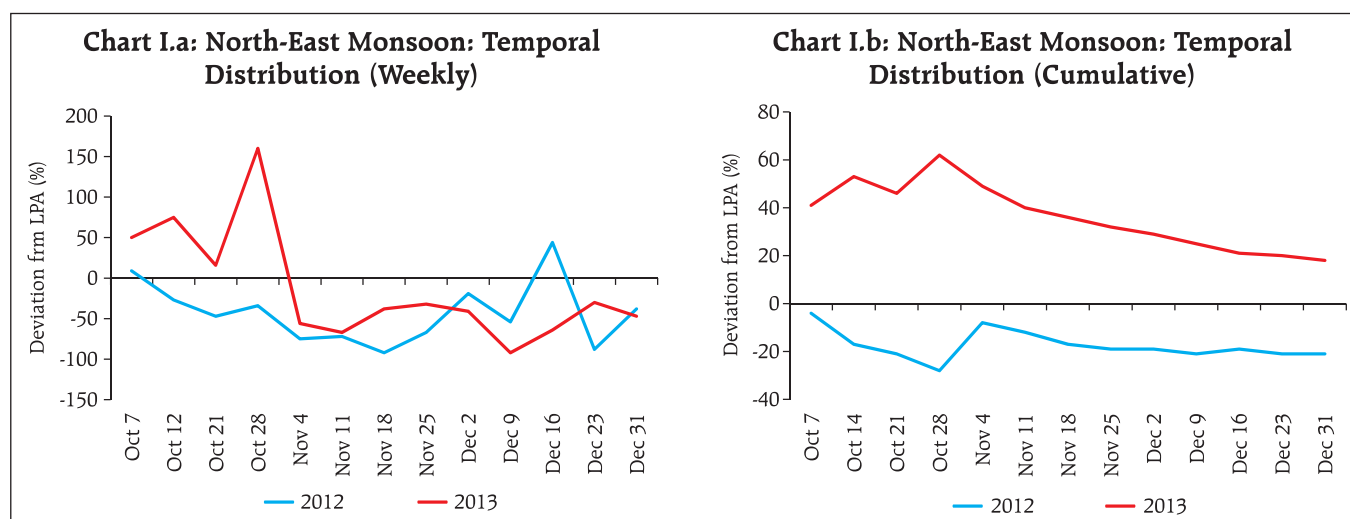
per cent, respectively, of LPA during November and December (Table 2). As regard the core region, rainfall for the season as a whole was 86 per cent of LPA, the monthly rainfall for the region being 109 per cent, 65 per cent and 45 per cent, respectively of LPA during October, November and December.

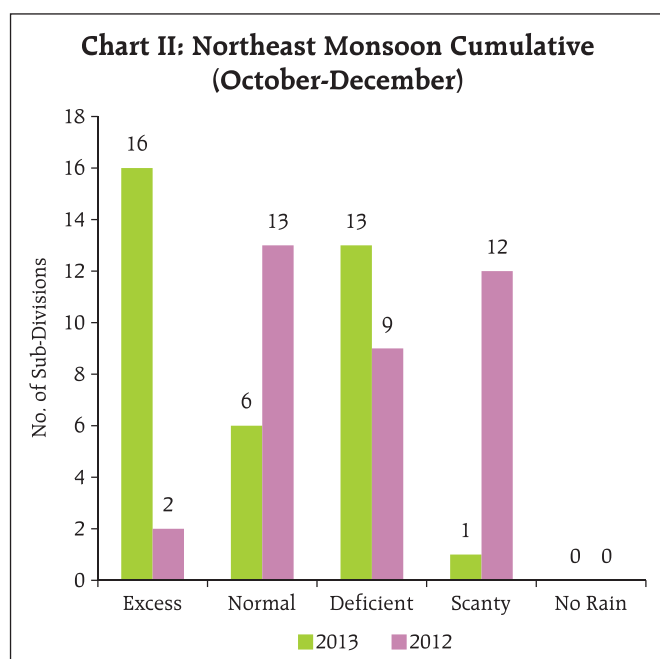
Weekly

At all-India level, on a weekly basis, rainfall was above normal till end-October 2013. Afterward, the weekly rainfall remained below LPA till end of the season (Chart I.a). However, heavy rainfall during October 2013 (161 per cent of LPA) has kept the cumulative weekly rainfall for the season above LPA (Chart I.b).

Spatial Distribution

During the season, out of 36 meteorological sub-divisions, 16 sub-divisions received excess rainfall, 6 received normal rainfall, 13 received deficient rainfall. Remaining one sub-division (Uttarakhand) received scanty rainfall (Char II). Amongst the sub-divisions in the core region, Coastal Andhra Pradesh received excess rainfall and Kerala received normal rainfall. Many sub-divisions of the Central and Eastern region of the country received excess rainfall, namely, Gangetic West Bengal, Odisha, Jharkhand, Bihar, East Madhya Pradesh, Chhattisgarh and Telangana. However, some sub-divisions of peninsula, namely,





Rayalaseema, Tamil Nadu & Puducherry and South-Interior Karnataka, and extreme Northern/North Eastern region received deficient/scanty rainfall (Table 3 and Statement I).

Since 2002, there were seven years when North-East rainfall was below LPA with the most severe shortfall being during 2011 (Table 4).

Table 3: Distribution of sub-divisions according to category of rainfall 2013

Category of Rainfall	Sub-Division
1	2
Excess	Coastal Andhra Pradesh, Telangana, Andaman & Nicobar Islands, Gangetic West Bengal, Orissa, Jharkhand, Bihar, East Uttar Pradesh, West Uttar Pradesh, West Madhya Pradesh, East Madhya Pradesh, Saurashtra & Kutch, Chattisgarh, Gujrat region, Daman, Dadra & Nagar Haveli and West Rajasthan, Vidarbha
Normal	Sub-Himalayan West Bengal and Sikkim, East Rajasthan, Konkan & Goa, Coastal Karnataka, Kerala, Marathwada
Deficient	Haryana, Chandigarh and Delhi, Punjab, Himachal Pradesh, Arunachal Pradesh, Assam & Meghalaya, Nagaland, Manipur, Mizoram & Tripura, Jammu & Kashmir, South Interior Karnataka, and Lakshyadweep, Madhya Maharashtra, Rayalaseema, Tamil Nadu & Puducherry, North Interior Karnataka
Scanty	Uttarakhand
No Rain	Nil

Table 4: North-East Monsoon: Cumulative Rainfall

Year	Cumulative Rainfall: Above (+)/ Below (-) Normal (per cent)	Rainfall			
		Excess	Normal	Deficient	Scanty/ No Rain
		Number of Sub-Divisions (Total=36)			
1	2	3	4	5	6
2002	-33	3	7	12	14
2003	8	9	9	6	12
2004	-11	8	10	17	1
2005	10	11	6	5	14
2006	-21	3	6	14	13
2007	-32	2	7	9	18
2008	-31	2	4	15	15
2009	8	13	10	9	4
2010	21	18	7	10	1
2011	-48	1	6	5	24
2012	-21	2	13	9	12
2013	18	16	6	13	1

Source: India Meteorological Department.

District wise

District-wise, out of 627 meteorological districts for which data are available, 63 per cent of the meteorological districts received excess/normal rainfall and the remaining 37 per cent received deficient/scanty/no rainfall during the season (Statement II). The corresponding figures for the previous year were 31 per cent and 69 per cent, respectively.

Reservoir Status

The Central Water Commission monitors total live water storage in 85 major reservoirs of the country, having full reservoir level of 155.046 billion cubic meters (BCM). Satisfactory South-West monsoon during 2013 has replenished these reservoirs to levels much above the previous year. Normal post monsoon rainfall during October-December further replenished these reservoirs. Live to total capacity in these reservoirs at end-September 2013 was 86 per cent as against 75 per cent the previous year. At end-December 2013, the live to total capacity in these reservoirs was 68 per cent as against 59 per cent a year ago (Table 5). As on March 20, 2014 total live storage in these 85 reservoirs was 44 per cent of the full reservoir level (FRL) as compared with 35 per cent a year ago.

Table 5: Reservoir Status

Status	30-Sep				31-Dec			
	2010	2011	2012	2013	2010	2011	2012	2013
1	2	3	4	5	6	7	8	9
Total Live Storage (BCM)	114.5	131.5	115.5	133.5	104.7	94.4	91.4	105.2
Percentage of Live Capacity at FRL	75.0	87.0	75.0	86.0	69.0	62.0	59.0	68.0

Note: BCM – Billion Cubic Meters; FRL – Full Reservoir Level

Source: Central Water Commission.

Progress of Rabi Sowing

As expected, satisfactory rainfall during the season has helped *rabi* sowing. Available information showed that as on March 7, 2014 area sown under all *rabi* crops was 5.5 per cent higher than that in the previous year and around 7.4 per cent above the normal. Area under wheat and pulses, the two important *rabi* crops has also surpassed the levels of sowing attained last year (Table 6).

Estimates of Agricultural Production: 2013-14

Foodgrains production of 263.2 million tonnes during 2013-14 has been estimated to be 2.4 per cent higher than the final estimates of 2012-13. This by far is the highest production recorded for foodgrains which has come about in the back drop of record production of rice, wheat and pulses. Production of oilseeds (33 million tonnes) and cotton (35.6 million bales) were also the highest ever recorded (Table 7).

Table 6: Rabi Sowing – 2013-14

(Million hectares)

Crop Name	Normal as of date	07-Mar		Percentage change Over 2013	per cent of Normal
		2014	2013		
1	2	3	4	5	6
Foodgrains	53.3	58.0	54.7	6.0	108.8
Wheat	29.1	31.5	29.8	5.7	108.2
Rice	3.4	4.1	3.4	20.6	120.6
Coarse Cereals	6.3	6.1	6.2	-1.6	96.8
Pulses	14.6	16.2	15.3	5.9	111.0
Oilseed	9.1	9.1	8.9	2.2	100.0
All-Crops	62.5	67.1	63.6	5.5	107.4

Conclusion

Agriculture has emerged driver of growth during 2013-14 due both to normal North-East and South-West monsoon. The confluence of these factors together with well distributed precipitation has significantly improved the production of both *kharif* and *rabi* crops. Record production of rice and wheat augur well for the implementation of the National Food Security Act 2013 and through greater open market availability help rein cereal prices. Record production of pulses and oilseeds are expected to reduce the demand-supply gaps and ease price pressures as the country is not yet self-sufficient in the production of these two crops.

Table 7: Agricultural Production 2013-14

(Million tonnes)

Crop	2012-13		2013-14	Percentage Change of 2 nd AE 2013-14	
	2 nd AE	Final Estimates	2 nd AE	Over 2 nd AE 2012-13	Over Final 2012-13
1	2	3	4	5	6
Foodgrains	250.1	257.1	263.2	5.2	2.4
Rice	101.8	105.2	106.2	4.3	0.9
Wheat	92.3	93.5	95.6	3.6	2.2
Coarse Cereals	38.5	40.0	41.6	8.2	4.0
Pulses	17.6	18.3	19.8	12.3	7.8
Oilseeds	29.5	30.9	33.0	11.8	6.6
Cotton#	33.8	34.2	35.6	5.3	4.0
Jute & Mesta##	11.1	10.9	11.3	1.9	3.4
Sugarcane (Cane)	334.5	341.2	345.9	3.4	1.4

#: Million bales of 170 kgs. each

##: Million bales of 180 kgs. each

Source: Ministry of Agriculture, GoI.

Statement I: Basic Rainfall Data (Cumulative)								
Sub-Divisions	Rainfall for the period from October 1 to December 31, 2013				Rainfall for the period from October 1 to December 31, 2012			
	Actual (mm)	Normal (mm)	% deviation from Normal		Actual (mm)	Normal (mm)	% deviation from Normal	
1 Andaman & Nicobar Islands	902.4	695.9	30	E	665.2	695.9	-4	N
2 Arunachal Pradesh	189.9	267.2	-29	D	224.4	267.2	-16	N
3 Assam & Meghalaya	122.8	195.0	-37	D	181.3	195.0	-7	N
4 Nagaland, Manipur, Mizoram & Tripura	127.7	243.0	-47	D	181.2	243.0	-25	D
5 Sub-Himalayan West Bengal and Sikkim	219.4	185.3	18	N	148.6	185.3	-20	D
6 Gangetic West Bengal	358.4	160.1	124	E	134.0	160.1	-16	N
7 Orissa	392.8	144.1	173	E	147.6	144.1	2	N
8 Jharkhand	281.1	91.6	207	E	81.3	91.6	-11	N
9 Bihar	197.5	77.5	155	E	44.4	77.5	-43	D
10 East Uttar Pradesh	98.8	60.4	64	E	2.5	60.4	-96	S
11 West Uttar Pradesh	70.4	54.4	29	E	3.9	54.4	-93	S
12 Uttarakhand	36.2	89.6	-60	S	32.6	89.6	-64	S
13 Haryana, Chandigarh & Delhi	14.8	29.4	-50	D	7.6	29.4	-74	S
14 Punjab	28.9	41.0	-30	D	11.3	41.1	-73	S
15 Himachal Pradesh	61.6	108.2	-43	D	41.4	108.2	-62	S
16 Jammu & Kashmir	96.4	131.8	-27	D	95.0	131.8	-28	D
17 West Rajasthan	11.6	9.5	22	E	3.2	9.6	-67	S
18 East Rajasthan	32.4	27.6	17	N	0.3	27.6	-99	S
19 West Madhya Pradesh	67.7	53.1	27	E	3.6	53.1	-93	S
20 East Madhya Pradesh	123.4	57.8	114	E	20.8	57.8	-64	S
21 Gujarat Region, Daman, Dadra & Nagar Haveli	60.0	34.9	72	E	4.6	34.9	-87	S
22 Saurashtra & Kutch	34.7	29.0	20	E	3.6	29.0	-87	S
23 Konkan and Goa	158.8	148.6	7	N	175.5	148.6	18	N
24 Madhya Maharashtra	62.8	107.8	-42	D	95.1	107.8	-12	N
25 Marathwada	112.7	101.6	11	N	72.2	101.6	-29	D
26 Vidarbha	133.7	81.8	64	E	42.8	81.8	-48	D
27 Chhattisgarh	175.0	76.9	128	E	65.3	76.9	-15	N
28 Coastal Andhra Pradesh	455.0	327.4	39	E	435.2	327.4	33	E
29 Telangana	251.0	119.3	110	E	145.1	119.3	22	E
30 Rayalaseema	165.5	219.2	-25	D	215.1	219.2	-2	N
31 Tamil Nadu & Puducherry	293.4	438.2	-33	D	367.7	438.2	-16	N
32 Coastal Karnataka	278.8	262.8	6	N	219.9	262.8	-16	N
33 North Interior Karnataka	105.1	145.3	-28	D	139.2	145.3	-4	N
34 South Interior Karnataka	131.0	209.6	-38	D	161.8	209.6	-23	D
35 Kerala	431.8	480.7	-10	N	312.3	480.7	-35	D
36 Lakshadweep	177.3	333.6	-47	D	167.3	333.6	-50	D
E : Excess, i.e., +20% or more			16				2	
N : Normal, i.e., +19% to -19%			6				13	
D : Deficient, i.e., -20% to -59%			13				9	
S : Scanty, i.e., -60% or less			1				12	
NR : No rain, i.e., -100%			0				0	
TOTAL			36				36	

Source: India Meteorological Department.

Statement II: State-wise Distribution of No. of Districts with Excess, Normal, Deficient, Scanty and No Rainfall								
S. No.	States	October 1, 2013 to December 31, 2013						
		E	N	D	S	NR	ND	TOTAL
1	A & N Islands (UT)	1	1	1	0	0	0	3
2	Arunachal Pradesh	0	4	8	1	0	3	16
3	Assam	0	13	11	3	0	0	27
4	Meghalaya	0	1	3	3	0	0	7
5	Nagaland	0	2	5	0	0	4	11
6	Manipur	0	0	4	3	0	2	9
7	Mizoram	1	0	2	5	0	1	9
8	Tripura	0	0	4	0	0	0	4
9	Sikkim	1	2	1	0	0	0	4
10	West Bengal	17	2	0	0	0	0	19
11	Orissa	29	1	0	0	0	0	30
12	Jharkhand	24	0	0	0	0	0	24
13	Bihar	37	1	0	0	0	0	38
14	Uttar Pradesh	39	12	18	2	0	0	71
15	Uttarakhand	0	1	6	6	0	0	13
16	Haryana	2	1	7	10	1	0	21
17	Chandigarh (UT)	0	0	1	0	0	0	1
18	Delhi	7	1	0	0	1	0	9
19	Punjab	3	3	7	7	0	0	20
20	Himachal Pradesh	2	2	6	2	0	0	12
21	Jammu & Kashmir	2	4	10	3	1	2	22
22	Rajasthan	12	10	10	1	0	0	33
23	Madhya Pradesh	34	7	9	0	0	0	50
24	Gujarat	17	5	4	0	0	0	26
25	Dadra & Daman (UTs)	2	0	0	0	0	0	2
26	Diu (UT)	1	0	0	0	0	0	1
27	Goa	0	2	0	0	0	0	2
28	Maharashtra	17	9	6	3	0	0	35
29	Chhattisgarh	18	0	0	0	0	0	18
30	Andhra Pradesh	17	3	3	0	0	0	23
31	Tamil Nadu	0	5	27	0	0	0	32
32	Puducherry (UT)	0	0	2	0	0	2	4
33	Karnataka	0	10	18	2	0	0	30
34	Kerala	0	9	5	0	0	0	14
35	Lakshadweep (UT)	0	0	1	0	0	0	1
Total		283	111	179	51	3	14	641

E: Excess N: Normal D: Deficient

S: Scanty NR: No Rain ND: No Data

Source: India Meteorological Department.