

PAK-SCMS

BULLETIN

PAKISTAN: SATELLITE BASED CROP MONITORING SYSTEM

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SUPARCO, the National Space Agency of Pakistan, started the program on "Monitoring of Crops through Satellite Technology" during the year 2005. This is a perpetual study encompassing all growing seasons around the year. The purpose of this initiative is to reinforce support for policy makers, planners and private sector for food security, stocking, marketing, trade and industrial management. The final crop estimates are released by end of March for Rabi crops and mid of October for Kharif crops.

Food and Agriculture Organization of United Nations, (FAO-UN) provided technical backstopping for analytics and transfer of technology. Wheat, cotton, rice, sugarcane, maize and potato crops are being covered under this program. In addition, large scale geospatial applications of satellite remote sensing technology have been made for monitoring/mitigation of natural disasters (floods, flash floods, and drought) and providing reconnaissance detailed information ordained for the uplift of agriculture and allied pursuits.

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CROP SITUATION: DECEMBER 2019

Summary

Increasing values of Normalized Difference vegetation Index (NDVI) at the end of December 2019 manifest emergence and active growth of early rabi crops. Generally, below normal night temperatures were observed especially during last decade of the month in most parts of the country. 1-2 country-wide spells were observed with light to moderate rains.

Wheat crop sowing has been completed in almost all parts of the country at the end of December. Generally the crop condition is good so far. Increase in support prices (Rs. 1365 per 40 kg), early termination of some kharif crops, better inputs availability and favorable weather conditions are most promising factors to have good wheat crop harvest at the end of this rabi season. Any weather phenomenon at crop maturity level, however can damage wheat crop before harvest. Government has estimated wheat availability of 28.973 million tons against the national requirement of 26.91 million during 2019-20. Thus no wheat shortage is expected in the country.

Cotton crop harvesting has been com-

pleted during December. This year, cotton crop production did not meet the targets due to multiple stresses mainly insect pests infestation. Crop size is expected to remain lowest of the decade. In the past 15 years, lowest cotton crop production was 9.92 million bales during 2015-16. According to PCGA report of 1st January 2020, cotton arrivals in the ginning factories of Pakistan were 8.139 million bales as compared to 10.274 million bales during last year (down by 20.77 percent). In Punjab and Sindh, the cotton arrivals during the reported period were lower by 23.84 and 16.18 percent, respectively, as compared to the same period of last year.

Sugarcane crop harvesting has got momentum during December. Increase in sugarcane support prices by provincial governments (Punjab @ Rs. 190 and Sindh @ 192 per 40 kg) and decrease in sugarcane area may result in stable and better prices in the general market.

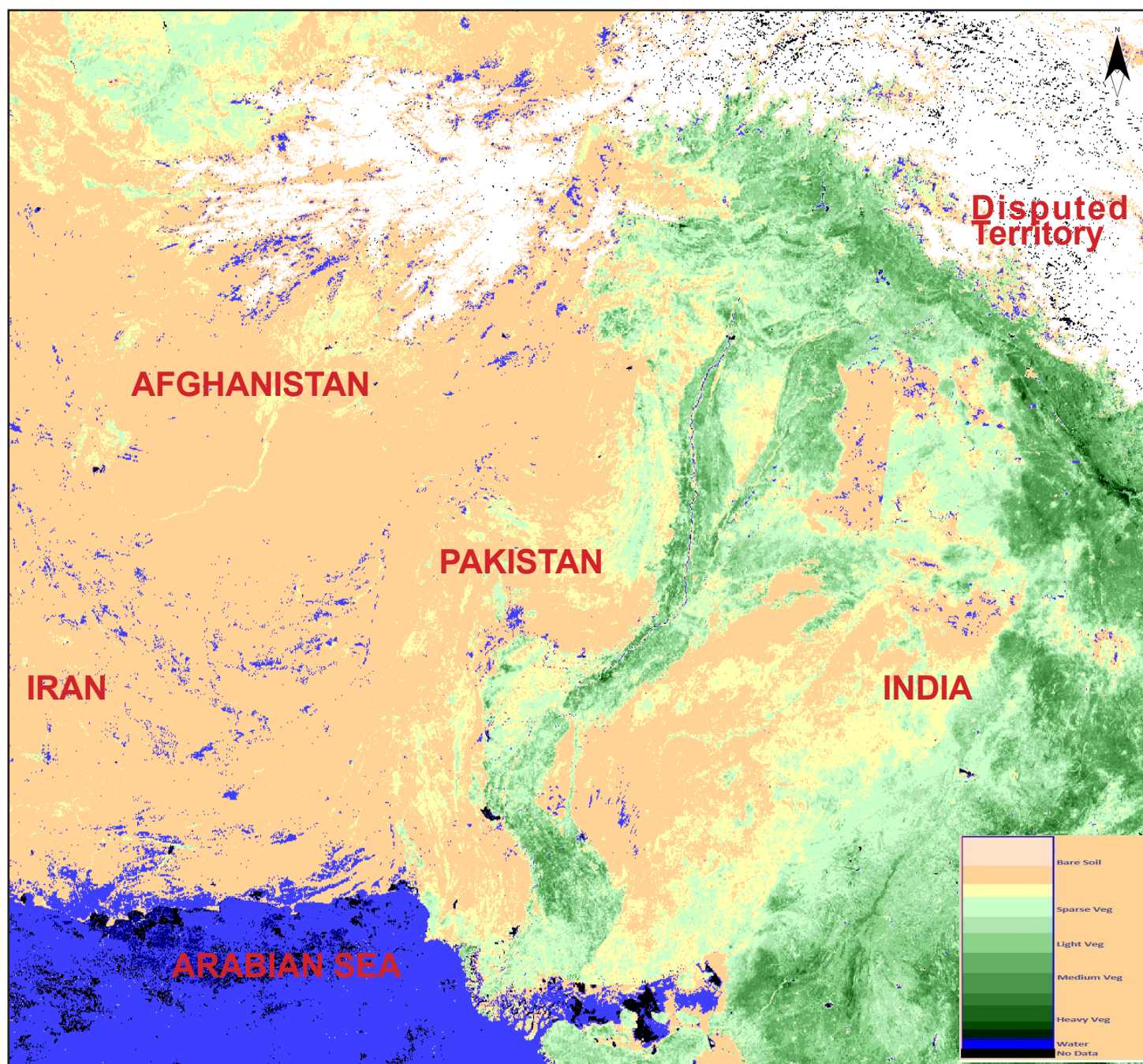
Rice harvesting has almost been completed. Pakistan has exported 1.601 million of rice during July to November 2019 as

CROPS SITUATION

compared to exports of 1.156 million tons during same period of last year up by 38.6 percent. In financial terms Pakistan earned 0.836 million US\$ during July to November 2019 as compared to earning of 0.603 million US\$ during the same period of last year. This showed an increase of 38.6 percent in the earnings of country from rice exports.

As per report of Indus River System Authority (IRSA) for December 2019, the irrigation water supply was 5.430 MAF against the last year's supply of 4.188 MAF, higher by 29.67 percent. As compared to the same period of last year, the irrigation water supplies in Punjab, Sindh and Balochistan were higher by 34.05, 1.969 and 22.67 percent, respectively. Khyber Pakhtunkhwa, however, has faced shortfall of irrigation water supply by 0.21 Percent.

As per report of National Fertilizer Development Centre (NFDC), total availability of Urea in November 2019 was 1422 thousand tons whereas total availability of DAP was 960 thousand tons. During November 2019, offtake of Nitrogen and Potash was lower by 7.4 and 9.8 percent, respectively, whereas offtake of Phosphate has been increased by 50.7 percent as compared to the same period of last year



Normalized Difference Vegetation Index (NDVI) 31st December 2019

Rabi Crops 2019-20

Wheat

Wheat crop sowing has been completed in almost all parts of the country at the end of December. Generally the crop condition is good so far. Increase in support prices (Rs. 1365 per 40 Kg), early termination of some kharif crops, better inputs availability and favourable weather conditions are most promising factors to have good wheat crop harvest at the end of this rabi season. Any weather phenomenon at crop maturity level as observed during April 2019, however can damage wheat crop before harvest. Timely rains and better irrigation water supplies than last year (27 percent higher than last year) have resulted not only in timely sowing of wheat crop but also good crop germination in both barani and irrigated areas of the country. A comparison of irrigation supplies with last year and average system usage is given below:

Comparison of Irrigation Releases for Rabi Seasons						
MAF					Percentage Change from	
Provinces	Average System Usage (2019-20)	2017-18	2018-19	2019-2020 (Estimated)	Last year	Average System Usage
Punjab	19.935	12.76	13.247	16.933	27.8	-15.1
Sindh	15.042	9.752	10.098	12.779	26.5	-15.0
Khyber Pakhtunkhwa	0.706	0.525	0.451	0.706	56.5	0.0
Balochistan	1.027	1.117	0.967	1.027	6.2	0.0
Total	36.71	24.154	24.763	31.444	27.0	-14.3

Source: Working Paper FCA October, 2019

Wheat stocks at the start of food year 1st May, 2019 were 3.779 million tons. Current wheat stock situation including new wheat procurement in the country is given below:

Province / Agency	Leftover stock on 01-05-2019	Procurement during 2019	Stocks position on 26-09-2019	Stocks position on 26-09-2018
Punjab	1.566	3.316	4.430	6.300
Sindh	0.804	0.000	0.803	1.650
Khyber Pakhtunkhwa	0.077	0.037	0.127	0.230
Balochistan	0.000	0.000	0.000	0.0073
PASSCO	1.332	0.681	1.710	1.900
Total	3.779	4.034	7.070	10.153

Source: Working Paper FCA October, 2019

Government estimated wheat availability of 28.973 million tons including production estimate of 25.194 million tons and left-over stocks of 3.779 million tons during 2019. National requirement of wheat was estimated at 26.91 million tons having sufficient wheat to fulfill the need of population. Increase in wheat flour prices, however indicating demand supply gap that require government attention to keep wheat flour prices under control.

Kharif Crops 2019-20

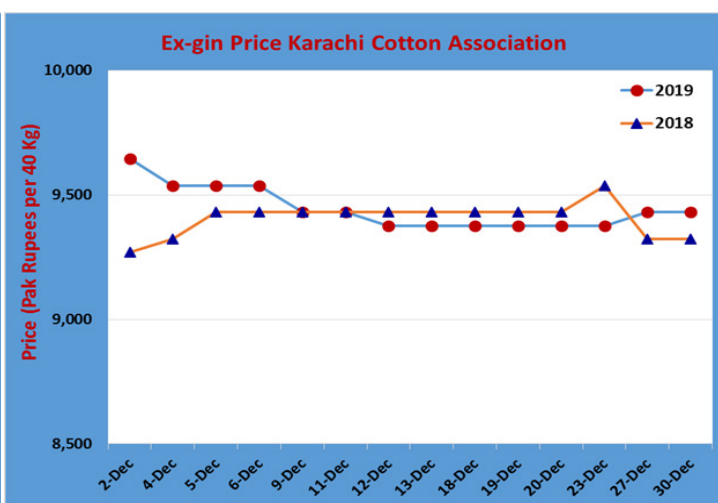
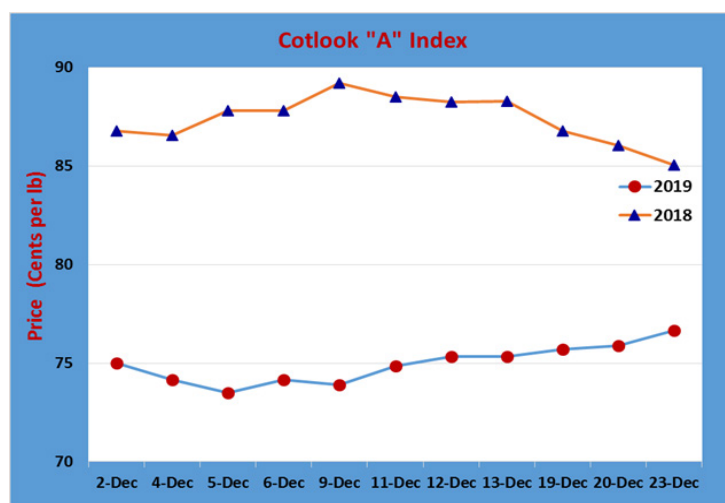
Cotton

Cotton crop harvesting has been completed during December. This year cotton crop was stressed and production did not meet the targets. Crop size is expected to remain lowest of the decade. Earlier lowest cotton crop production was 9.92 million bales during 2015-16. This low cotton production may result in stressed country trade due to higher cotton imports and may affect textile exports.

According to PCGA report of 1st January 2020, cotton arrivals in the ginning factories of Pakistan were 8.139 million bales as compared to 10.274 million bales during last year (down by 20.77 percent). In Punjab and Sindh, the cotton arrivals during the reported period were lower by 23.84 and 16.18 percent, respectively, as compared to the same period of last year. The details of cotton arrivals are given below:

Province	2019	2018	Difference	
	(000) Bales		Percent	
Punjab	4,693,653	6,162,706	-1,469,053	-23.84
Sindh	3,445,838	4,111,160	-665,322	-16.18
Total	8,139,491	10,273,866	-2,134,375	-20.77

In the international market, average cotton price during December 2019 was 74.96 cents per lb as compared to average price of 87.37 cents per lb during December 2018, showing a decrease of 12.41 cents per lb (down by 16.6 percent). Local markets, however, have an average ex-gin price of Rs. 9446 during December 2019 against the average price of Rs. 9404 per 40 kg in December 2018 showing nominal increase of around Rs. 42 per 40 kg (0.4 percent). Nominal increase in local markets price was mainly due to currency devaluation and decrease in cotton prices from last month. Phutti prices during December 2019 were generally ranged from Rs. 2500 to 4000 per 40 kg, less than last month depending upon lint quality. Graphs showing Cotlook "A" index and Karachi Cotton Association (Ex-gin) prices are given below:



PCCC daily reports dates

Sugarcane

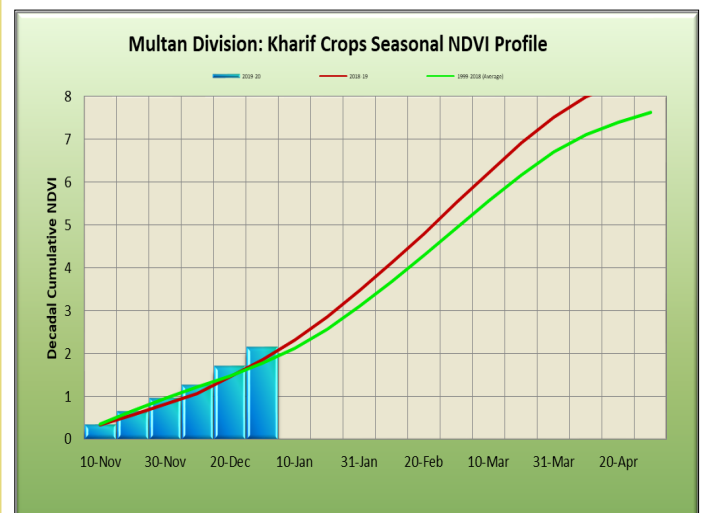
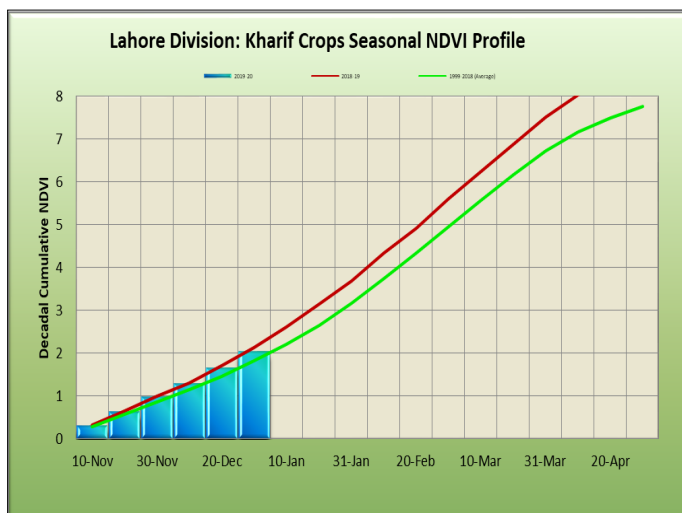
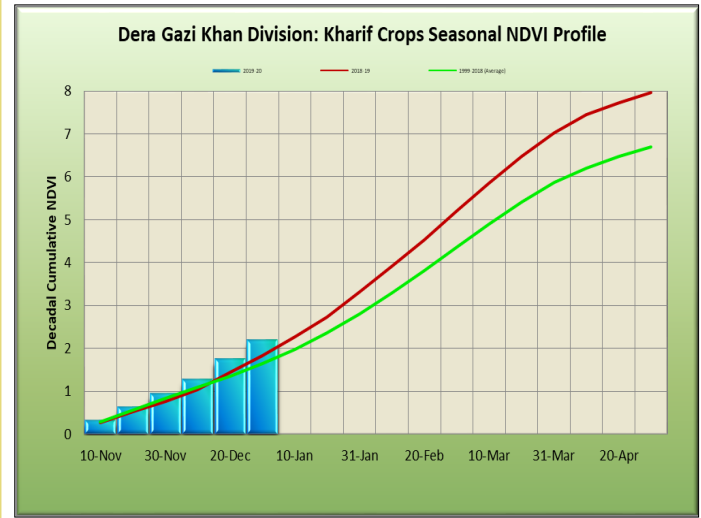
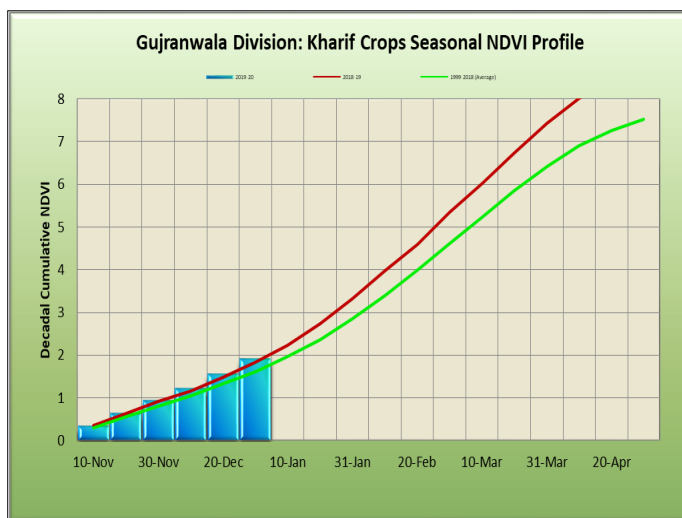
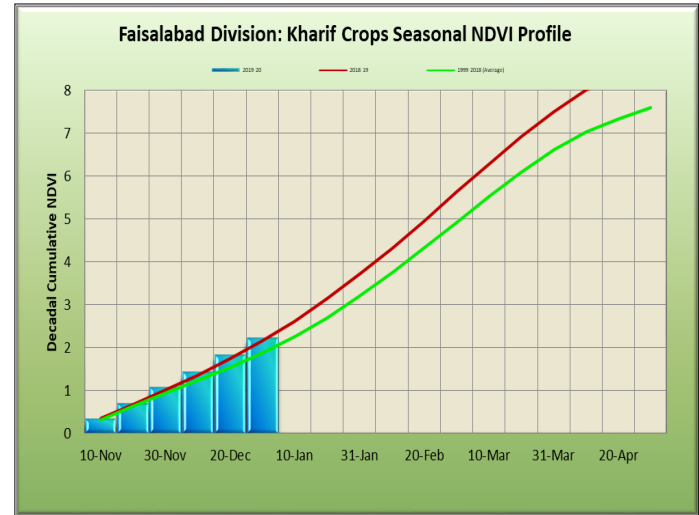
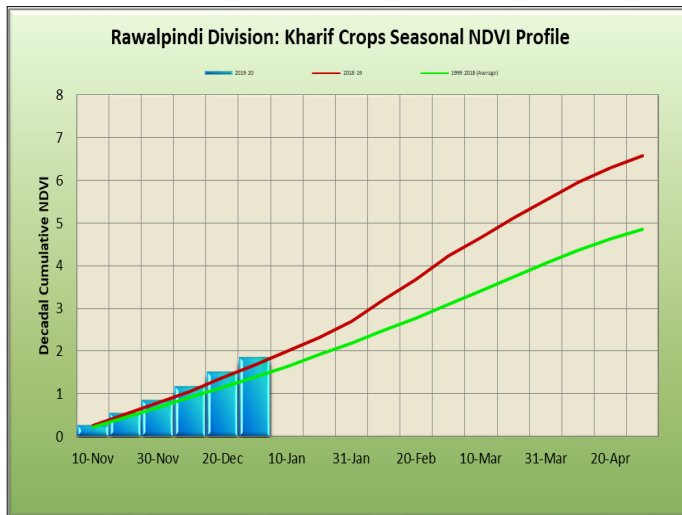
Sugarcane crop harvesting has got momentum during December due to in all almost all parts of the country due to start of sugar mills operations. Increased in sugarcane support prices by provincial governments (Punjab @ Rs. 190 and Sindh @ 192 per 40 kg) and decrease in sugarcane area may result in stable and better prices in the general market.

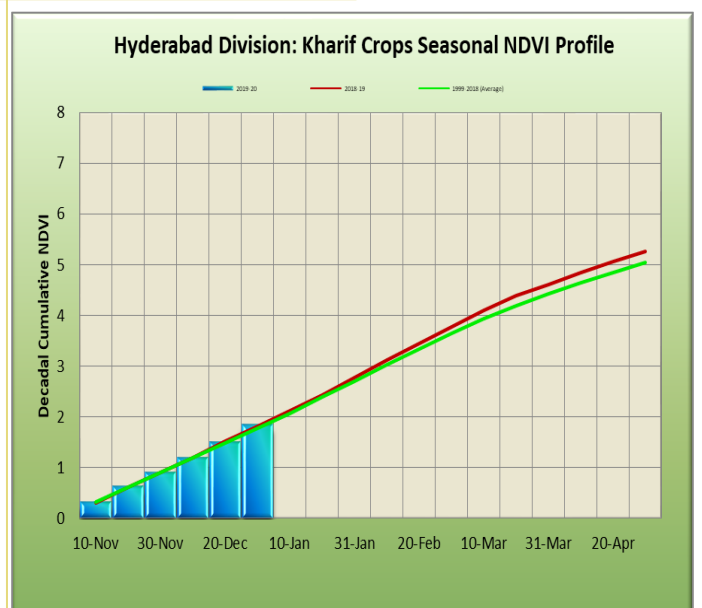
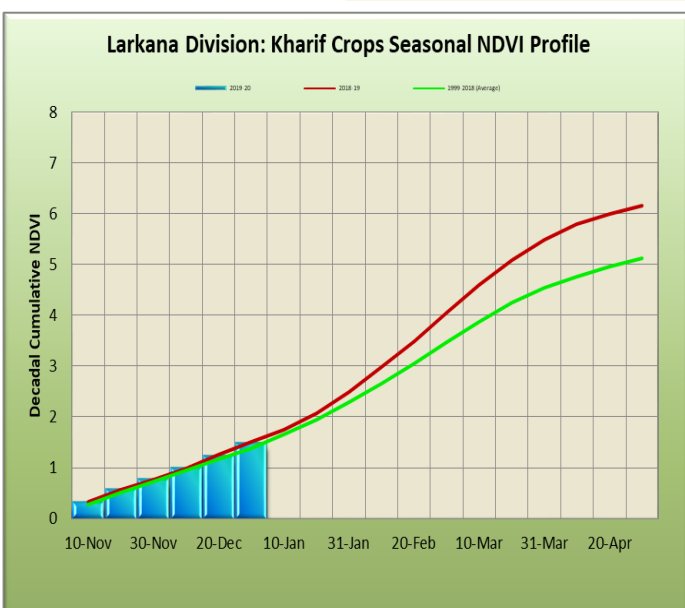
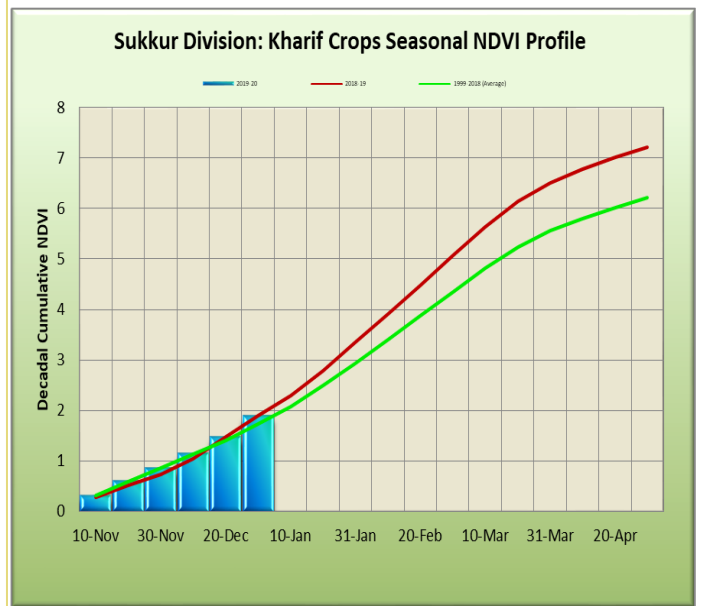
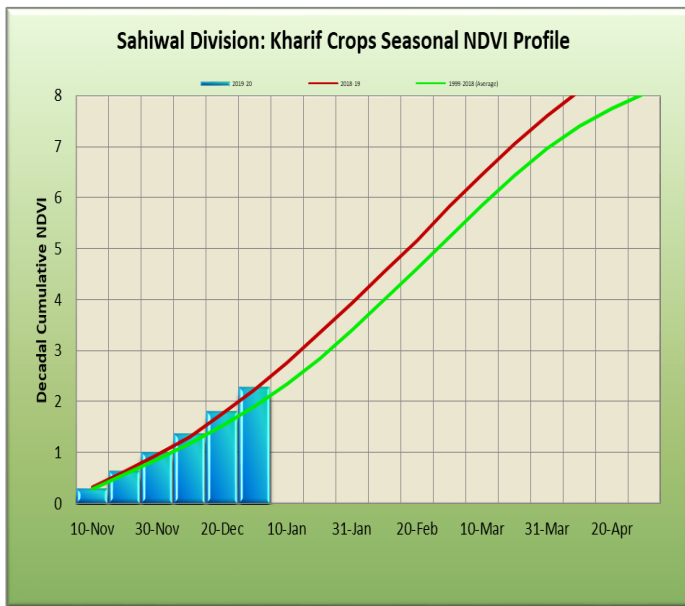
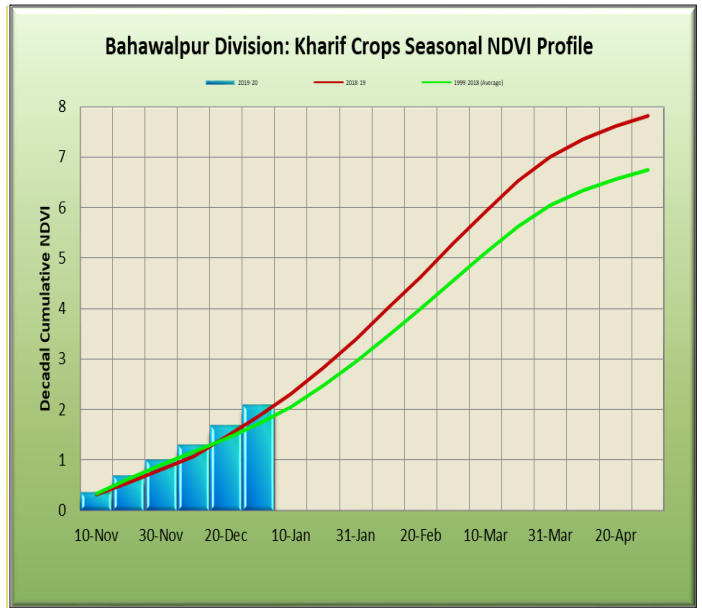
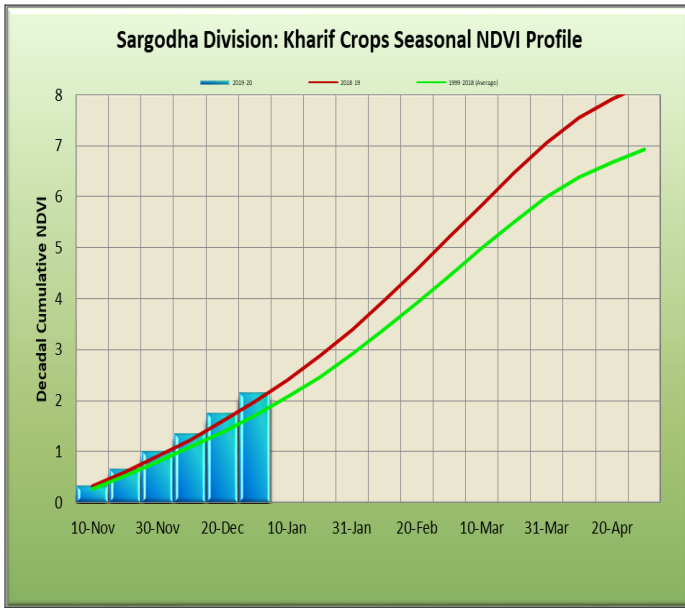
Rice

Rice harvesting has almost completed in most parts of the country. Rice exports has been increased significantly. Pakistan has exported 1.601 million tons of rice during July to November 2019 as compared to exports of 1.156 million tons during same period of last year up by 38.6 percent. In financial terms Pakistan earned 0.836 million US\$ during July to November 2019 as compared to earnings of 0.603 million US\$ during the same period of last year. This showed an increase of 38.6 percent in the earnings of country from rice exports.

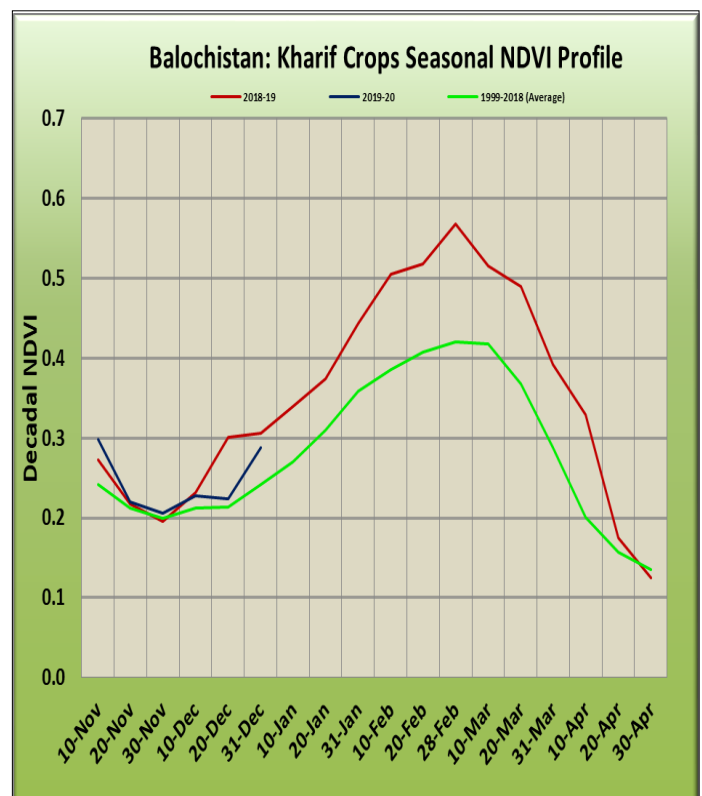
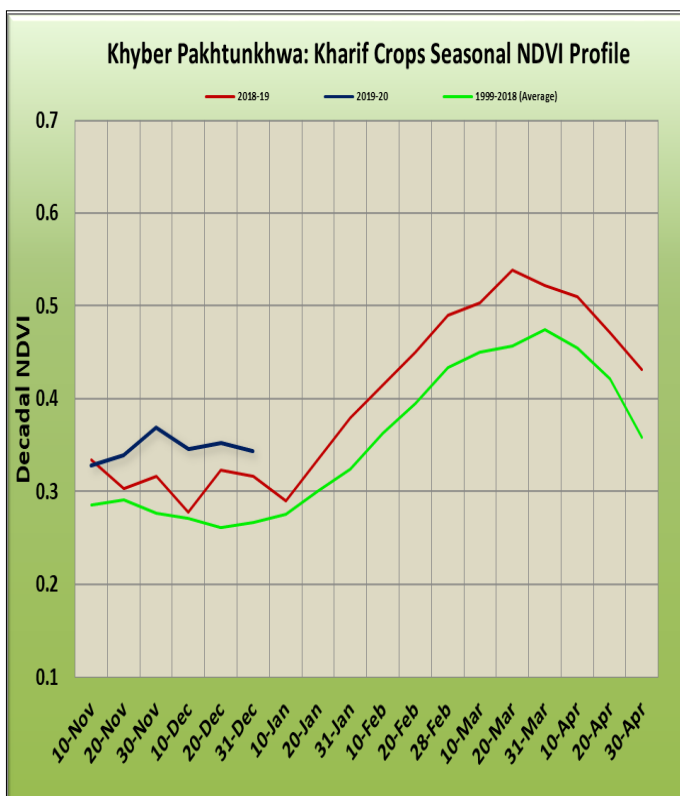
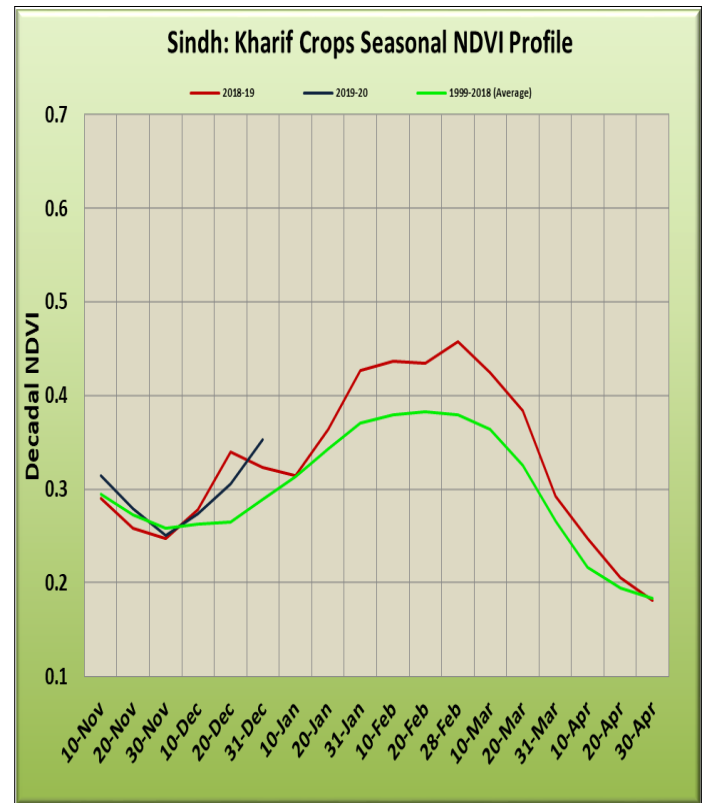
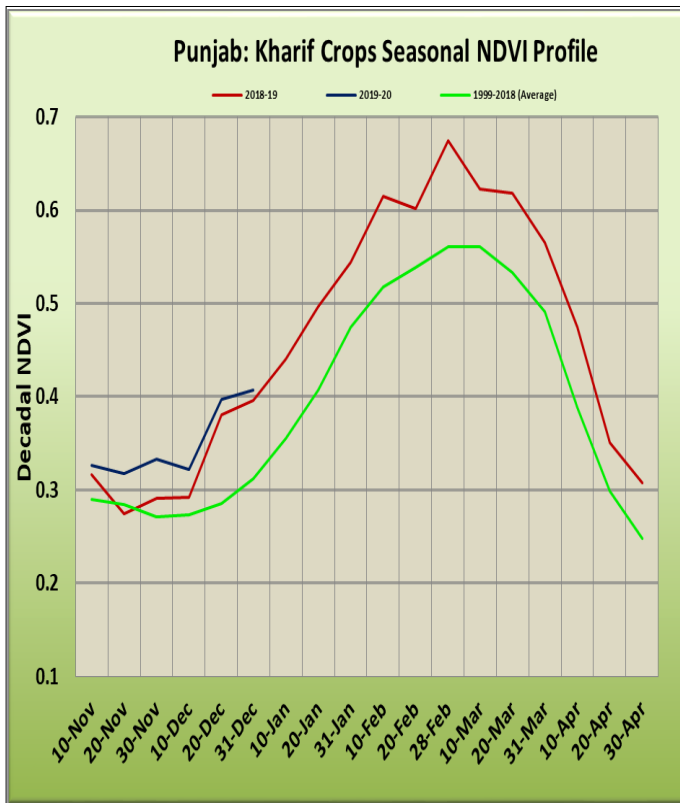
Normalized Difference Vegetation Index (NDVI): Crop Growth Profiles

SUPARCO is acquiring MODIS 250 m resolution imagery on daily basis and Proba -V VGT 1000 m resolution imagery on 10 day basis to monitor crop growth. The multi-date high resolution data are being acquired during each cropping season to assess vegetation changes and size of cropped areas through image classification. The Proba-V VGT based graphs depicting temporal vegetation changes for various administrative units of the country are as follows:



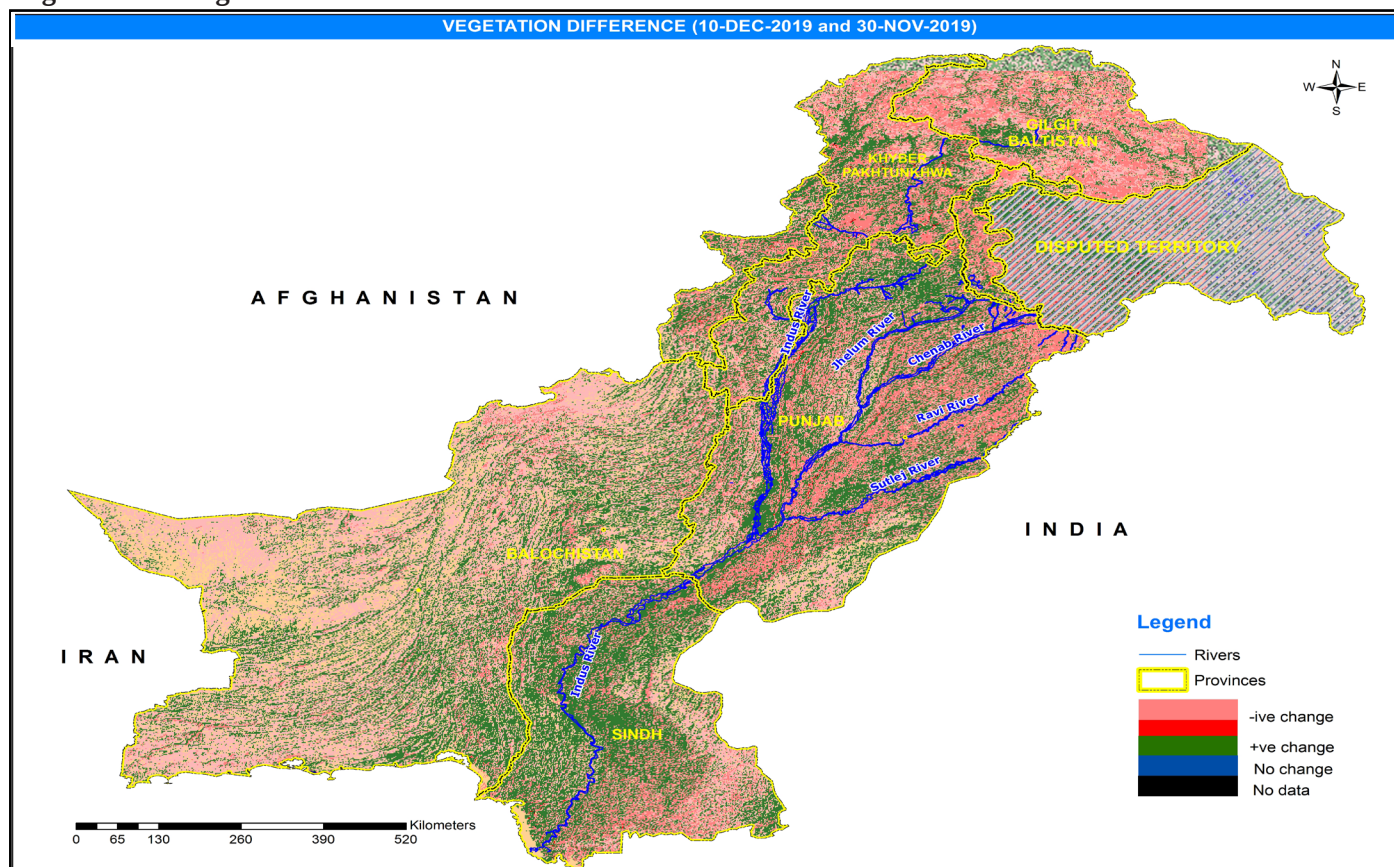


Normalized Difference Vegetation Index (NDVI): Crop Growth Profile at Provincial Level

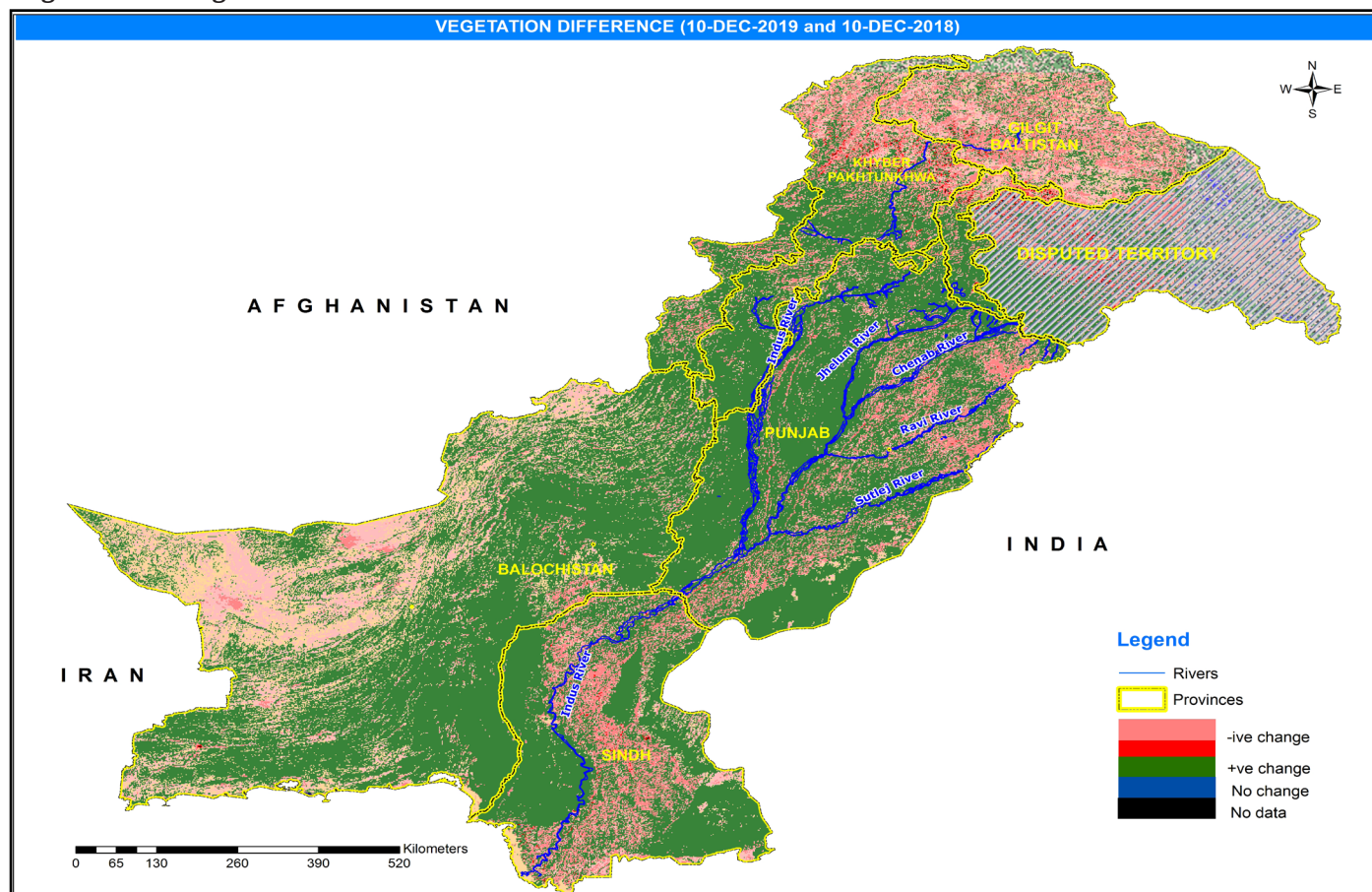


VEGETATION DIFFERENCE

Vegetation Change: December 2019 vs November 2019



Vegetation Change: December 2019 vs December 2018

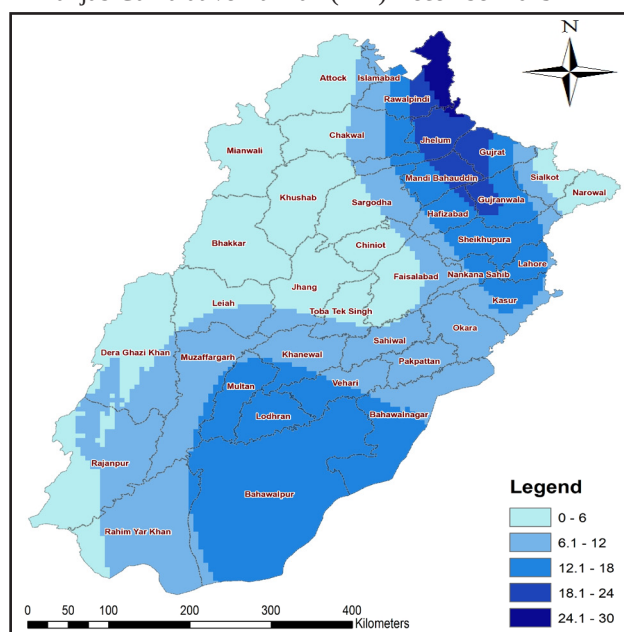


SATELLITE IMAGERY: SPOT VGT 1000M

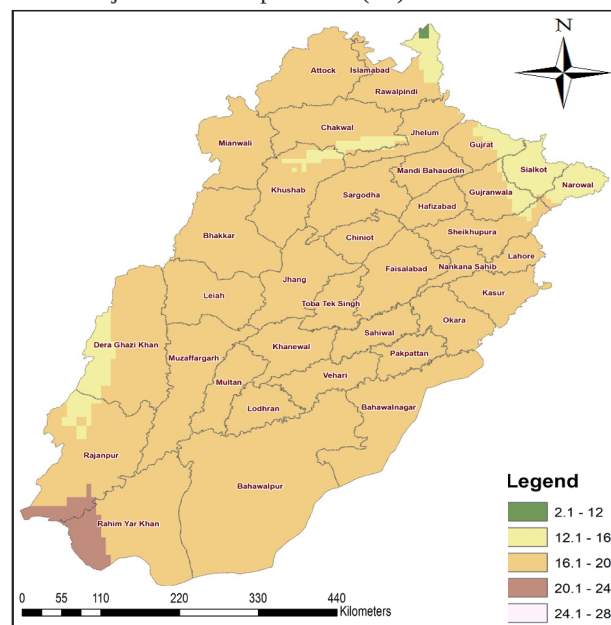
Agro-Met Conditions

During December 2019, 1-2 rainspells were observed throughout the country. In Punjab, Sialkot received rainfall of 33 mm, Murree 31 mm, Mangla 30 mm, Jhelum and Mandi Bahau Din 23 mm while rest of Punjab received less than 20 mm of rainfall. In Khyber Pakhtunkhwa maximum cumulative rainfall was 43 mm in Malam Jabba, Dir 22 mm, Balakot 19 mm, Kakul 18 mm, Kalam 14 mm while rest of Khyber Pakhtunkhwa received less than 10 mm of rainfall. In Sindh, Thatta received rainfall of 4 mm while rest of Sindh received very less or no rainfall. In Balochistan, maximum cumulative rainfall was 26 mm in Quetta, Lasbela and Barkhan 11 mm while rest of Balochistan received less than 10 mm of rainfall.

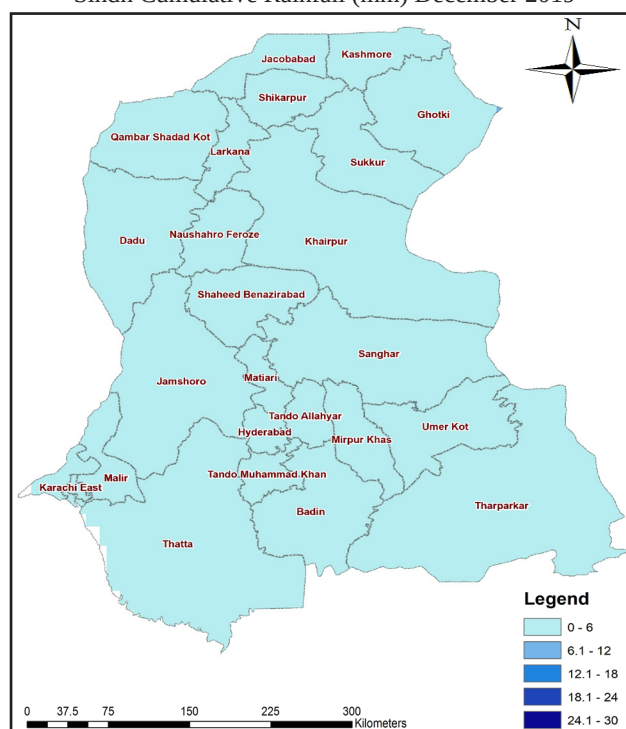
Punjab Cumulative Rainfall (mm) December 2019



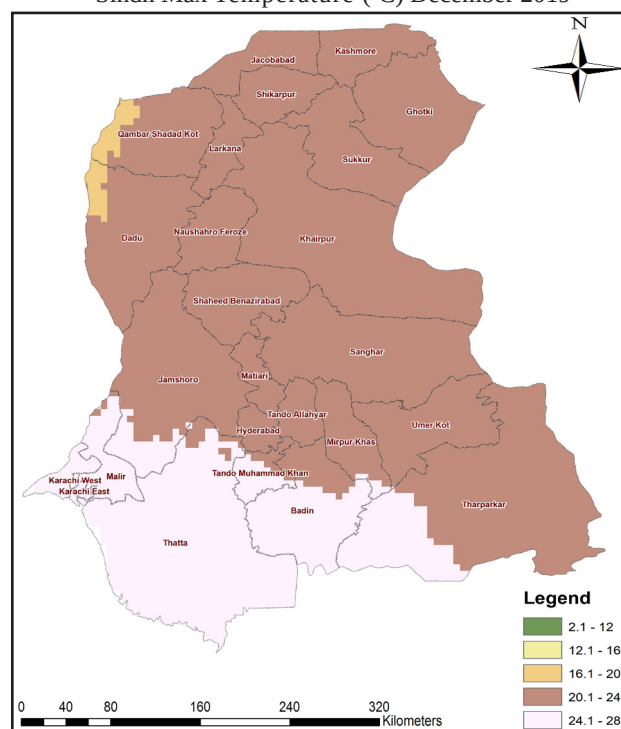
Punjab Max Temperature (°C) December 2019



Sindh Cumulative Rainfall (mm) December 2019

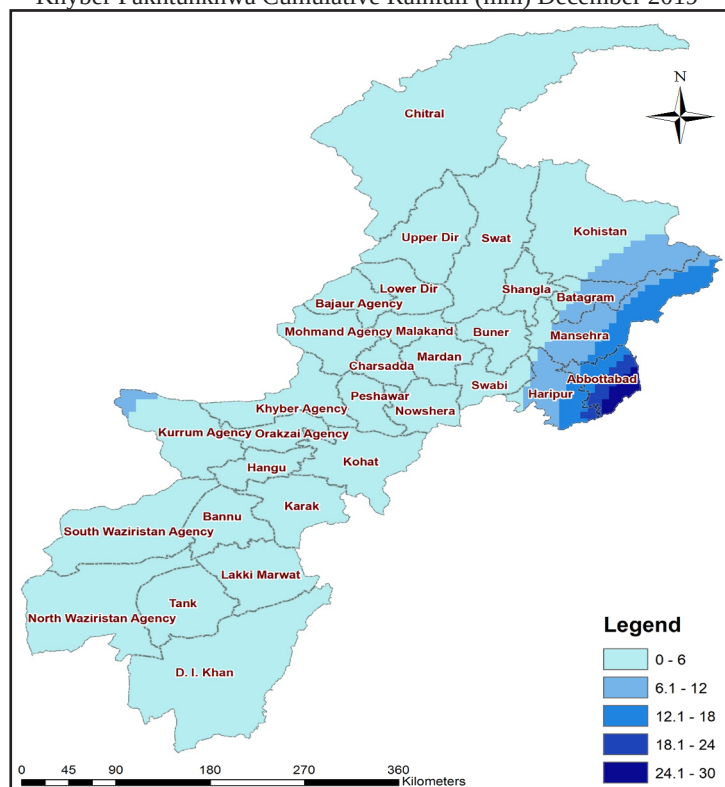


Sindh Max Temperature (°C) December 2019

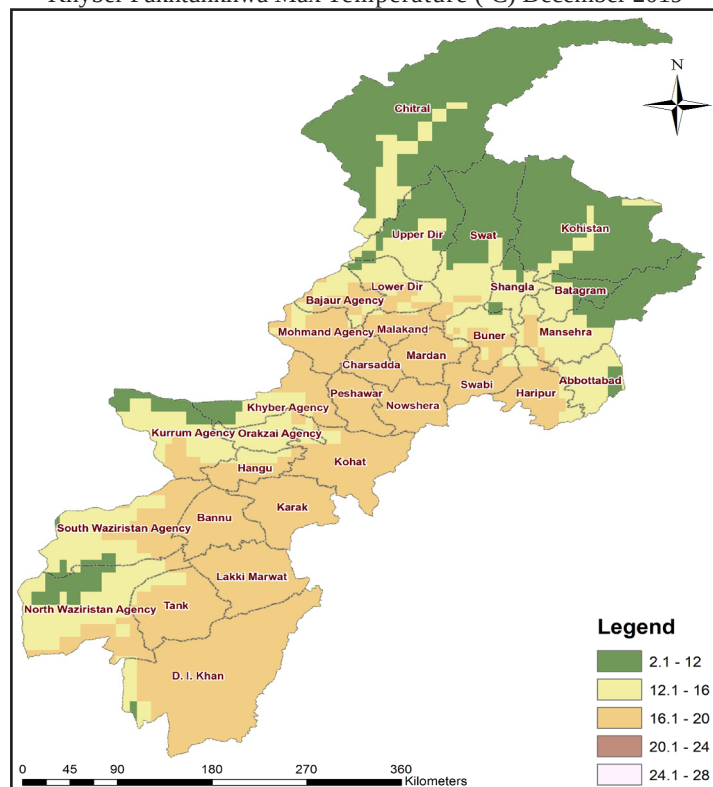


AGRO-MET CONDITIONS

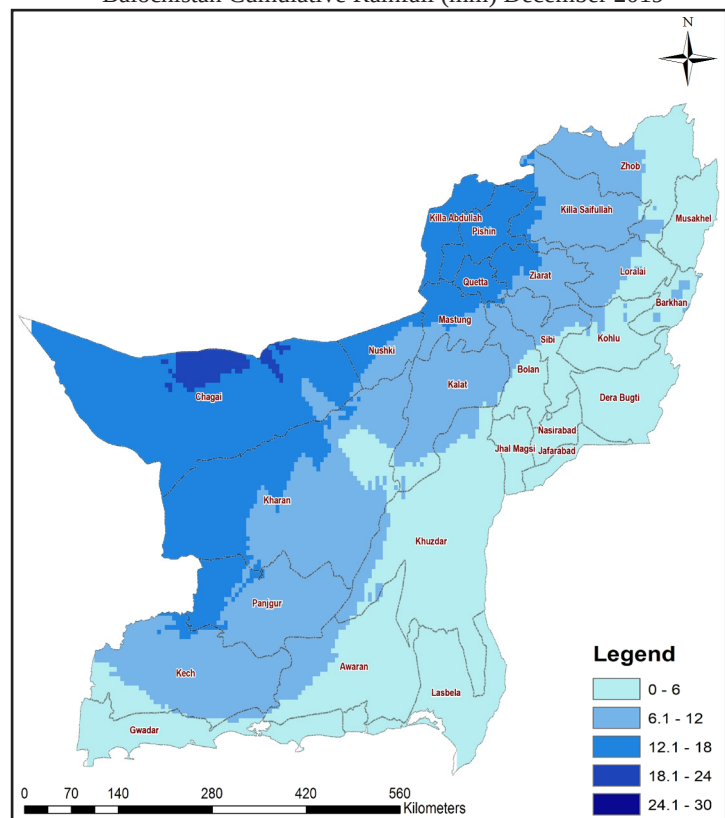
Khyber Pakhtunkhwa Cumulative Rainfall (mm) December 2019



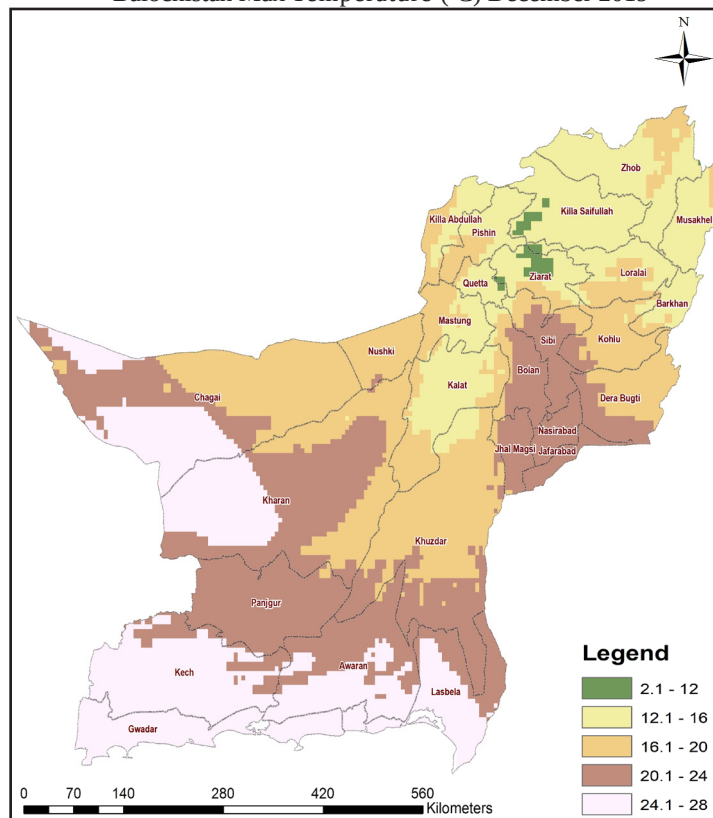
Khyber Pakhtunkhwa Max Temperature (°C) December 2019



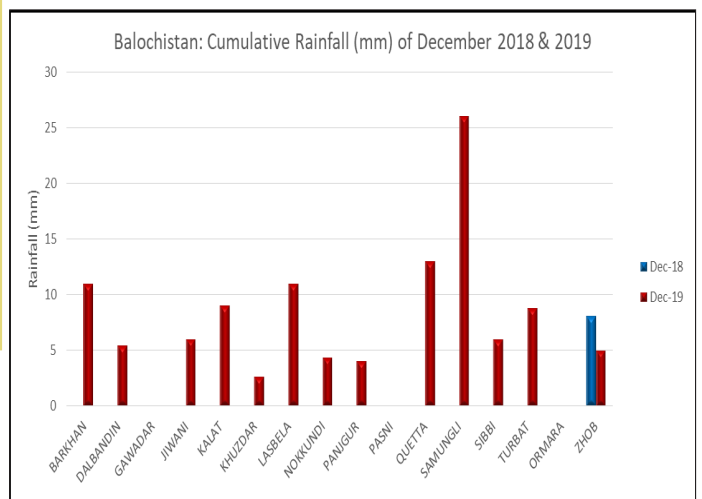
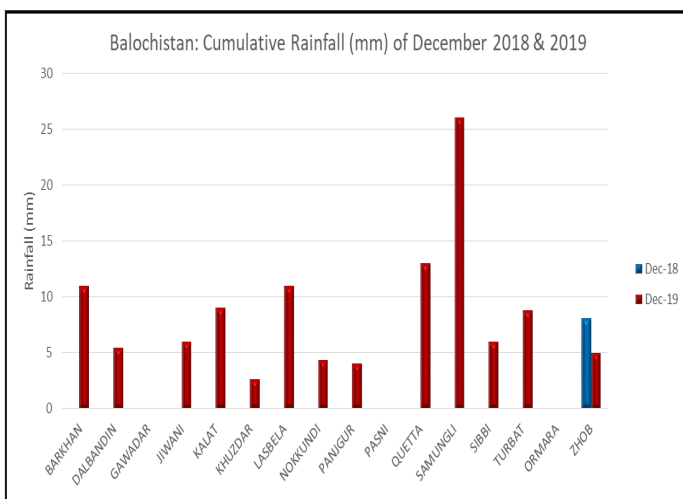
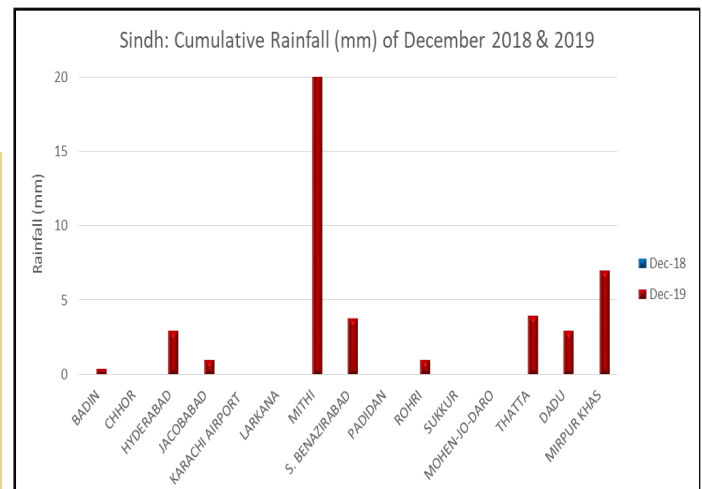
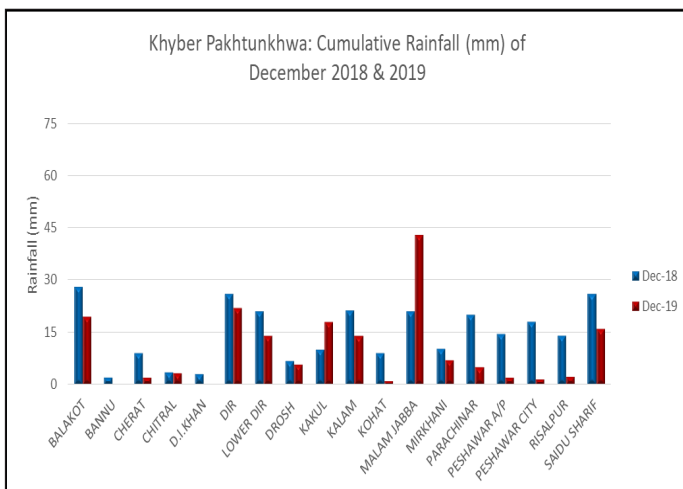
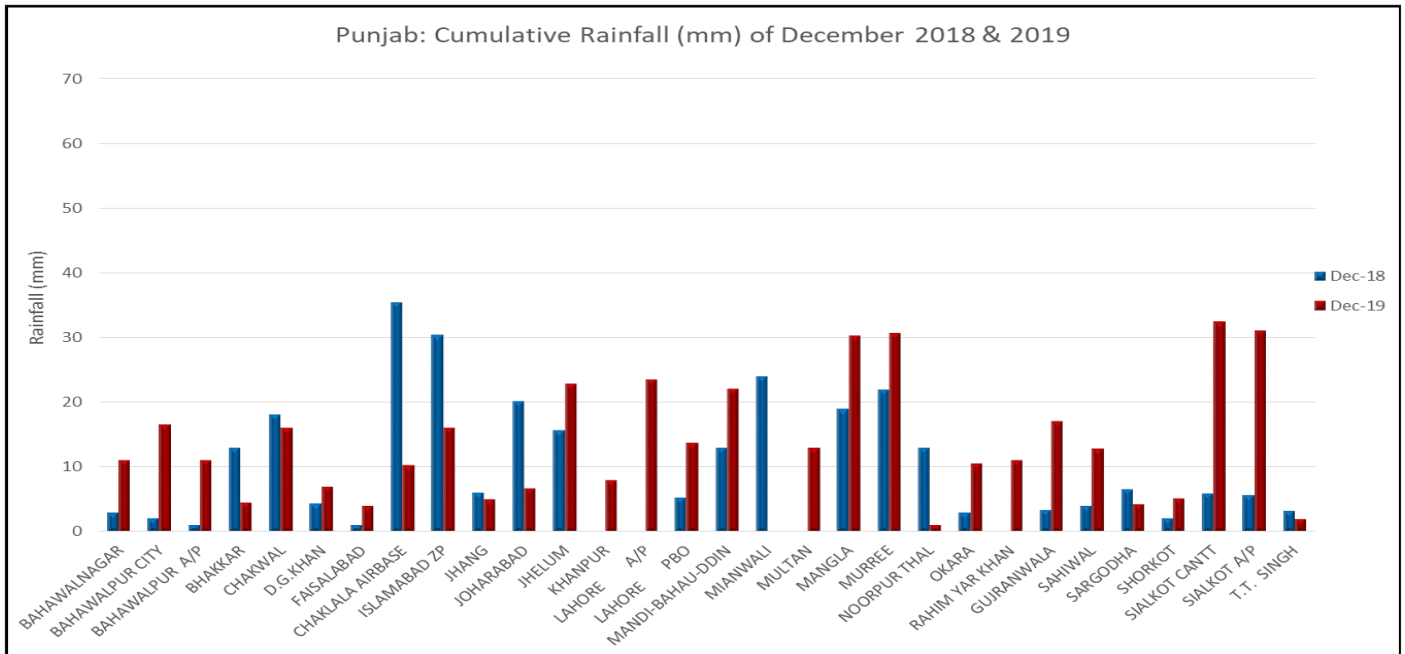
Balochistan Cumulative Rainfall (mm) December 2019



Balochistan Max Temperature (°C) December 2019

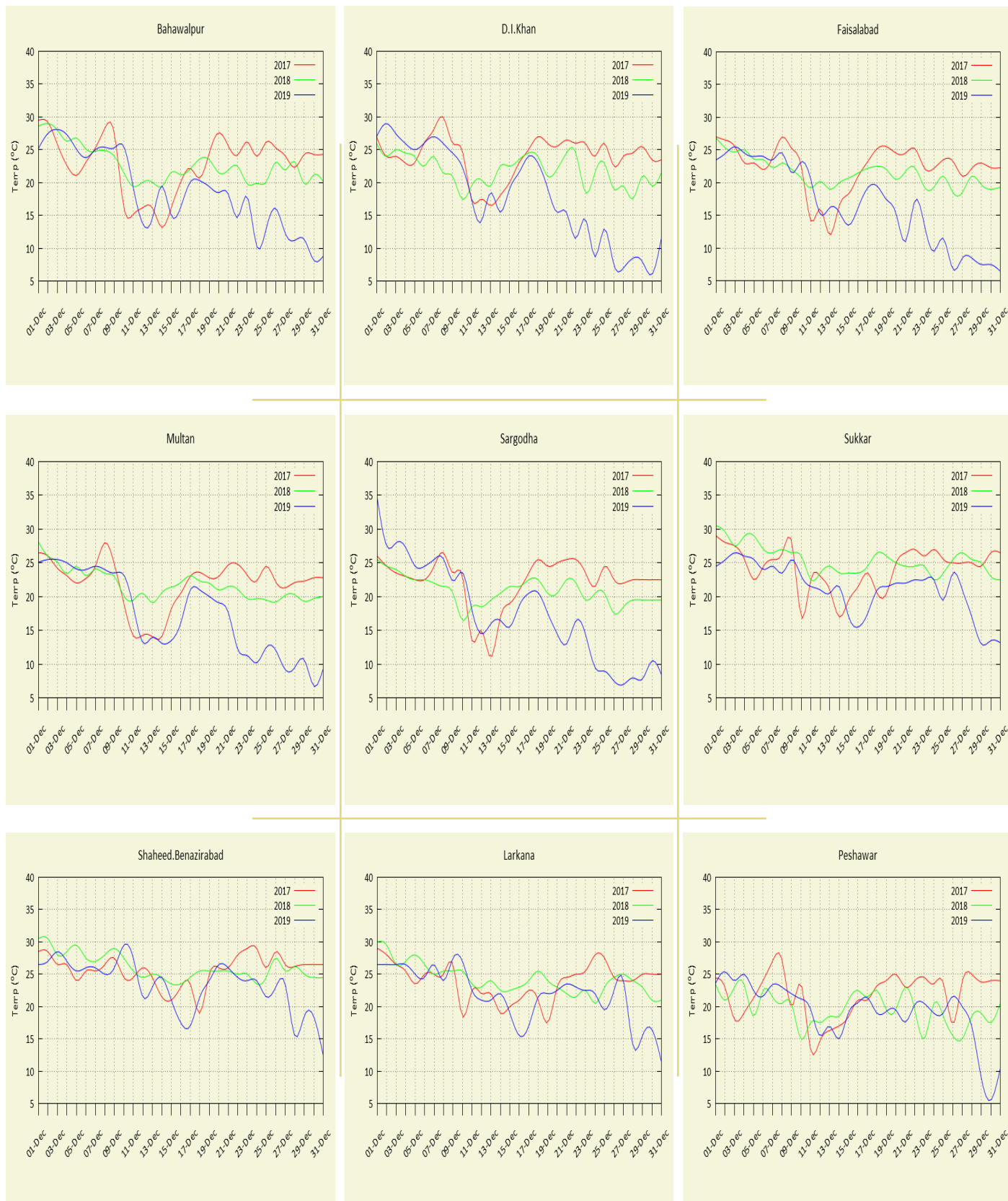


Monthly Rainfall (mm): December (2018 & 2019)



Maximum Temperature: December 2019

The ranges of maximum temperature (°C) during December 2019 were as follows:



Minimum Temperature: December 2019

The ranges of minimum temperature (°C) during December 2019 were as follows:

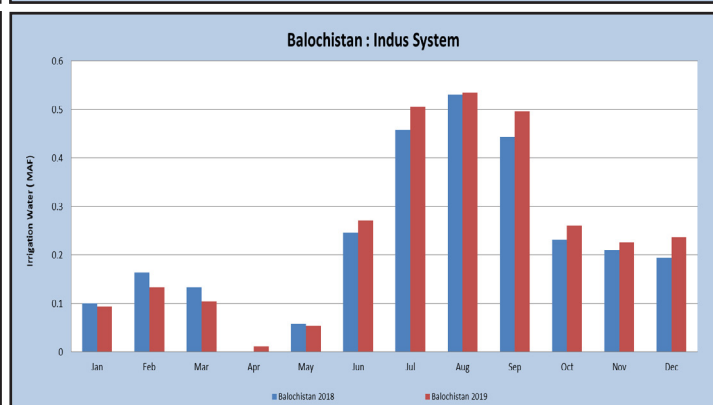
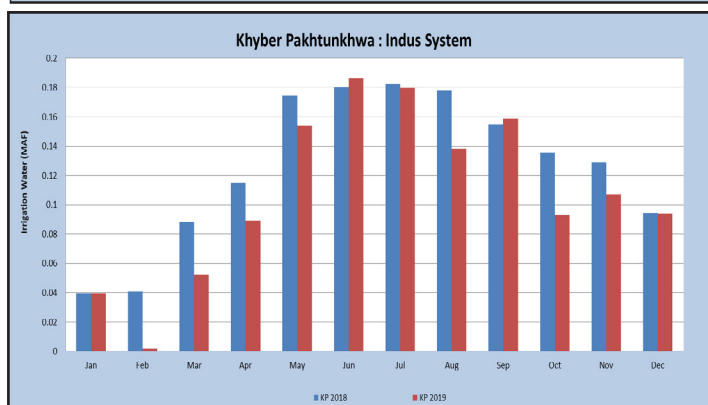
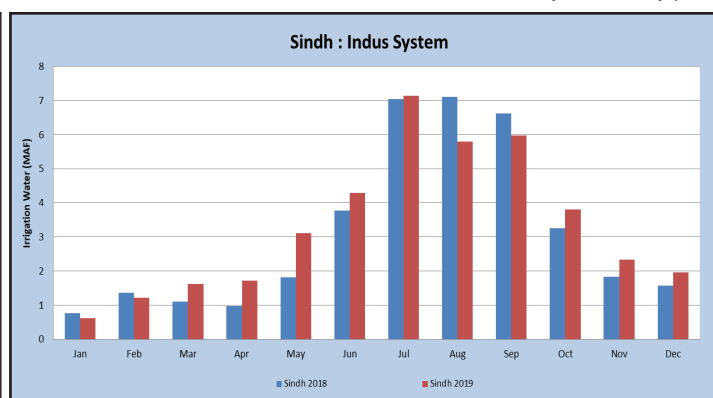
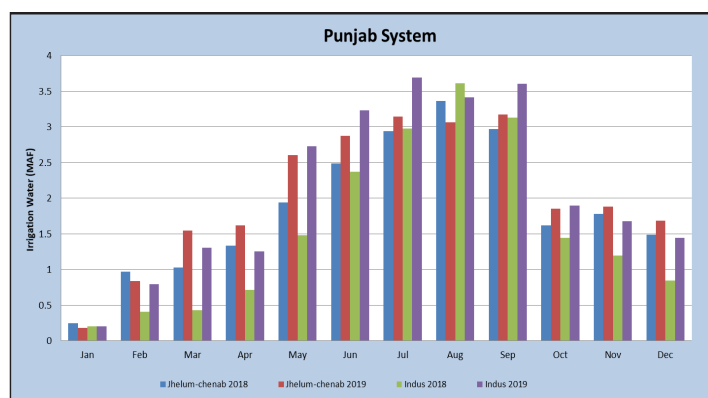


Irrigation Water Supply: December, 2019

The irrigation water supply during December 2019 was 5.430 MAF against the last year's supply of 4.188 MAF, higher by 1.243 MAF (29.67 percent). During December 2019, as compared to the same time period of last year, the supply in Punjab was 3.130 MAF (higher by 34.05 percent), Sindh was 1.969 MAF (higher by 25.80 percent), Khyber Pakhtunkhwa received 0.094 MAF (lower by 0.21 percent) while Balochistan received water supply of 0.237 MAF (higher by 22.67 percent).

Rabi 2019-20	Month	Year	Punjab			Sindh	Khyber Pakhtunkhwa	Balochistan	Total
			Jhelum-Chenab	Indus	Total				
			Million Acre Feet						
	Oct	2019	1.852	1.895	3.747	3.807	0.093	0.260	7.907
		2018	1.618	1.445	3.064	3.258	0.135	0.231	6.688
		Change	0.233	0.450	0.683	0.549	-0.043	0.012	1.22
		% change	14.43	31.11	22.30	16.85	-31.48	12.80	18.23
	Nov	2019	1.882	1.678	3.560	2.329	0.107	0.226	6.222
		2018	1.783	1.200	2.983	1.831	0.129	0.210	5.153
		Change	0.099	0.478	0.577	0.498	-0.022	0.012	1.07
% change		5.56	39.83	19.35	27.19	-16.92	7.55	20.75	
Dec	2019	1.689	1.442	3.130	1.969	0.094	0.237	5.430	
	2018	1.490	0.845	2.335	1.565	0.094	0.193	4.188	
	Change	0.198	0.597	0.795	0.404	0.000	0.044	1.243	
	% change	13.31	70.63	34.05	25.80	-0.21	22.67	29.67	
Total	2019	5.422	5.015	10.437	8.104	0.294	0.724	19.559	
	2018	4.892	3.490	8.382	6.654	0.359	0.635	16.029	
	Change	0.531	1.525	2.056	1.451	-0.065	0.089	3.531	
	% change	10.86	43.68	24.52	21.80	-18.03	14.07	22.03	

Source: Indus River System Authority (IRSA)



Fertilizer Offtake

As per report of NFDC, the month of November 2019 started with opening inventory of 887 thousand tons of Urea. During November, domestic Urea production was 535 thousand tons with total availability of 1422 thousand tons. Urea offtake during November 2019 remained 381 thousand tons leaving behind closing balance of 1039 thousand tons.

The opening inventory of DAP for November 2019 was 643 thousand tons. During November domestic production of DAP was 73 thousand tons. The total availability of DAP was 960 thousand tons which also includes 244 thousand tons of imported supplies. DAP offtake during November 2019 was 404 thousand tons leaving behind closing balance of 555 thousand tons.

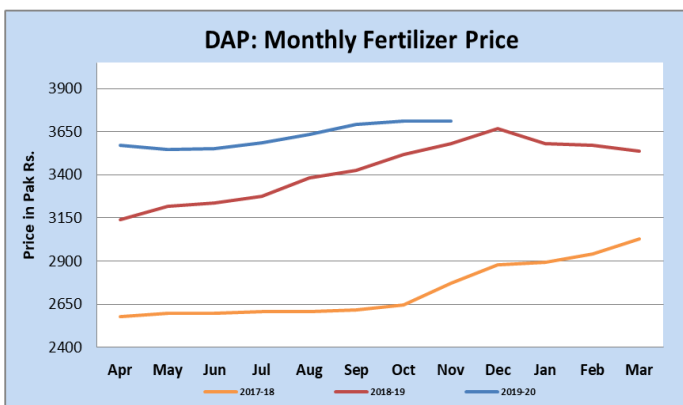
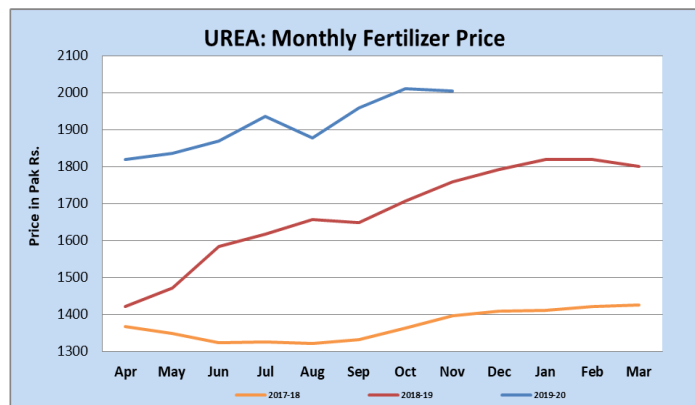
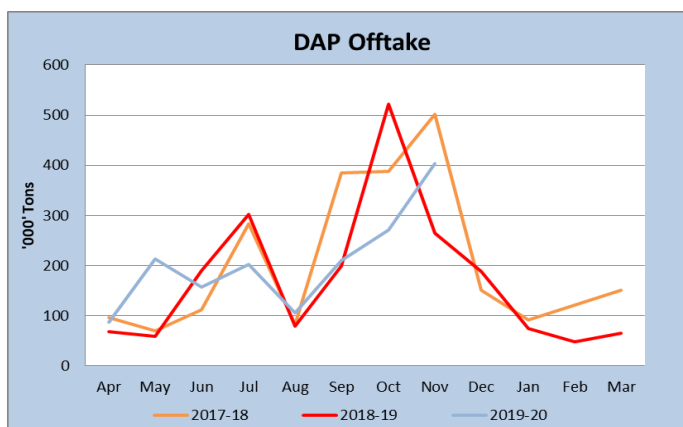
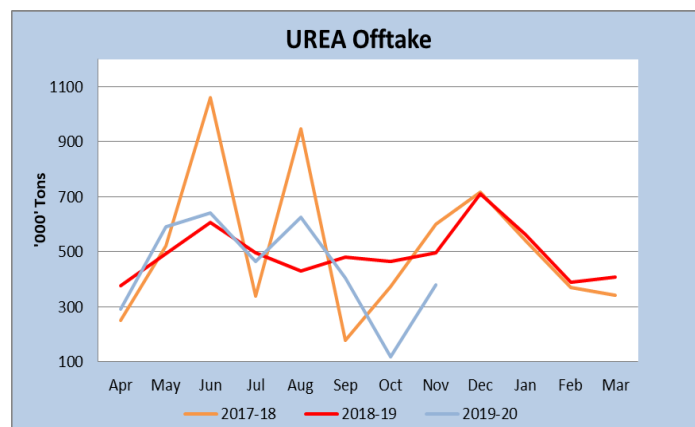
During November 2019, offtake of Nitrogen and Potash decreased by 7.4 and 9.8 percent respectively whereas, offtake of Phosphate increased by 50.7 as compared to same time period of last year.

Product	Opening Inventory	Domestic Production	Imports	Total Availability	Offtake	Write On/Off	Closing Balance
000 Tons							
Urea	887	535	0	1422	381	-2	1039
DAP	643	73	244	960	404	-1	555

Month	Fertilizer Offtake Rabi 2019-20				Fertilizer Offtake Rabi 2018-19				% Change			
	Nitrogen	Phosphate	Potash	Total	Nitrogen	Phosphate	Potash	Total	Nitrogen	Phosphate	Potash	Total
	(000 Tons)											
Oct	122.4	140.7	5.0	268.1	330.0	257.7	6.4	594.1	-62.9	-45.4	-22.9	-54.9
Nov	269.6	201.9	3.3	474.8	291.1	134.0	3.7	428.7	-7.4	50.7	-9.8	10.7
Total	392.0	342.6	8.3	742.9	621.1	391.7	10.1	1022.9	-36.9	-12.5	-18.1	-27.4

Source: MRR.01/2020 NFDC

The fertilizer statistics and prices are depicted in the graphs below:



زرعی سفارشات

ماہ جنوری

گندم:-

- 1- گندم کو بر وقت آبپاشی گندم کی پیداوار بڑھانے والے کلیدی عناصر میں سے ایک ہے۔ مونجی کے بعد کاشتہ فصل کو 30 تا 40 دن بعد پہلا پانی لگائیں۔ دیگر فصلات، وریال زمین پر کاشت اور بچھیتی کاشتہ گندم کو پہلا پانی 20 تا 25 دن بعد لگائیں۔
- 2- گندم کو دوسرا پانی 80 تا 90 دن بعد لگائیں جبکہ بچھیتی کاشت کو دوسرا پانی گوبھ کی حالت پر 70 تا 80 دن بعد لگائیں۔ پانی لگانے میں تاخیر سے تولیدی شگوفے کم اور دانہ کا وزن کم ہو جاتا ہے۔
- 3- پہلی آبپاشی کے بعد کھیت وتر میں آنے کے بعد دوہری بار ہیرو چلائیں۔
- 4- جڑی بوٹیاں کی بر وقت تلفی پیداوار میں اضافہ کی ضامن ہے۔ گندم کی فصل میں چوڑے اور نوکیلے پتوں والی دونوں طرح کی جڑی بوٹیاں ہوتی ہیں۔ اس لیے ان کے لیے مناسب زہروں کا مؤثر استعمال کریں۔
- 5- نوکیلے پتوں والی جڑی بوٹیوں عام طور پر دوسرے پانی کے بعد کھیت میں نظر آتی ہیں۔ اس لیے ان کے تدارک کے لیے سفارش کردہ زرعی زہروں کا استعمال انتہائی ضروری ہے۔
- 6- سپرے کے وقت مندرجہ ذیل باتوں کا خاص خیال رکھتے ہوئے بہتر نتائج حاصل کیے جا سکتے ہیں۔
 - (a) سپرے کے لیے کم از کم 100 تا 120 لیٹر پانی فی ایکڑ استعمال کریں۔
 - (b) سپرے اس وقت کریں جب سورج چمک رہا ہو۔
 - (c) تیز ہوا، بارش، دھند اور شبنم کے زیر اثر فصل پر سپرے سے اجتناب کریں۔
 - (d) سپرے مشین کو اچھی طرح صاف کرنے کے بعد فلیٹ فین نوزل سے سپرے کریں۔
 - (e) سپرے کے بعد گوڈی یا بار ہیرو کا استعمال نہ کریں۔
 - (f) علیحدہ علیحدہ یا دونوں طرح کی زہروں کو ملا کر سپرے کرنے کی صورت میں زہروں کی مقدار کم نہ کریں۔
 - (g) سپرے کے دوران حفاظتی لباس، ماسک اور ہاتھوں پر دستانے کا استعمال کریں۔
 - (h) ہوا کے رخ سپرے کریں۔

کماؤ:-

- 1- فصل کو زمین سے ایک انچ گہرائی سے کاٹیں۔ اس سے زیر زمین پوریوں میں موجود آنکھوں کو زیادہ صحت مند ماحول میسر آتا ہے۔ اور مدنڈھوں میں موجود گڑووں کی سنڈیوں کو تلف کرنے میں مدد ملتی ہے۔
- 2- کٹائی سے 20-25 دن پہلے آبپاشی دینا بند کر دیں۔
- 3- کماؤ کی کٹائی اس وقت کریں جب چینی کی بافت عروج پر ہو۔ سب سے پہلے مونڈھی پھر ستمبر کاشتہ اور آخر میں بہاریہ فصل کی کٹائی کریں۔ اس طرح چینی کی ریکوری زیادہ ہوگی۔
- 4- کھر کی صورت میں فصل کو ہلکا پانی لگا دیں۔
- 5- مونڈھی فصل رکھنے کا ارادہ ہو تو کماؤ کو 15 جنوری کے بعد کاٹیں۔
- 6- بہاریہ کماؤ کی کاشت کے لیے بیج، کھاد اور زمین کی تیاری کا بندوبست کریں۔

فصلات اور باغات کورے اور سردی سے حفاظت

کورے اور سخت سردی سے فصلات اور باغات کے چھوٹے بڑے پودوں پر مضر اثرات ہوتے ہیں۔

کورے کے نقصانات:- سخت سرد راتوں میں پودے بڑی تیزی سے حرارت خارج کرتے ہیں۔ اور خلیوں میں پانی جم جاتا ہے اور خلیے کے کیمیائی اجزاء میں بگاڑ پیدا ہوتا ہے۔ شدید سردی گندم کی فصل کے لیے نقصان دہ نہیں ہے لیکن کماؤ، باغات اور سبزیات کے پودے اس سے متاثر ہوتے ہیں۔ شدید سردی یا کورے کے حملے سے گنا کے رس کا معیار گر جاتا ہے اور وزن میں کمی آتی ہے۔ اس کے علاوہ کماؤ کی آنکھوں کی پھوٹنے کی صلاحیت کم ہو جاتی ہے۔ جس سے فصل کی کوالٹی متاثر ہو سکتی ہے۔

حفاظتی اقدامات:- 1- کماؤ کی مونڈھی فصل رکھنی ہو تو کورا ختم ہونے کے بعد کٹائی کا عمل شروع کریں۔ تاکہ فصل کی پیداوار متاثر نہ ہو۔

- 2- فصل کی آبپاشی کا وقفہ کم کر دیں اور پانی کم مقدار میں لگائیں۔
- 3- فصل کے ارد گرد بھوسہ، پرالی یا گھاس وغیرہ جلا کر دھواں کریں۔
- 4- کھر کی متوقع راتوں میں آبپاشی کی جائے اس سے زمین کے درجہ حرارت میں خاطر خواہ کمی نہیں ہوتی اور خلیوں میں پانی کی مقدار بڑھ جاتی ہے۔
- 5- باغات کے پودوں کے تنوں پر چونے اور نیلے تھوتے کے محلول کی سفیدی یا پرانی بوری یا پرالی لپیٹ کر بھی سردی کا اثر کم کیا جاسکتا ہے۔



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