



**SECTION IV
DISTRICT PROFILES**

AWARAN

Awaran district lies in the south of the Balochistan province. Awaran is known as oasis of dates. The climate is that of a desert with hot summer and mild winter. Major crops include wheat, barley, cotton, pulses, vegetable, fodder and fruit crops. There are three tehsils in the district: Awaran, Jhal Jhao and Mashkai. The district headquarter is located at Awaran.

SOIL ATTRIBUTES

Soil type/parent material	Mostly barren rocks with shallow unstable soils material followed by nearly level to sloppy, moderately deep, strongly calcareous, medium textured soils overlying gravels
Dominant soil series	Gacheri, Khamara, Winder
*pH	Data not available
*Electrical conductivity (dS m⁻¹)	Data not available
Organic matter (%)	Data not available
Available phosphorus (ppm)	Data not available
Extractable potassium (ppm)	Data not available
Farmers availing soil testing facility (%)	2 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	0 (Based on crop production zone wise data)

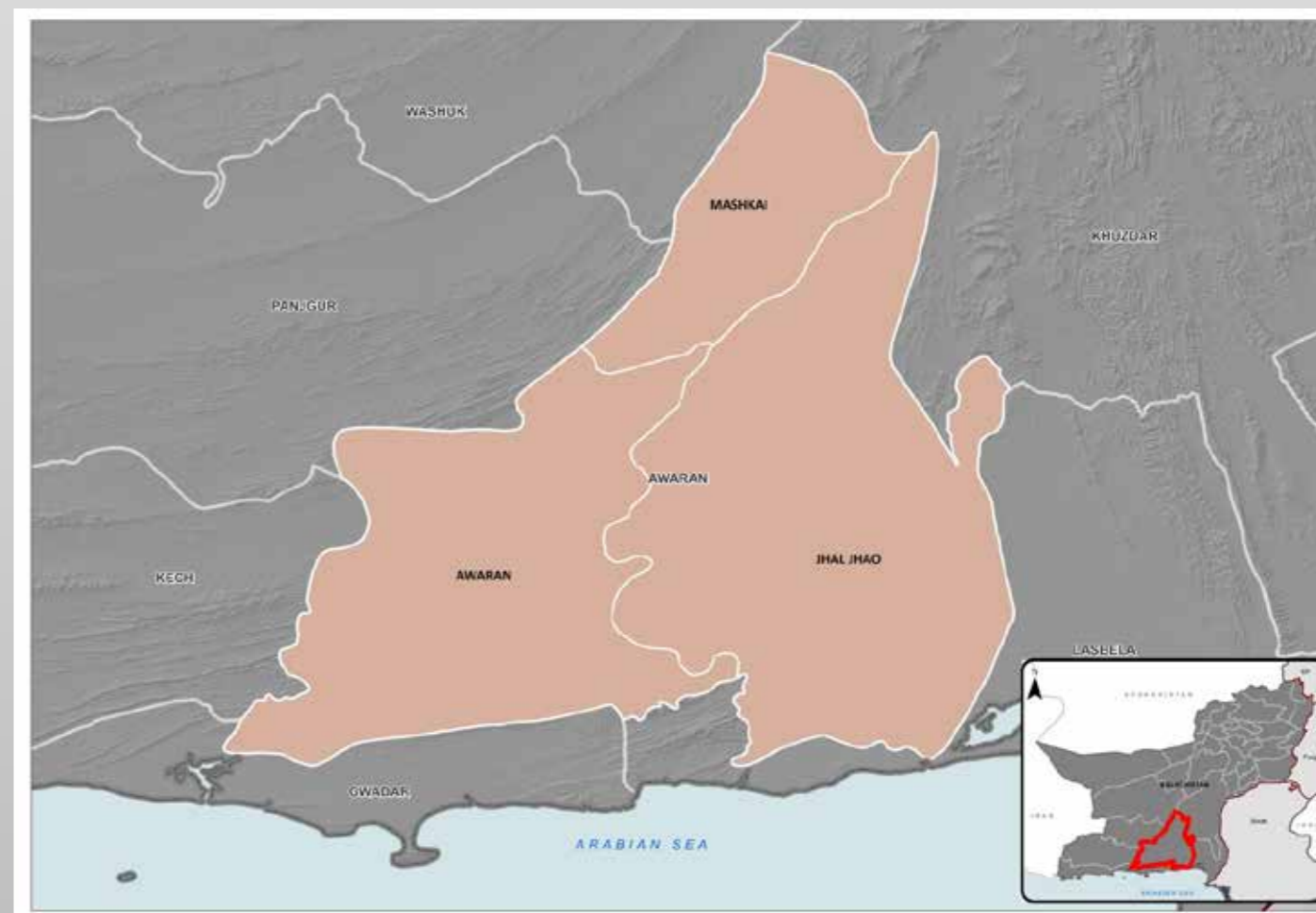
Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	23,600
Total non-cultivated area (hectares)	187,700
Total area under irrigation (hectares)	22,725
Major rabi crop(s)	Wheat, vegetable crops
Major kharif crop(s)	Cotton, sorghum
Total livestock population	612,006

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

Barkhan district shares its borders with the province of Punjab to the east. Fort of Mawand of Karam Khan Bijrani Marri and dinosaur fossils are major landmarks. The topography varies from plains to valleys and mountains. Barkhan has a hot semi-arid climate with very hot summer and mild winter. Major crops are wheat, barley, sorghum, millet, fruit and vegetable crops. There is only one tehsil, Barkhan, in this district.

SOIL ATTRIBUTES

Soil type/parent material	Mainly bare rocks followed by moderately deep, calcareous, gravelly, medium textured soils
Dominant soil series	Maslakh, Quetta, Baghai
*pH	Data not available
*Electrical conductivity (dS m⁻¹)	Data not available
Organic matter (%)	Data not available
Available phosphorus (ppm)	Data not available
Extractable potassium (ppm)	Data not available
Farmers availing soil testing facility (%)	0 (Based on crop production zone data)
Farmers availing water testing facility (%)	0 (Based on crop production zone data)

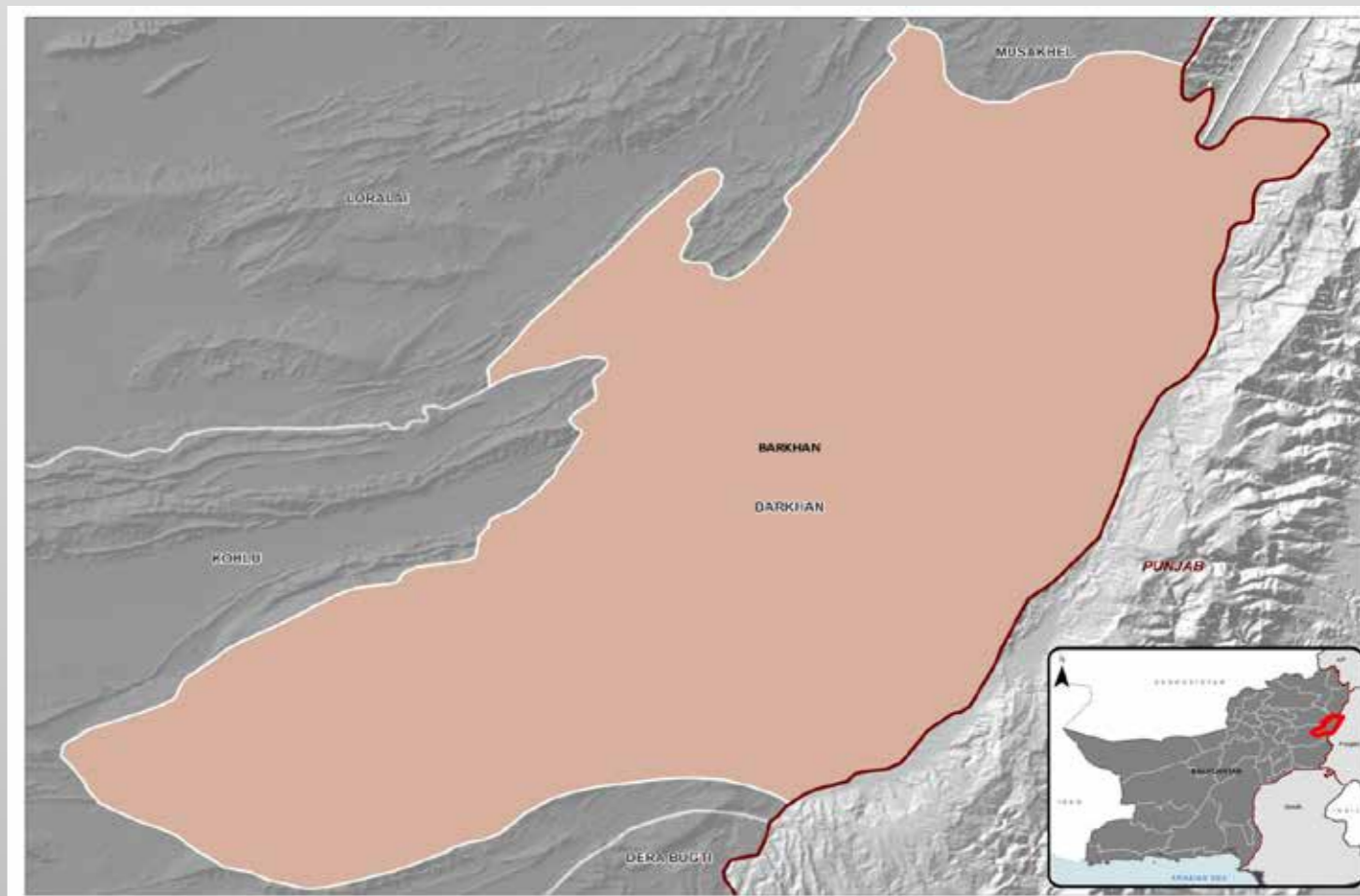
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 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	42,749
Total non-cultivated area (hectares)	79,901
Total area under irrigation (hectares)	19,224
Major rabi crop(s)	Wheat and vegetable crops
Major kharif crop(s)	Cotton, sorghum
Total livestock population	860,343

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

CHAGAI

Chagai, one of the largest districts of Pakistan is located on the northwest corner of Balochistan. Climate is that of a desert with hot summer and mild winter. The rainfall is irregular and scanty. Major crops include wheat, rapeseed, cotton, fodder and vegetable crops. There are four tehsils in the district: Chagai, Dalbandin, Nokkundi and Taftan. The district headquarter is located at Chagai.

SOIL ATTRIBUTES

Soil type/parent material	Nearly levelled, deep, strongly calcareous, medium textured soils. Piedmont colluvial and alluvial deposits
Dominant soil series	Nokkundi, Dalbindin, Chagai
*pH	Data not available
*Electrical conductivity (dS m⁻¹)	Data not available
Organic matter (%)	Data not available
Available phosphorus (ppm)	Data not available
Extractable potassium (ppm)	Data not available
Farmers availing soil testing facility (%)	2 (Based on crop production zone data)
Farmers availing water testing facility (%)	0 (Based on crop production zone data)

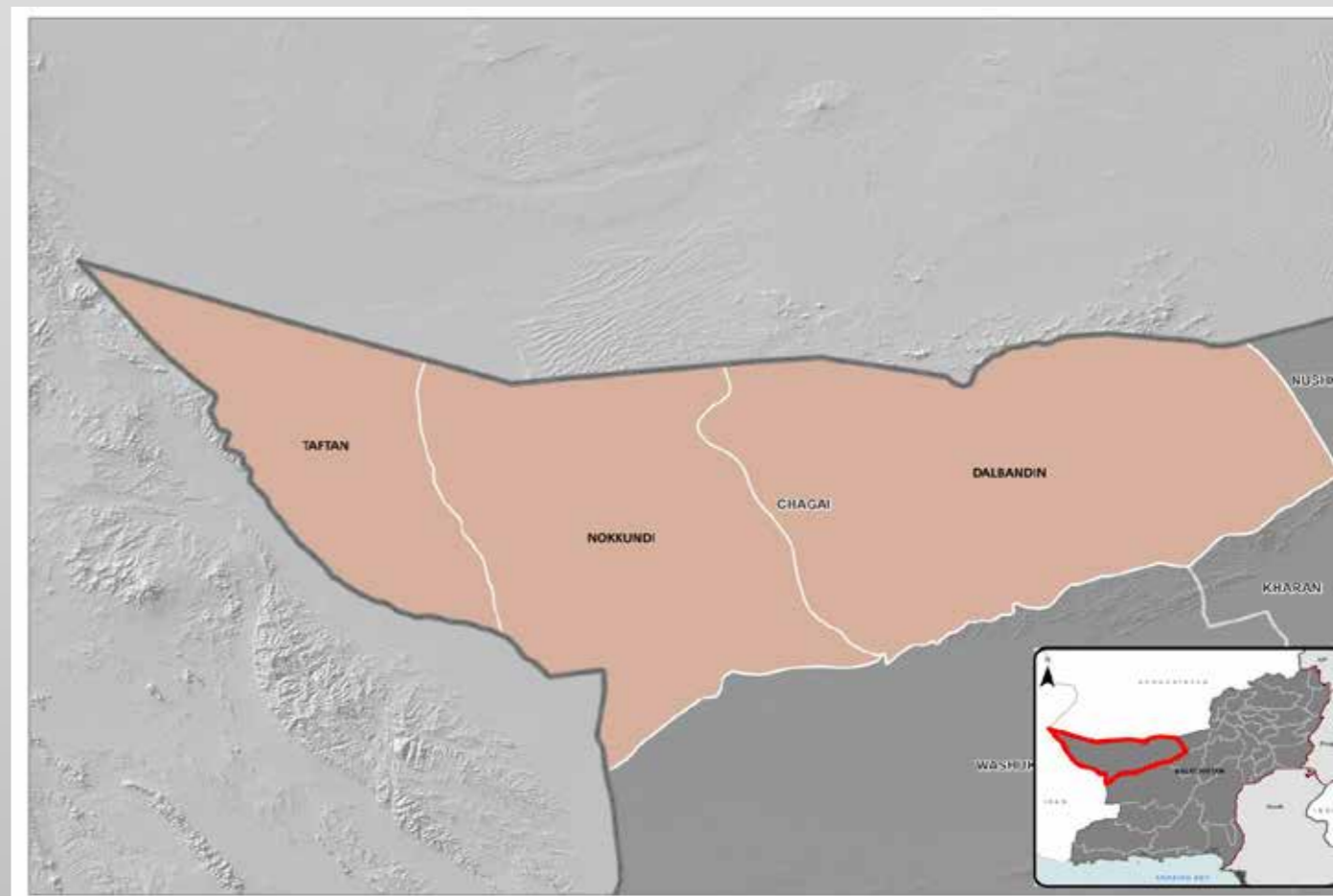
Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*Soil nH and electrical conductivity were measured in 1:2.5. soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	141,777
Total non-cultivated area (hectares)	311,9371
Total area under irrigation (hectares)	6,953
Major rabi crop(s)	Wheat, rapeseed
Major kharif crop(s)	Cotton, vegetable crops
Total livestock population	626,465

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

Dera Bugti borders Kohlu district in the north, Punjab province in the east, Sindh province in the south and Nasirabad district in the west of Balochistan. Climate is that of a desert with hot summer and mild winter. Major crops include wheat, chickpea, cotton, sorghum, millet and vegetable crops. There are three tehsils in the district: Dera Bugti, Phelawagh and Sui. The district headquarter is located at Dera Bugti.

SOIL ATTRIBUTES

Soil type/parent material	Mainly bare rocks, scattered shallow calcareous, medium textured soils
Dominant soil series	Baghgai, Kunner, Kaftari
pH	7.6 – 8.5 (Alkaline)*
Electrical conductivity (dS m⁻¹)	0.18 – 2.82 (Saline)*
Organic matter (%)	0.14 – 0.69 (Low)*
Available phosphorus (ppm)	2.0 – 4.0 (Low)*
Extractable potassium (ppm)	50 – 270 (Medium)*
Farmers availing soil testing facility (%)	63 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	71 (Based on crop production zone wise data)

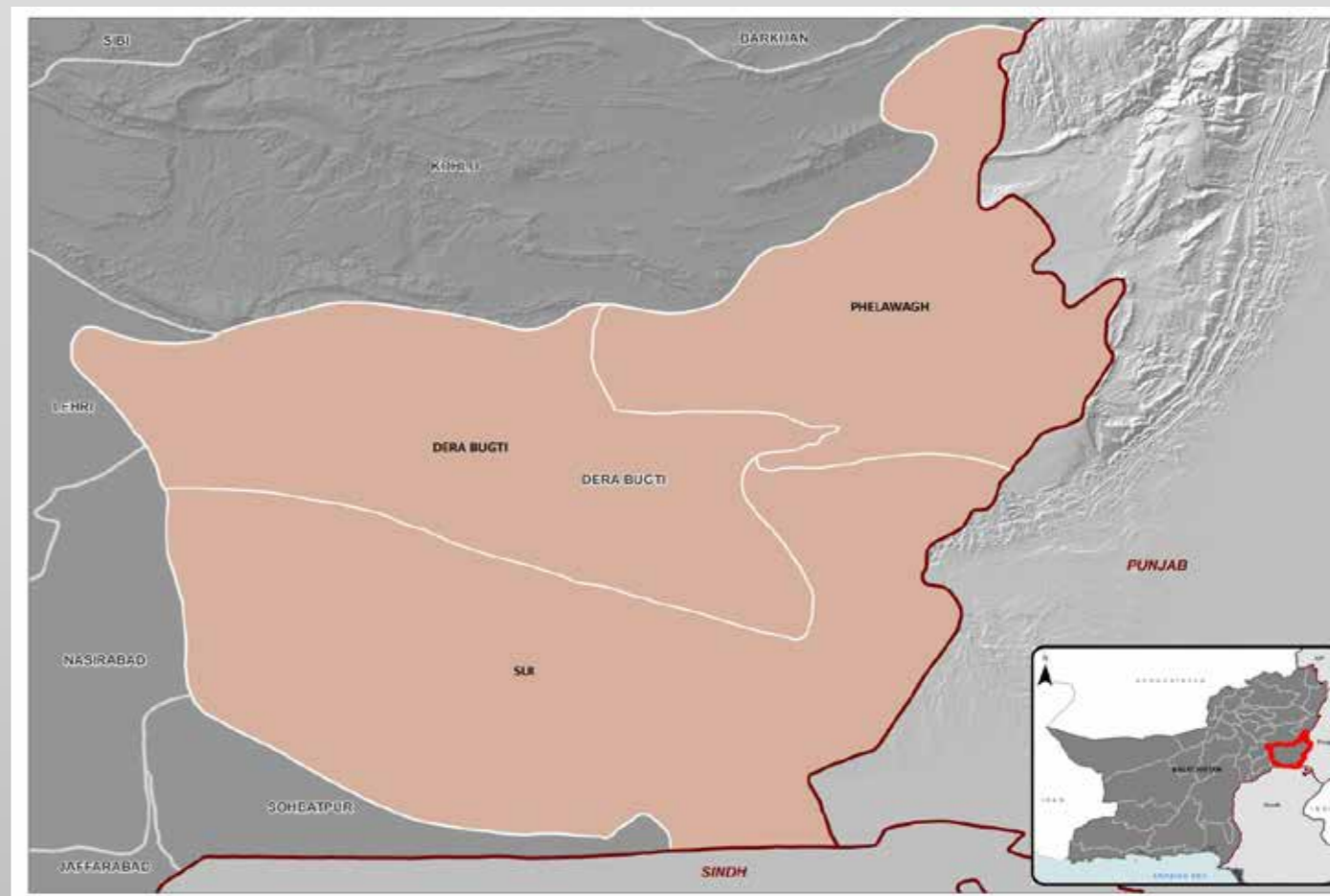
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 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	29,043
Total non-cultivated area (hectares)	40,047
Total area under irrigation (hectares)	23,838
Major rabi crop(s)	Wheat, chickpea, rapeseed
Major kharif Crop(s)	Cotton, sorghum, millet
Total livestock population	1,691,124

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

GWADAR

Gwadar is located in the coastal region on the Arabian Sea, south west of the Balochistan province. The name Gwadar originates from Gwat and Dar, which means the door of air. The district has a 620 km coastline along the Arabian Sea. The most significant feature of the Gwadar district is Gwadar Port that is a deep-sea warm water port. Gwadar is dry with hot arid climate. Agriculture activities are negligible. There are four tehsils in the district: Gwadar, Jiwani, Ormara and Pasni. The district headquarter is located at Gwadar and was established as district in 1977.

SOIL ATTRIBUTES

Soil type/parent material	Deep, moderately, calcareous, perfectly drained soils/ alluvial deposits from sand, mud, shale and limestone
Dominant soil series	Chakyan, Parkini, Kalag
pH	9.0 (Alkaline)*
Electrical conductivity (dS m⁻¹)	0 – 1.0 (Slightly saline) *
Organic matter (%)	0 (Low)*
Available phosphorus (ppm)	1.0 – 3.0 (Low)*
Extractable potassium (ppm)	26 – 100 (Low)*
Farmers availing soil testing facility (%)	0 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	0 (Based on crop production zone wise data)

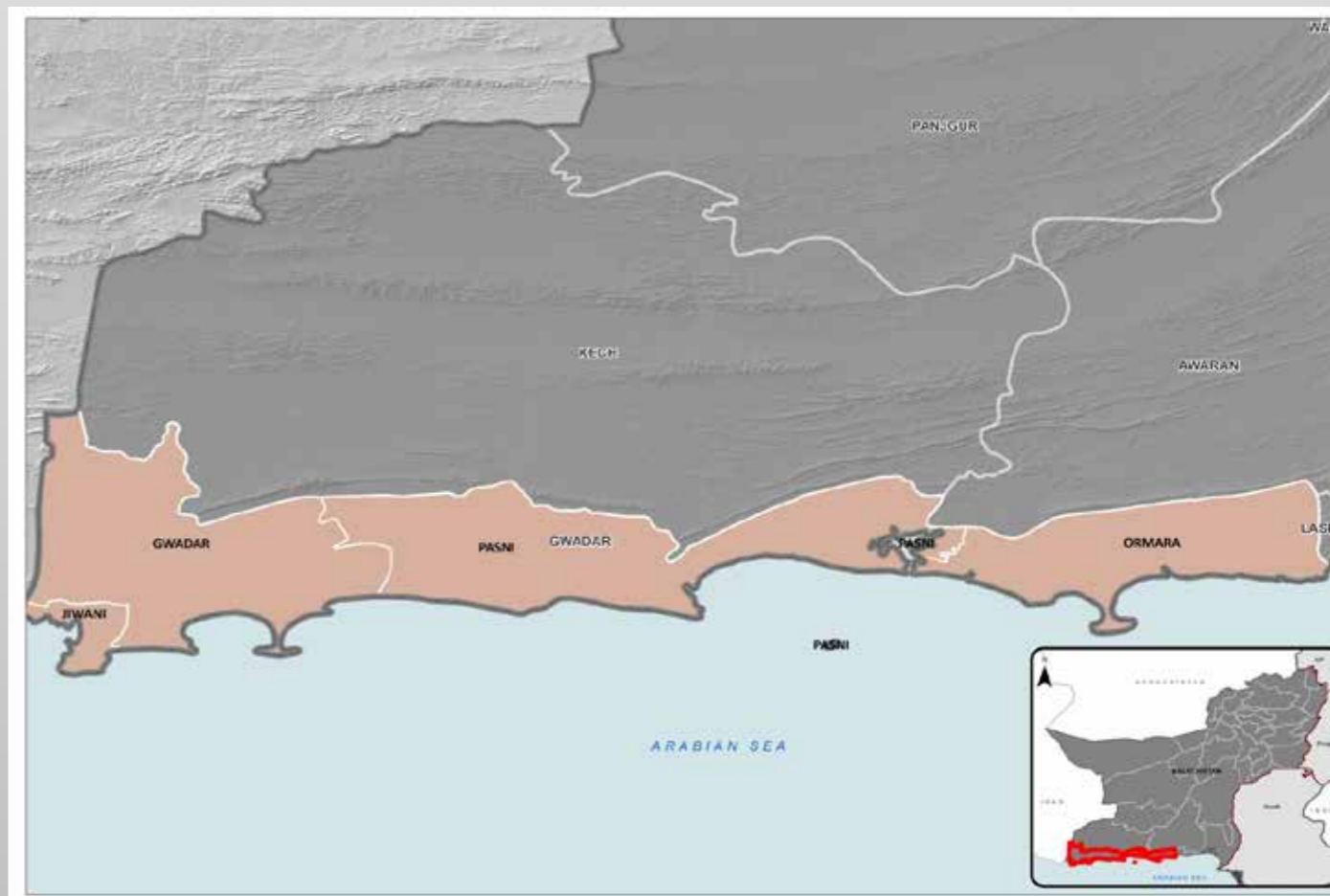
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*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	3,661
Total non-cultivated area (hectares)	393,833
Total area under irrigation (hectares)	2,384
Major rabi crop(s)	Wheat, fodder and vegetable crops
Major kharif crop(s)	Fruits and vegetable crops
Total livestock population	178,066

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

Harnai is a district in the north-east of Balochistan province. Harnai is surrounded by mountainous ranges. The climate is hot in summer and pleasant cold in winter. There is a fair rainy season during monsoon. It is the only area of the production of the fresh vegetable and fruit crops with fresh and clean water in the whole Balochistan wheat is the major cereal crop. There are two tehsils in the district: Harnai and Shahrig. The district headquarter is located at Harnai.

SOIL ATTRIBUTES

Soil type/parent material	Bare rock with few shallow unstable soil materials on mountains followed by mostly bare rocks, moderately deep, calcareous, medium textured soils in valley	
Dominant soil series	Wam, Shahrig, Khumak	
pH	7.9 – 8.5	(Alkaline)*
Electrical conductivity (dS m⁻¹)	0.2 – 4.3	(Saline)*
Organic matter (%)	0.52 – 0.97	(Low)*
Available phosphorus (ppm)	4.0 – 9.0	(Low)*
Extractable potassium (ppm)	74 – 380	(Medium)*
Farmers availing soil testing facility (%)	0 (Based on crop production zone wise data)	
Farmers availing water testing facility (%)	0 (Based on crop production zone wise data)	

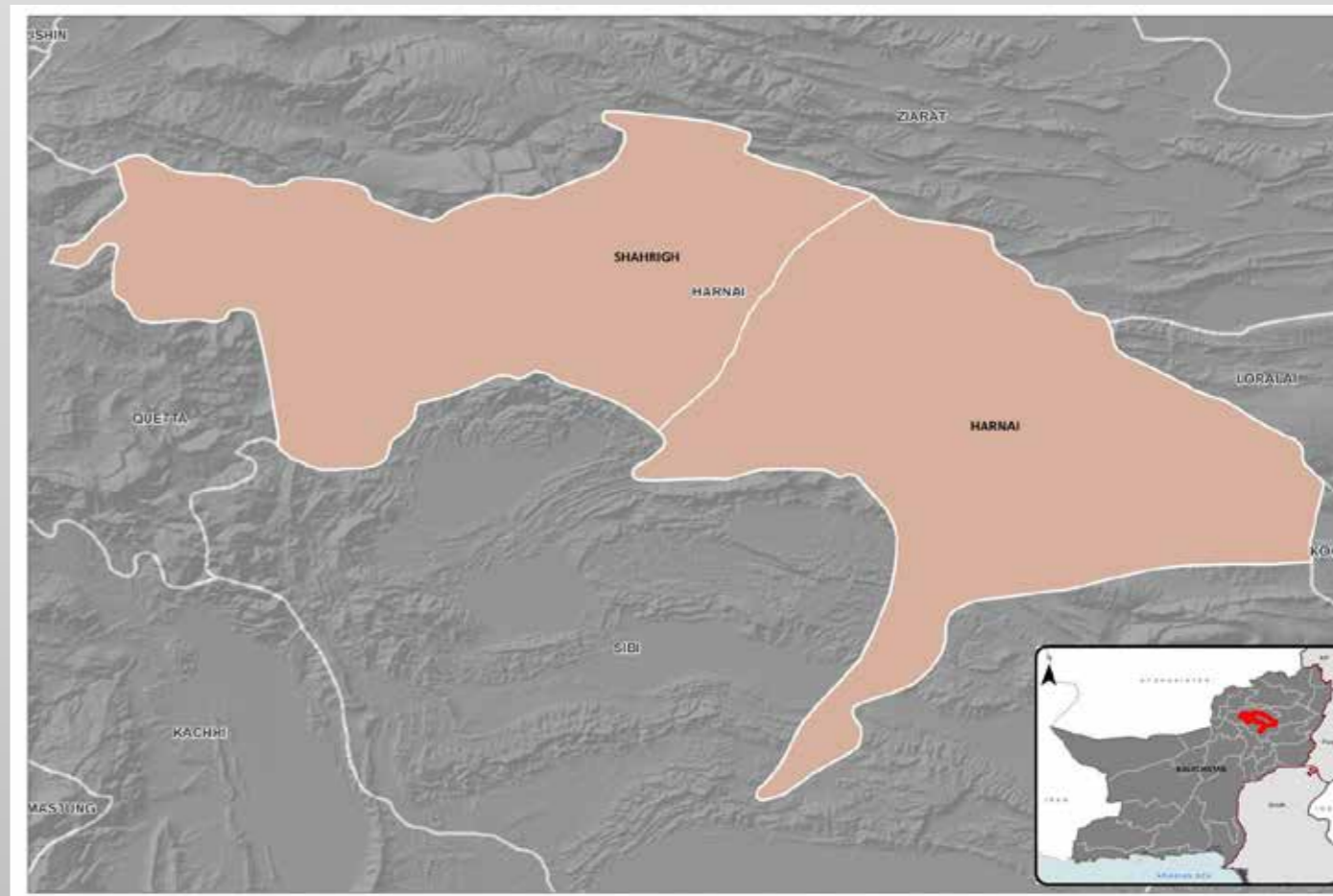
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*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	7,192
Total non-cultivated area (hectares)	17,410
Total area under irrigation (hectares)	6,552
Major rabi crop(s)	Wheat, vegetable crops
Major kharif crop(s)	Vegetable and fruit crops
Total livestock population	Data not available

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

JAFFARABAD

Jaffarabad is located in the eastern part of Balochistan was established district of the province in 1987. The climate is hot and dry in summer and moderately cold in winter. Main crops are wheat, rice, maize, cotton, vegetable and fodder crops. There are four tehsils in the district and the district headquarter is located at Dera Allah Yar.

SOIL ATTRIBUTES

Soil type/parent material	Deep, strongly calcareous, alkaline, fine textured, imperfectly drained soils followed by coarse textured gravelly soils
Dominant soil series	Jhatpat, Kundi, Jacobabad
pH	7.2 – 9.5 (Alkaline)*
Electrical conductivity (dS m⁻¹)	0.16 – 46.3 (Saline)*
Organic matter (%)	0.17 – 2.0 (Low)*
Available phosphorus (ppm)	1.0 – 22.0 (Low)*
Extractable potassium (ppm)	30 – 520 (Medium)*
Farmers availing soil testing facility (%)	63 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	71 (Based on crop production zone wise data)

Source:

District Soil Survey Reports, Soil Survey of Pakistan

Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)

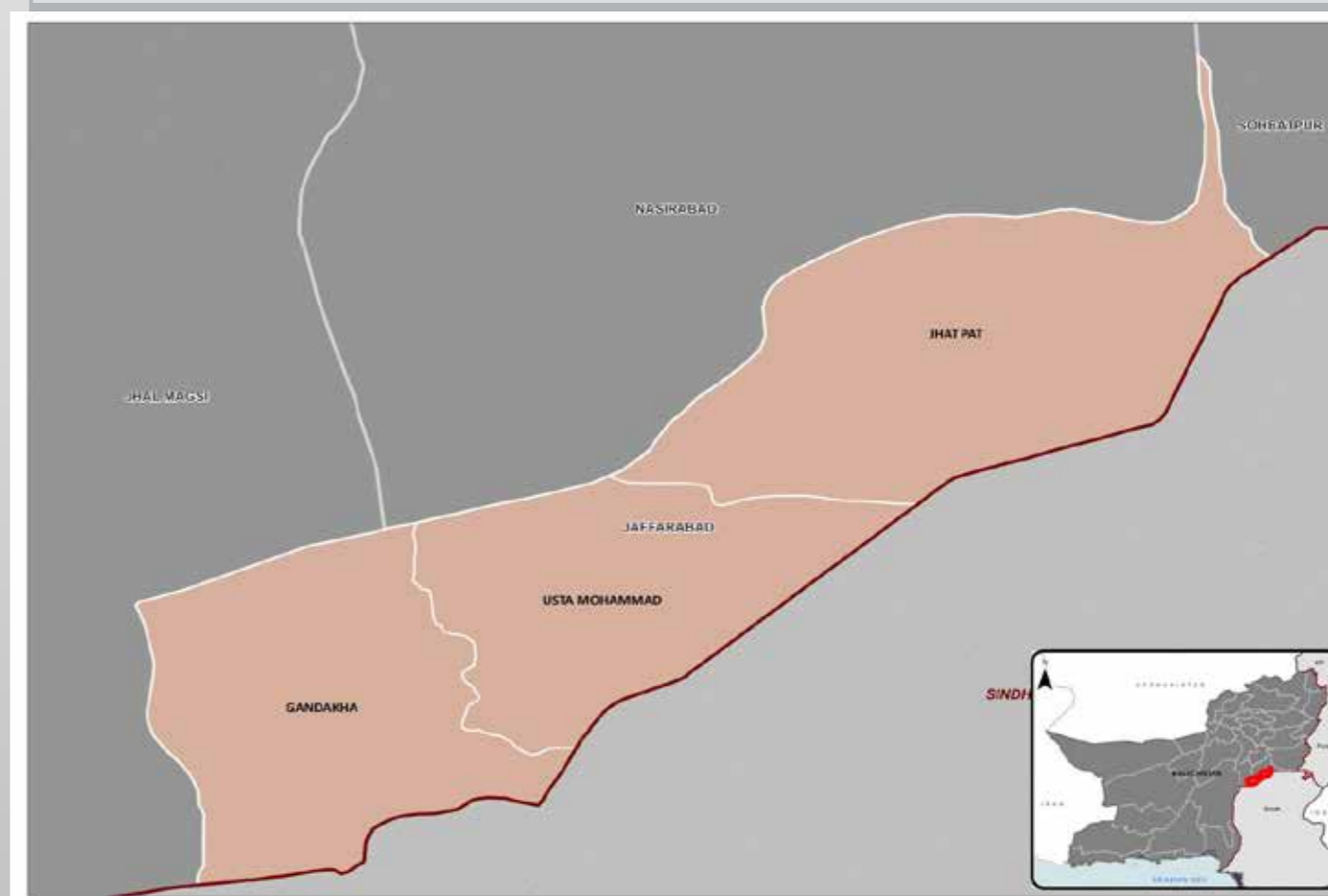
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Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	223,102
Total non-cultivated area (hectares)	26,414
Total area under irrigation (hectares)	217,448
Major rabi crop(s)	Wheat, chickpea, rapeseed
Major kharif crop(s)	Rice, sugarcane, cotton, fodder crops
Total livestock population	1,524,201



Source: Information Management Unit, FAO Pakistan

Jhal Magsi is the central district of Balochistan. It was previously part of the Kachhi district and was declared district in 1991. The climate is hot and dry in summer and moderately cold in winter. Rainfall is scanty. Main crops include wheat, rice, cotton, rapeseed, sorghum and fruit crops. There are two tehsils in the district: Gandawah and Jhal Magsi. The district headquarters is located at Jhal Magsi.

SOIL ATTRIBUTES

Soil type/parent material	Nearly level, deep, calcareous, moderately alkaline, fine textured, well drained soils followed by nearly level, slightly concave, deep, strongly alkaline, fine textured, imperfectly drained soils
Dominant soil series	Chiltan, Shabaq, Shamoza
pH	8.0 – 8.9 (Alkaline)*
Electrical conductivity (dS m⁻¹)	0.21 – 13.3 (Saline)*
Organic matter (%)	0.19 – 1.96 (Low)*
Available phosphorus (ppm)	3.0 – 11.0 (Low)*
Extractable potassium (ppm)	86 – 420 (Medium)*
Farmers availing soil testing facility (%)	63 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	72 (Based on crop production zone wise data)

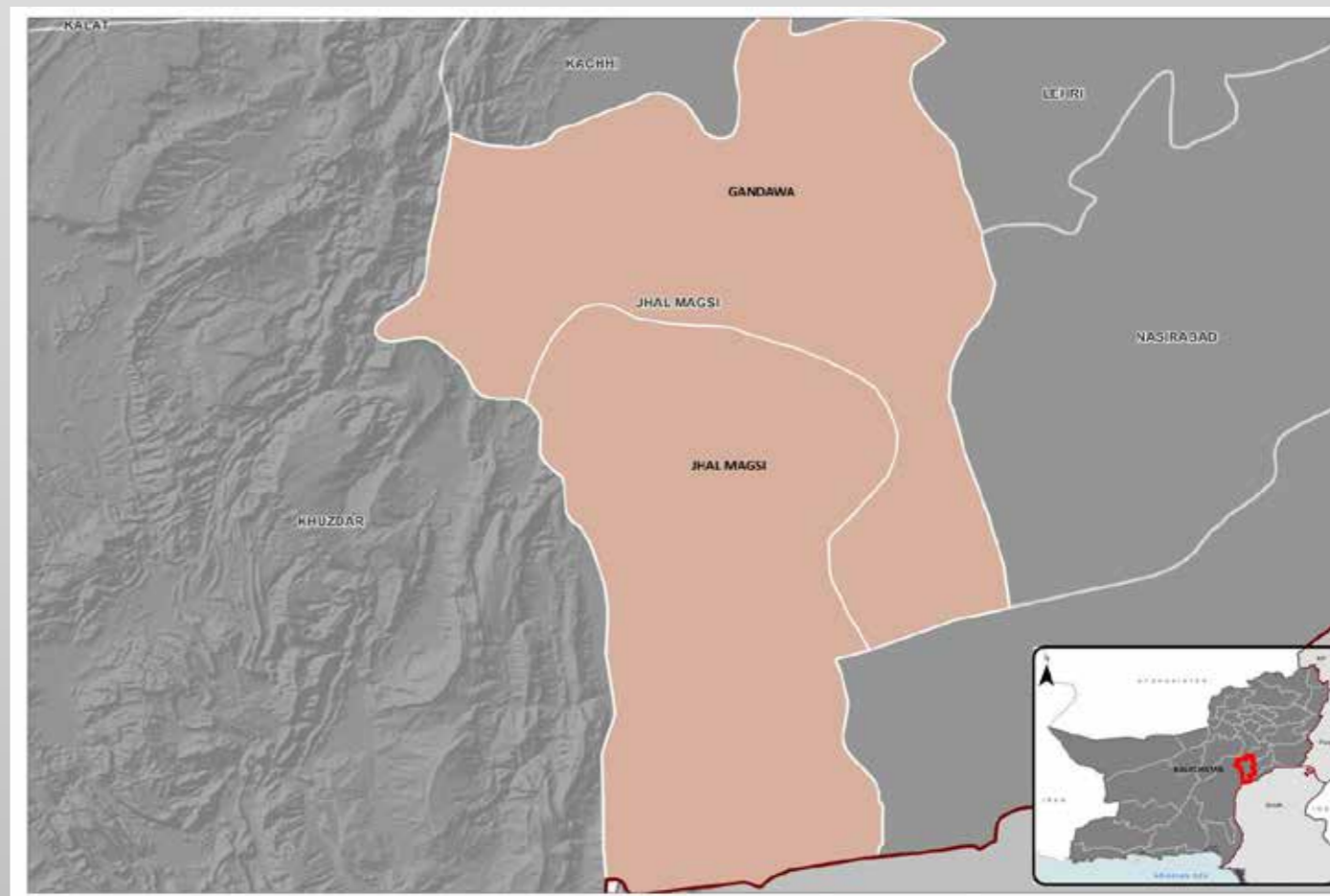
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*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	129,360
Total non-cultivated area (hectares)	203,891
Total area under irrigation (hectares)	67,133
Major rabi crop(s)	Wheat, rapeseed
Major kharif crop(s)	Rice, cotton, sorghum
Total livestock population	621,527

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

KACHHI

The district Kachhi (previously known as Bolan) lies in the central Balochistan. Main crops include wheat, cotton, onion and vegetable crops. The climate is hot and dry in summer and moderately cold in winter. There are three tehsils in the district: Dhadar, Mach and Sanni. The district headquarter is located at Dhadar.

SOIL ATTRIBUTES

Soil type/parent material	Piedmont alluvial deposits from sand, shale and limestone	
Dominant soil series	Murgha, Kaftari, Maslakh	
pH	7.9 – 9.2	(Alkaline)*
Electrical conductivity (ds m⁻¹)	0.12 – 9.02	(Saline)*
Organic matter (%)	0.14 – 1.0	(Low)*
Available phosphorus (ppm)	2.0 – 8.0	(Low)*
Extractable potassium (ppm)	58 – 420	(Medium)*
Farmers availing soil testing facility (%)	63 (Based on crop production zone wise data)	
Farmers availing water testing facility (%)	72 (Based on crop production zone wise data)	

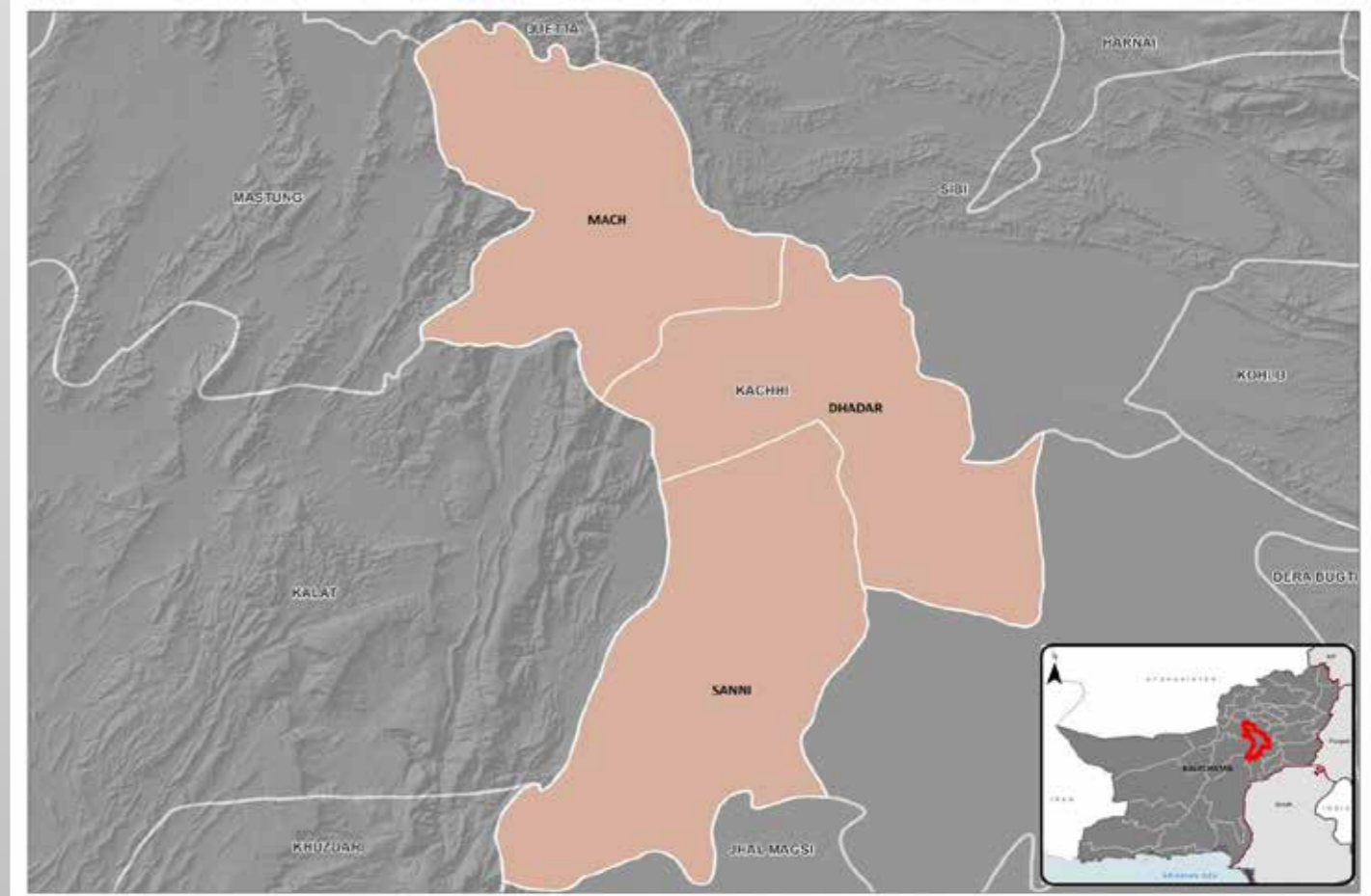
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*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5. soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	78,267
Total non-cultivated area (hectares)	246,440
Total area under irrigation (hectares)	23,550
Major rabi crop(s)	Wheat, rapeseed
Major kharif crop(s)	Cotton, vegetable crops
Total livestock population	1,474,935

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

Kalat was declared as a district in 1954 with an area of 6621Km. The climate is arid, mild in summer and cold in winter, with most rainfall occurring in the winter. The terrain is mountainous with several valleys and the main economic activities are agriculture and livestock rearing. Major crops include wheat, maize, fodders, vegetable and fruit crops. There are three tehsils in the district: Kalat, Mangochar and Surab. The district headquarters is located at Kalat.

SOIL ATTRIBUTES

Soil type/parent material	Piedmont and stream alluvial deposits
Dominant soil series	Chiltan, Maslakh, Gidder
pH	7.7 – 8.8 (Alkaline)*
Electrical conductivity (dS m⁻¹)	0.17 – 6.63 (Saline)*
Organic matter (%)	0.35 – 1.21 (Medium)*
Available phosphorus (ppm)	1.0 – 26.0 (Low)*
Extractable potassium (ppm)	54 – 520 (Medium)*
Farmers availing soil testing facility (%)	7 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	9 (Based on crop production zone wise data)

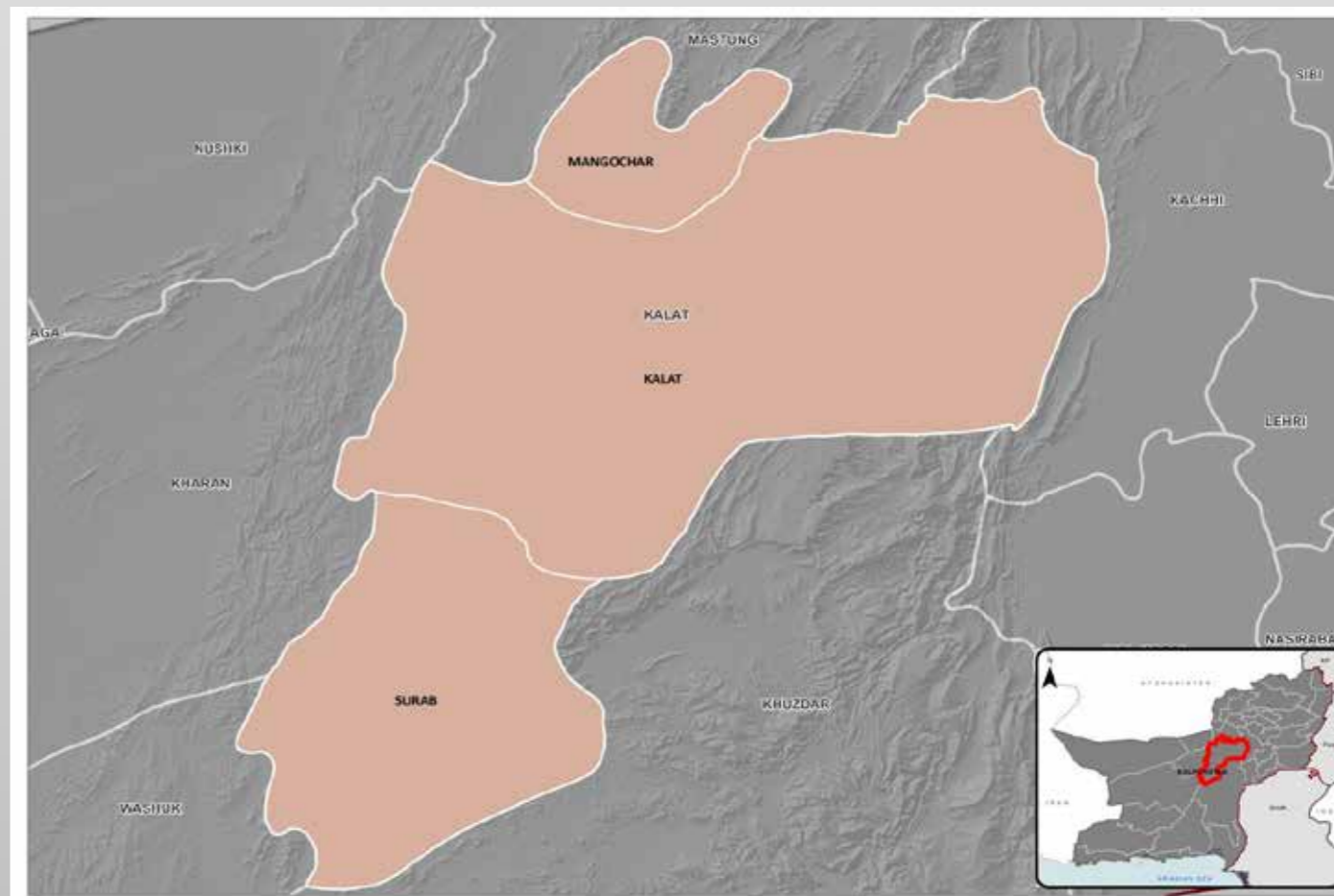
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*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	124,906
Total non-cultivated area (hectares)	506,546
Total area under irrigation (hectares)	19,352
Major rabi crop(s)	Wheat, vegetable crops
Major kharif crop(s)	Maize, sorghum, fruit crops
Total livestock population	2,444,864

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

KECH

Kech district lies in the southwestern part of Balochistan. Main crops include wheat, rice, sorghum, barley, melon and dates. The climate is hot and dry in summer and moderately cold in winter. There are five tehsils in the district: Buleda, Tump, Mand, Turbat and Dasht. The district headquarter is located at Turbat.

SOIL ATTRIBUTES

Soil type/parent material	Mostly barren rocks followed by moderately deep, calcareous, medium textured overlying gravels and gypsiferous soils
Dominant soil series	Chakyan, Parkini, Kalag
*pH	No data available
*Electrical conductivity (dS m⁻¹)	No data available
Organic matter (%)	No data available
Available phosphorus (ppm)	No data available
Extractable potassium (ppm)	No data available
Farmers availing soil testing facility (%)	0 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	0 (Based on crop production zone wise data)

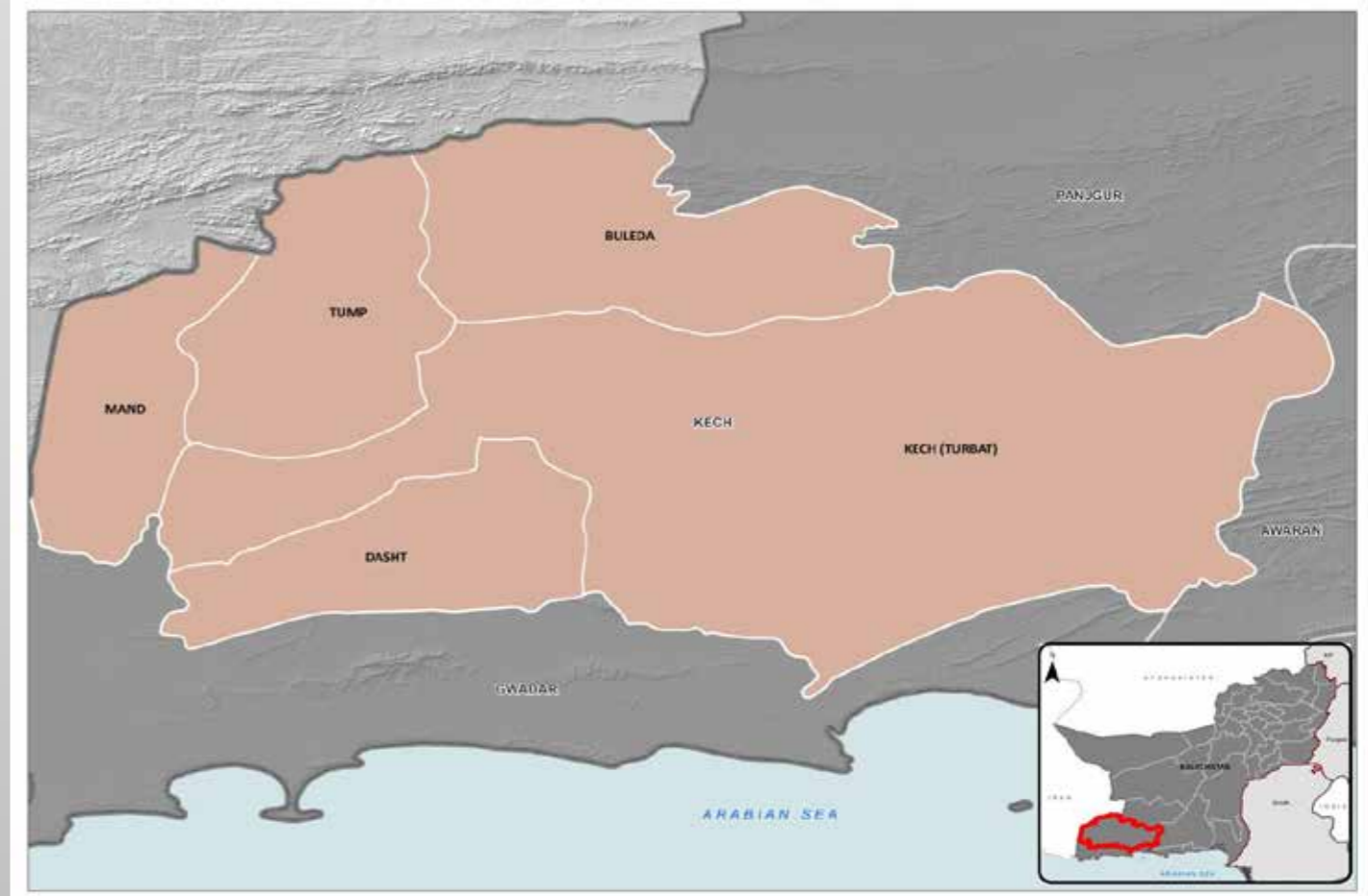
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* Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	65,597
Total non-cultivated area (hectares)	488,739
Total area under irrigation (hectares)	44,084
Major rabi crop(s)	Wheat, vegetable crops
Major kharif crop(s)	Rice, sorghum, dates, melon
Total livestock population	790,278

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

Killa Abdullah is bordered by Pishin district in the east, Quetta district in the south and by Afghanistan in the west. Killa Abdullah is a small valley bordered by mountains. The climate is moderately hot in summer and extreme cold in winter. The climate is especially suitable for fruit (e.g. apple, apricot, peach, plum, grapes, cherry) and vegetable crops (e.g. potatoes, onions, tomatoes). There are four tehsils in the district: Chaman, Dobandi, Gulistan and Killa Abdullah. The district headquarter is located at Chaman.

SOIL ATTRIBUTES

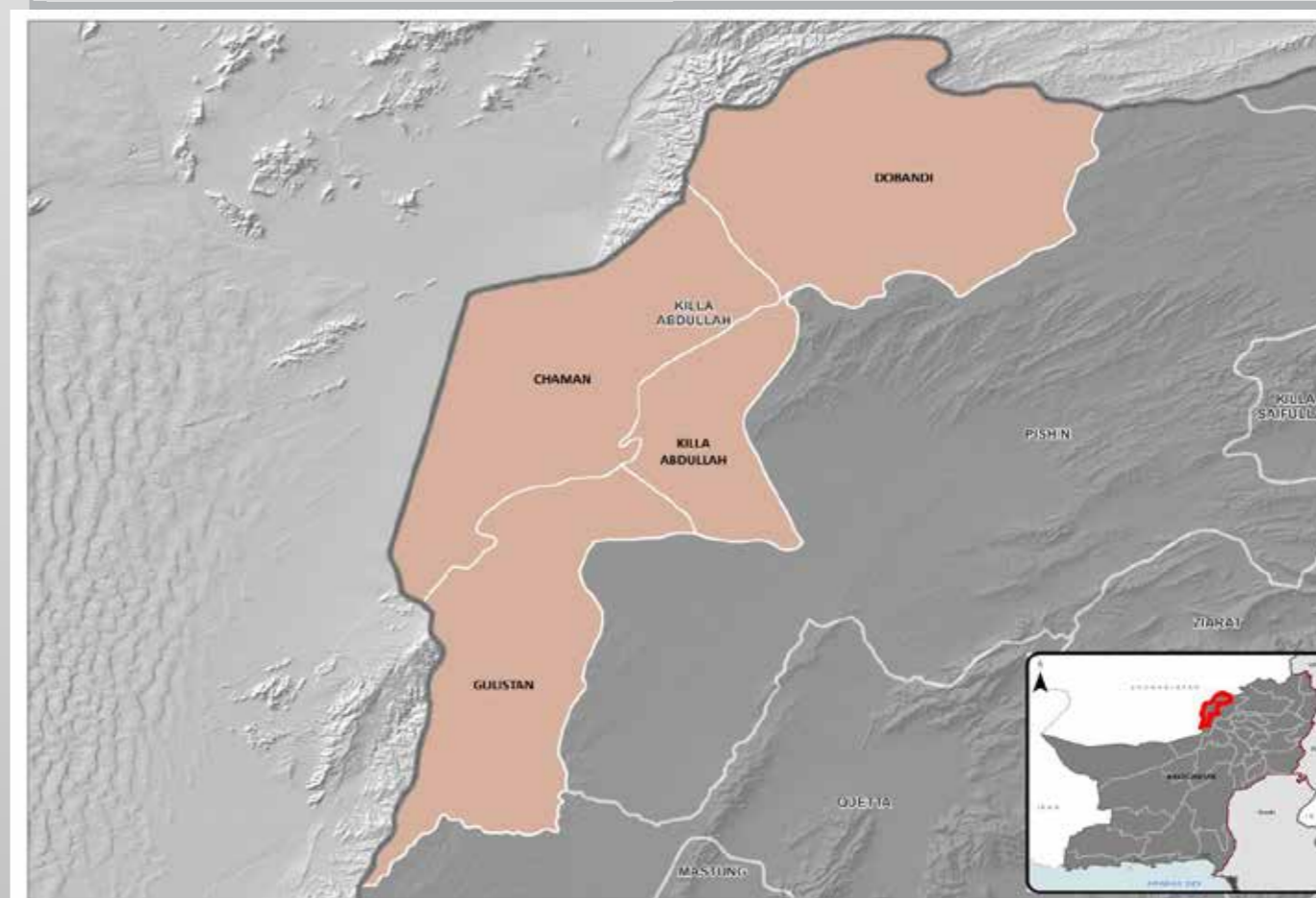
Soil type/parent material	Bare rock with few shallow unstable soil material on mountains followed by piedmont basins, very deep, calcareous textured, poorly drained soils and few nearly level, deep calcareous, alkaline, fine textured soils
Dominant soil series	Wam, Shahrig, Khumak
pH	7.9 – 8.6 (Alkaline)*
Electrical conductivity (dS m⁻¹)	0.15 – 0.84 (Saline)*
Organic matter (%)	0.58 – 1.42 (Medium)*
Available phosphorus (ppm)	4.0 – 8.0 (Low)*
Extractable potassium (ppm)	66 – 302 (Medium)*
Farmers availing soil testing facility (%)	24 (Based on crop production zone data)
Farmers availing water testing facility (%)	19 (Based on crop production zone data)

Source:
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*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	15,122
Total non-cultivated area (hectares)	613
Total area under irrigation (hectares)	9,222
Major rabi crop(s)	Wheat, fruit and vegetable crops
Major kharif crop(s)	Vegetable and fruit crops
Total livestock population	790,933



Source: Information Management Unit, FAO Pakistan

KHARAN

Kharan district borders in the north by Washuk district, in the east by Chagai, in the south by Nushki and in the west by Kalat. Major crops in the district are wheat, rapeseed, barley, cotton, fodder, vegetable and fruit crops. The climate is hot and dry in summer and moderately cold in winter. There is only one tehsil in the district: Kharan, that is the district headquarter.

SOIL ATTRIBUTES

Soil type/parent material	Piedmont colluvial and alluvial deposits
Dominant soil series	Nok Kundi, Dalbindin, Chagai
*pH	Data not available
*Electrical conductivity (dS m⁻¹)	Data not available
Organic matter (%)	Data not available
Available phosphorus (ppm)	Data not available
Extractable potassium (ppm)	Data not available
Farmers availing soil testing facility (%)	2 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	0 (Based on crop production zone wise data)

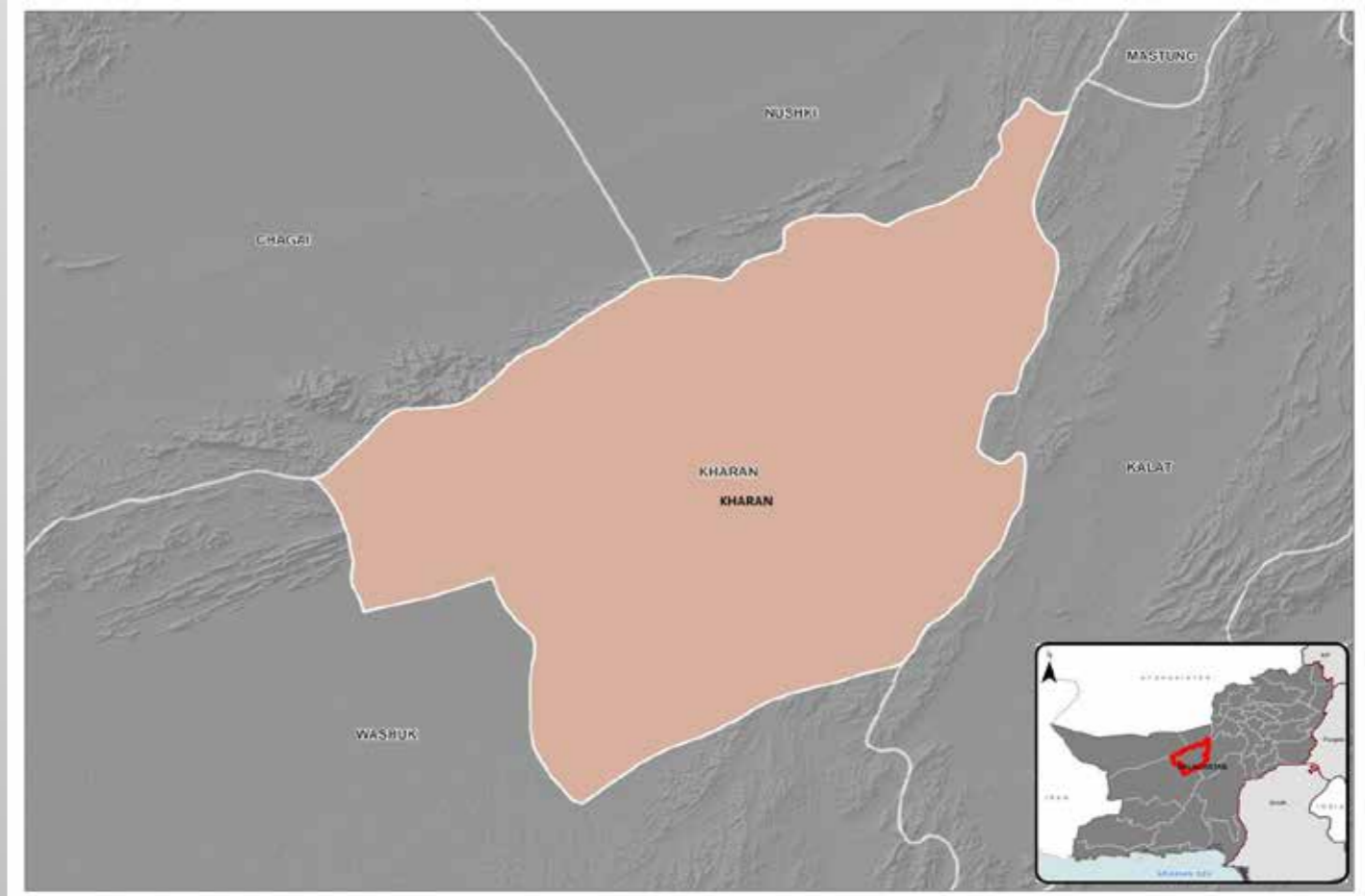
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* Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	101,340
Total non-cultivated area (hectares)	3,492,039
Total area under irrigation (hectares)	16,148
Major rabi crop(s)	Wheat, rapeseed, vegetable crops
Major kharif crop(s)	Cotton, sorghum, fruit crops
Total livestock population	1,606,913

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

Khuzdar was a part of Kalat district and was declared a separate district in 1974. The climate is that of a desert, with hot summer and mild winter. Major crops include wheat, cotton, maize, fodders, pulses and chillies. There are five tehsils in the district: Khuzdar, Mola, Naal, Wadh and Zehri. The district headquarter is located at Khuzdar.

SOIL ATTRIBUTES

Soil type/parent material	Piedmont alluvial deposits from sand, shale and limestone
Dominant soil series	Chiltan, Shabaq, Shamoza
*pH	Data Not Available
*Electrical conductivity (dS m⁻¹)	Data Not Available
Organic matter (%)	Data Not Available
Available phosphorus (ppm)	Data Not Available
Extractable potassium (ppm)	Data Not Available
Farmers availing soil testing facility (%)	7 (Based on crop production zone wise data)
Farmers availing water test facility (%)	9 (Based on crop production zone wise data)

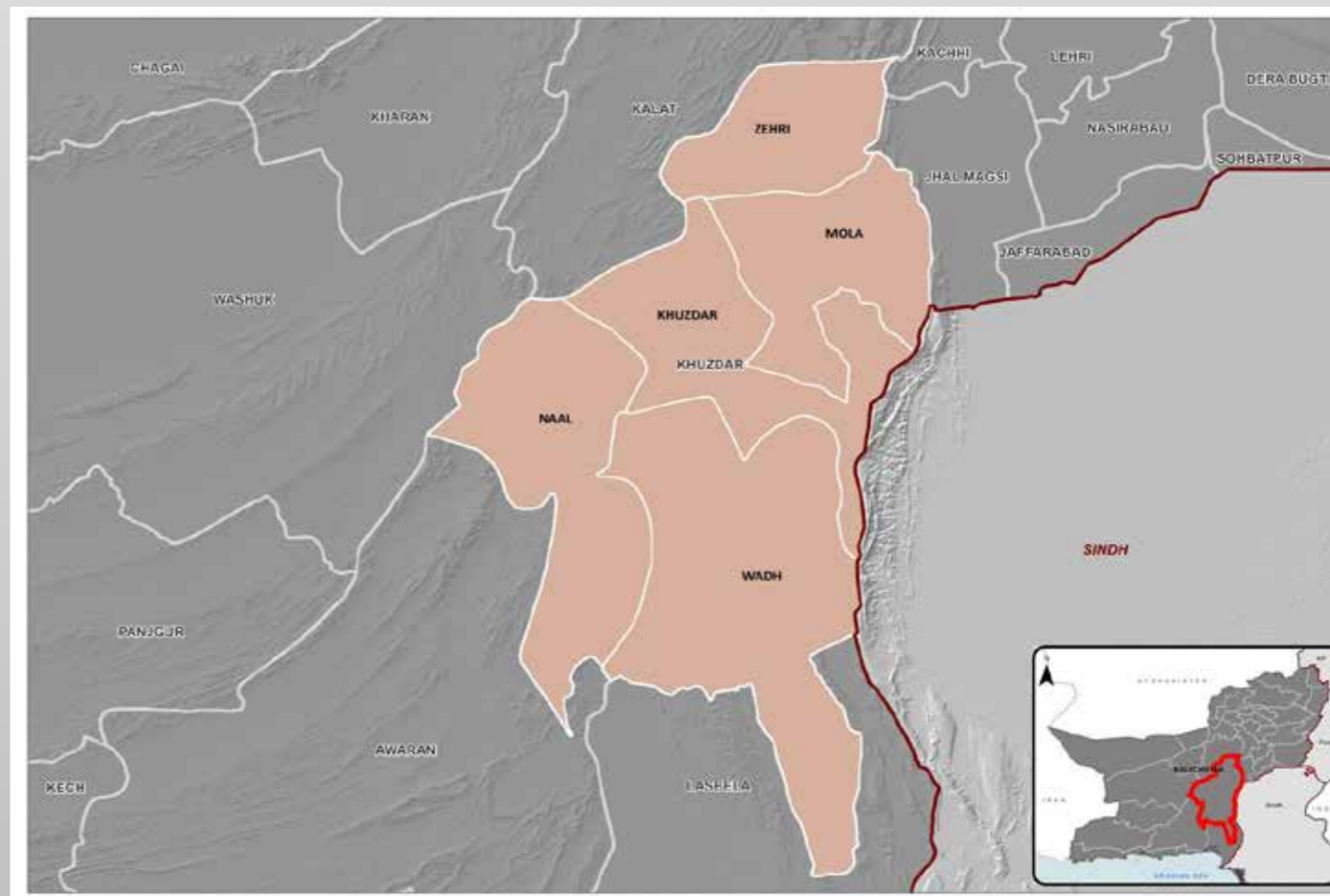
Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

* Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	135,992
Total non-cultivated area (hectares)	3,168,757
Total area under irrigation (hectares)	65,705
Major rabi crop(s)	Wheat, vegetable and fodder crops
Major kharif crop(s)	Cotton, maize, sorghum, millet
Total livestock population	2,662,533

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

KILLA SAIFULLAH

Killa Saifullah lies in the north of Loralai district and south of Zhob district of Balochistan. The climate is moderately hot in summer and extreme cold in winter. The district is rich with mineral wealth and produces a high quality chromite in Pakistan, the second largest reserve in the world. Major crops include wheat, maize, cotton, vegetables and fruits. There are two tehsils Killa Saifullah and Muslim Bagh in the district and the district headquarter is located at Killa Saifullah.

SOIL ATTRIBUTES

Soil type/parent material	Mainly bare rocks in mountains followed by moderately deep, calcareous, gravelly, medium textured soils in valley
Dominant soil series	Murgha, Maslakh, Patki
pH	7.7 – 10.0 (Alkaline)*
Electrical conductivity (ds m⁻¹)	0.16 – 8.0 (Saline)*
Organic matter (%)	0.1 – 1.6 (Medium)*
Available phosphorus (ppm)	1.0 – 18.0 (Low)*
Extractable potassium (ppm)	40 – 420 (Medium)*
Farmers availing soil testing facility (%)	24 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	19 (Based on crop production zone wise data)

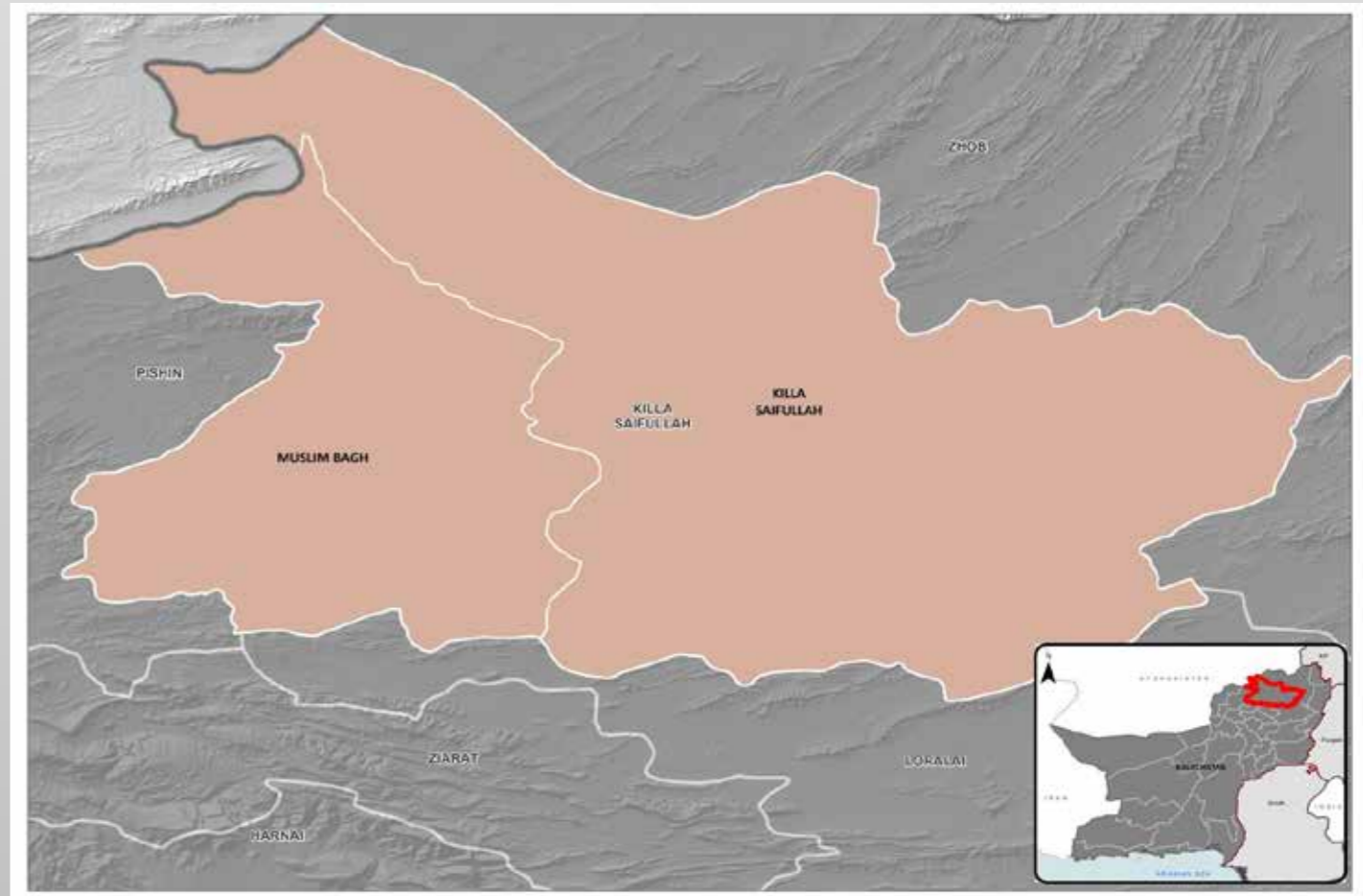
Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5. soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	150,512
Total non-cultivated area (hectares)	266,268
Total area under irrigation (hectares)	105,340
Major rabi crop(s)	Wheat, vegetable crops
Major kharif crop(s)	Maize, cotton, fruit crops
Total livestock population	2,238,767

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

Kohlu in the northeastern part of Balochistan was given the status of district in 1974. It is bounded by Loralai district in the north, Dera Bugti in the south and Sibi district in the west. The climate is hot in summer and cool in winter. Main crops include wheat, cotton, fodders, pulses, vegetable and fruit crops. There are three tehsils in the district and the district headquarter is located at Kohlu.

SOIL ATTRIBUTES

Soil type/parent material	Bare rock with few shallow unstable soil materials on mountains followed by deep/very deep, calcareous, alkaline fine textured, well drained soils/ Piedmont alluvial, calcareous deposits
Dominant soil series	Baghgai, Kunner, Kaftari
*pH	Data not available
*Electrical conductivity (1:2.5 H₂O) (dS m⁻¹)	Data not available
Organic matter (%)	Data not available
Available phosphorus (ppm)	Data not available
Extractable potassium (ppm)	Data not available
Farmers availing soil testing facility (%)	0 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	0 (Based on crop production zone wise data)

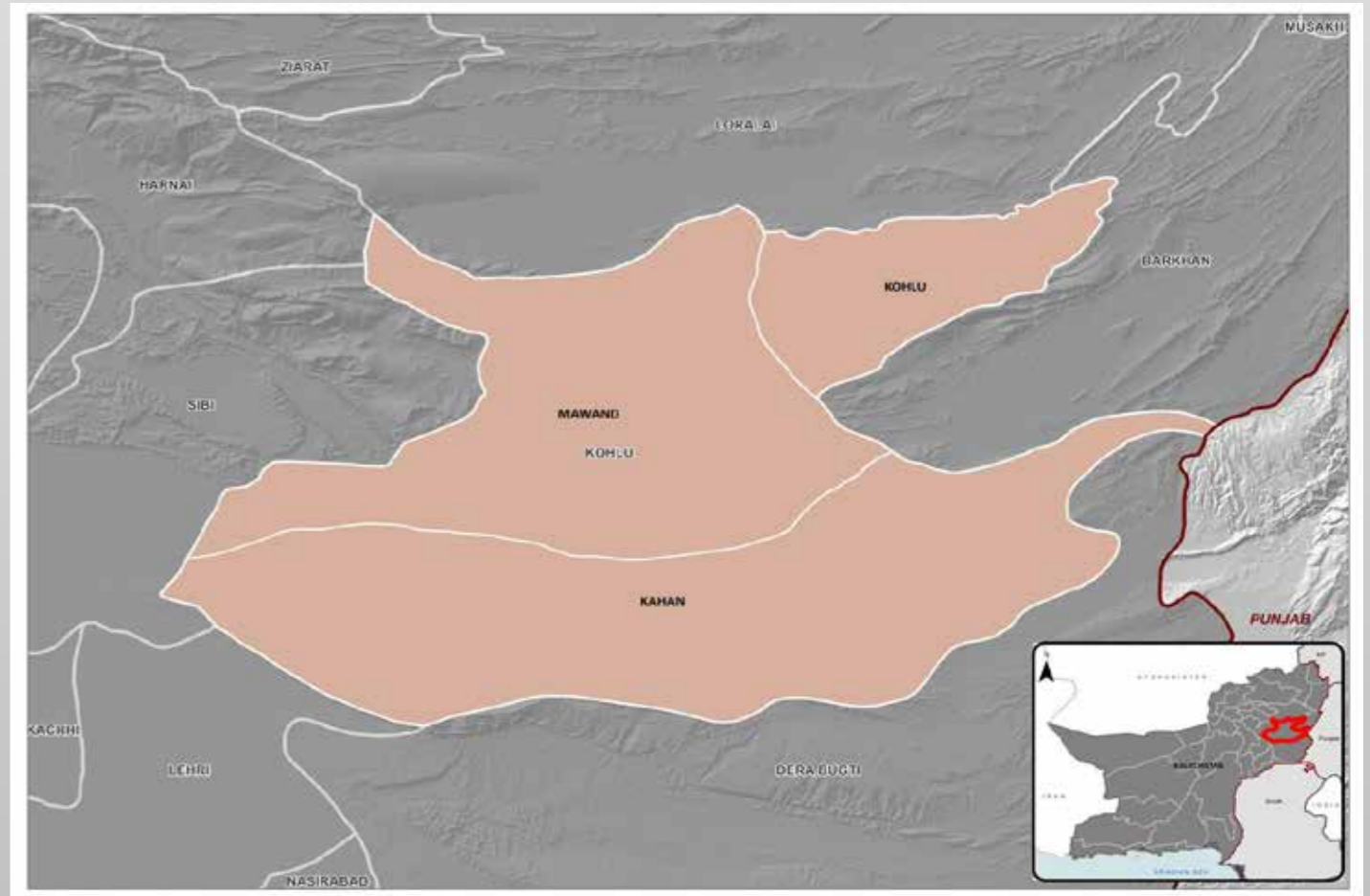
Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

* Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	31,887
Total non-cultivated area (hectares)	22,437
Total area under irrigation (hectares)	3,974
Major rabi crop(s)	Wheat, fodder crops
Major kharif crop(s)	Cotton, vegetable and fruit crops
Total livestock population	2,595,841

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

LASBELA

Lasbela is a coastal district of Balochistan province. One of the world's largest ship breaking yards is located at Lasbela coast. Major crops are wheat, rapeseed, rice, sugarcane and sorghum. There are seven tehsils in the district: Bela, Dureji, Hub, Uthal, Kanraj, Gaddani and Sonmiani/Winder. The district headquarter is Uthal.

SOIL ATTRIBUTES

Soil type/parent material	Piedmont alluvial deposits and cover sand
Dominant soil series	Gacheri, Khamara, Winder
pH	8.0 – 8.7 (Alkaline)*
Electrical conductivity (dS m⁻¹)	0.75 – 6.20 (Saline)*
Organic matter (%)	0.23 – 1.37 (Low)*
Available phosphorus (ppm)	1.0 – 9.0 (Low)*
Extractable potassium (ppm)	62 – 400 (Medium)*
Farmers availing soil testing facility (%)	2 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	0 (Based on crop production zone wise data)

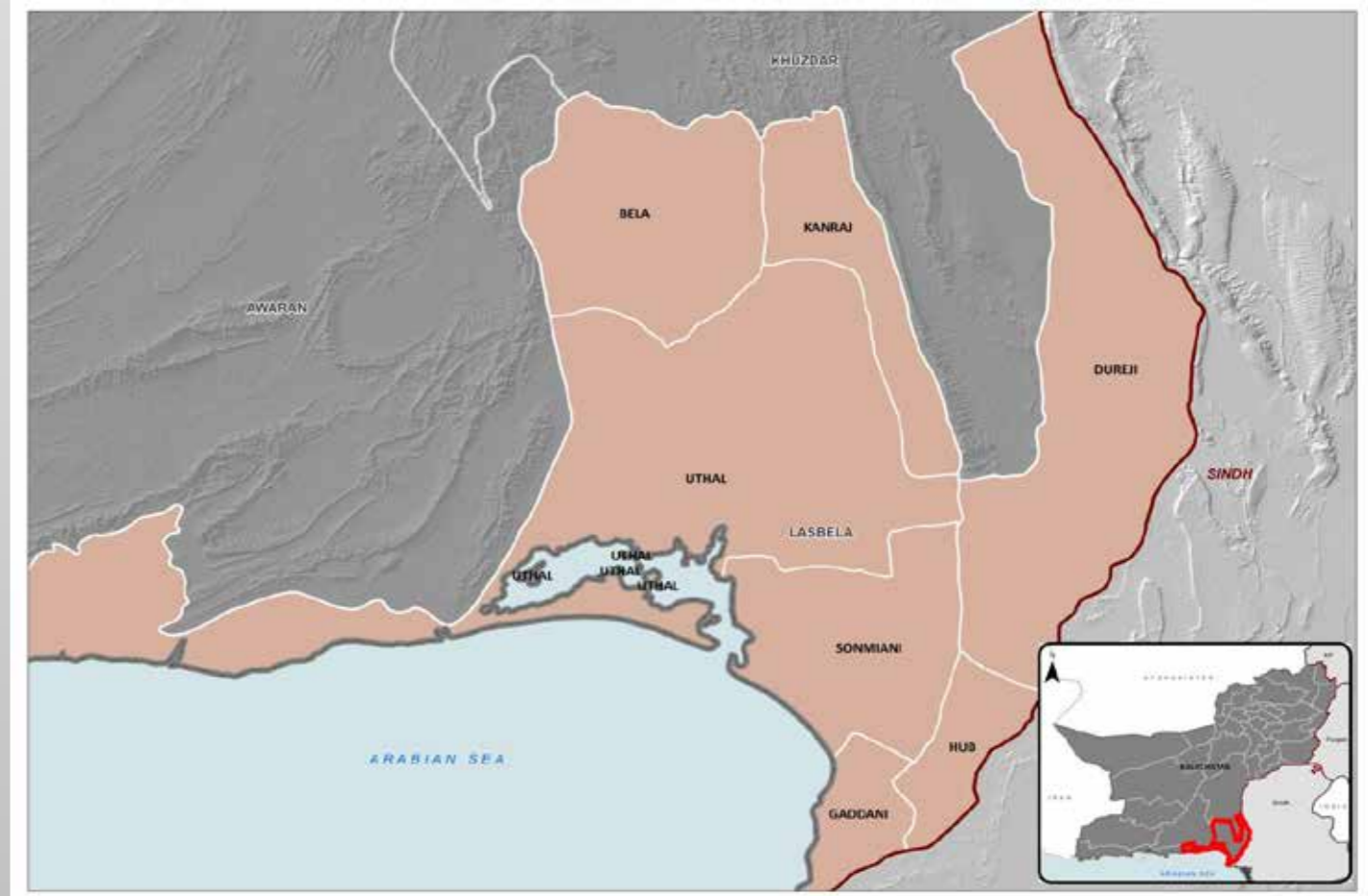
Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	51,949
Total non-cultivated area (hectares)	1,461,812
Total area under irrigation (hectares)	41,556
Major rabi crop(s)	Wheat, rapeseed
Major kharif crop(s)	Rice, sugarcane, sorghum
Total livestock population	1,558,507

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

Loralai District in the northeast of Balochistan was created in 1903 and was further partitioned in 1992 when Musakhel and Barkhan were given the status of separate districts. The climate is mild in summer and cold in winter. Major crops are wheat, cotton, maize, chickpea, vegetable and fruit crops including almond, apple, peach and cherry. There are three tehsils in the district and the district headquarter is at Loralai.

SOIL ATTRIBUTES

Soil type/parent material	Piedmont alluvial, calcareous deposits
Dominant soil series	Maslakh, Quetta, Baghai
pH	7.5 – 9.0 (Alkaline)*
Electrical conductivity (dS m⁻¹)	0.2– 4.44 (Slightly Saline)*
Organic matter (%)	0.75 – 2.0 (Medium)*
Available phosphorus (ppm)	1.0 – 22.0 (Low)*
Extractable potassium (ppm)	70 – 540 (Medium)*
Farmers availing soil testing facility (%)	0 (Based on crop production zone wise data)
Farmers availing water test facility (%)	0 (Based on crop production zone wise data)

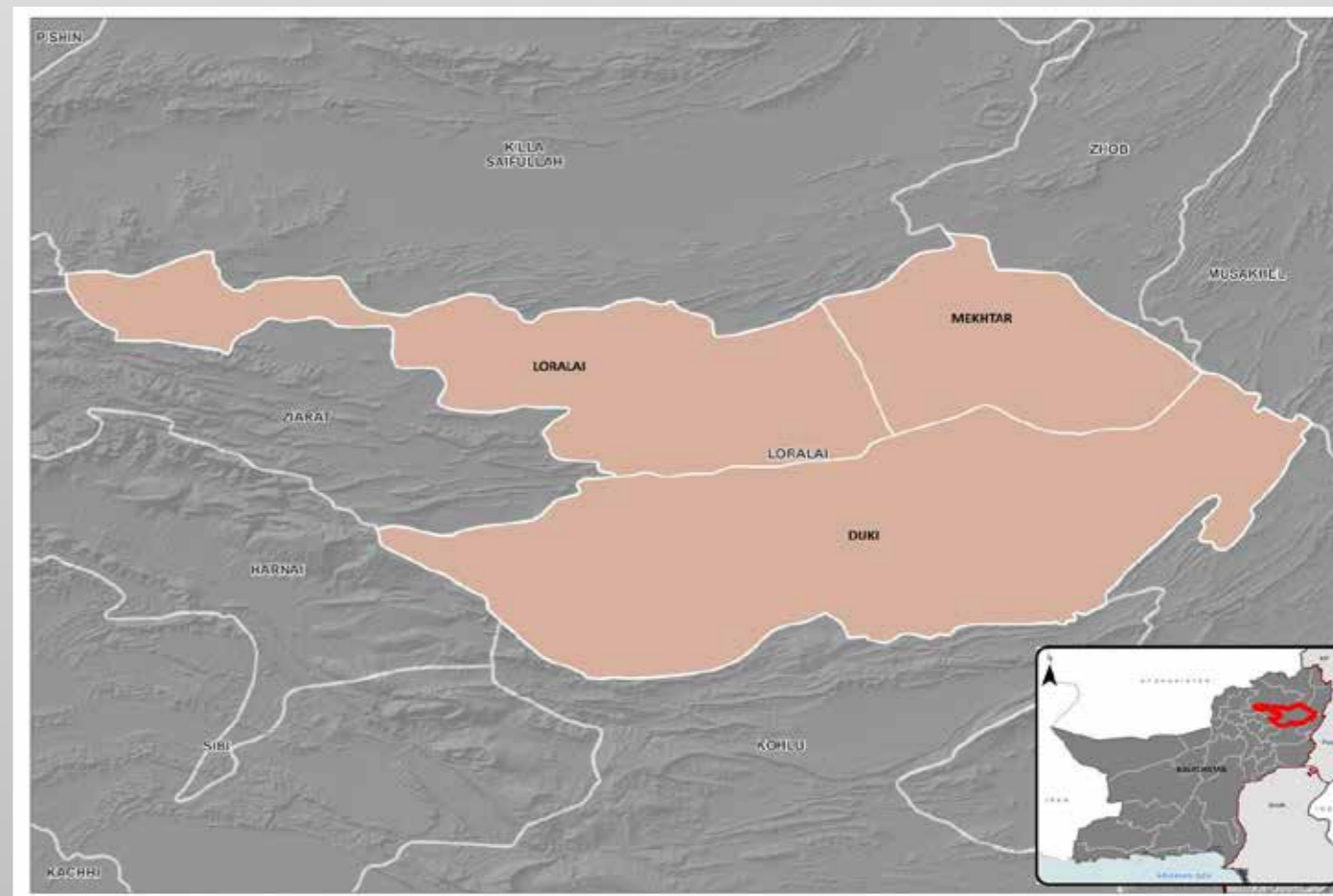
Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	Data not Available
Total non-cultivated area (hectares)	188,368
Total area under irrigation (hectares)	28,528
Major rabi crop(s)	Wheat, vegetable crops
Major kharif crop(s)	Cotton, maize, fruit crops
Total livestock population	1,517,092

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

MASTUNG

Mastung in the northwest of Balochistan was given the status of district in 1991. The climate of Mastung is local steppe, hot in summer and mild to cold in winter. Total rainfall in the district is less than 250 mm. Main crops include wheat, barley, cumin, mungbean, vegetable and fruit crops including apple, grapes, peach and plum. There are three tehsils in the district and the district headquarter is at Mastung.

SOIL ATTRIBUTES

Soil type/parent material	Mostly bare rocks, valleys are moderately deep, calcareous, medium textured soils
Dominant soil series	Murgha, Maslakh, Patki
pH	7.8 – 9.2 (Alkaline)*
Electrical conductivity (dS m⁻¹)	0.12 – 4.85 (Slightly Saline)*
Organic matter (%)	0.25 – 2.0 (Low)*
Available phosphorus (ppm)	1.0 – 26.0 (Low)*
Extractable potassium (ppm)	50 – 460 (Medium)*
Farmers availing soil testing facility (%)	24 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	19 (Based on crop production zone wise data)

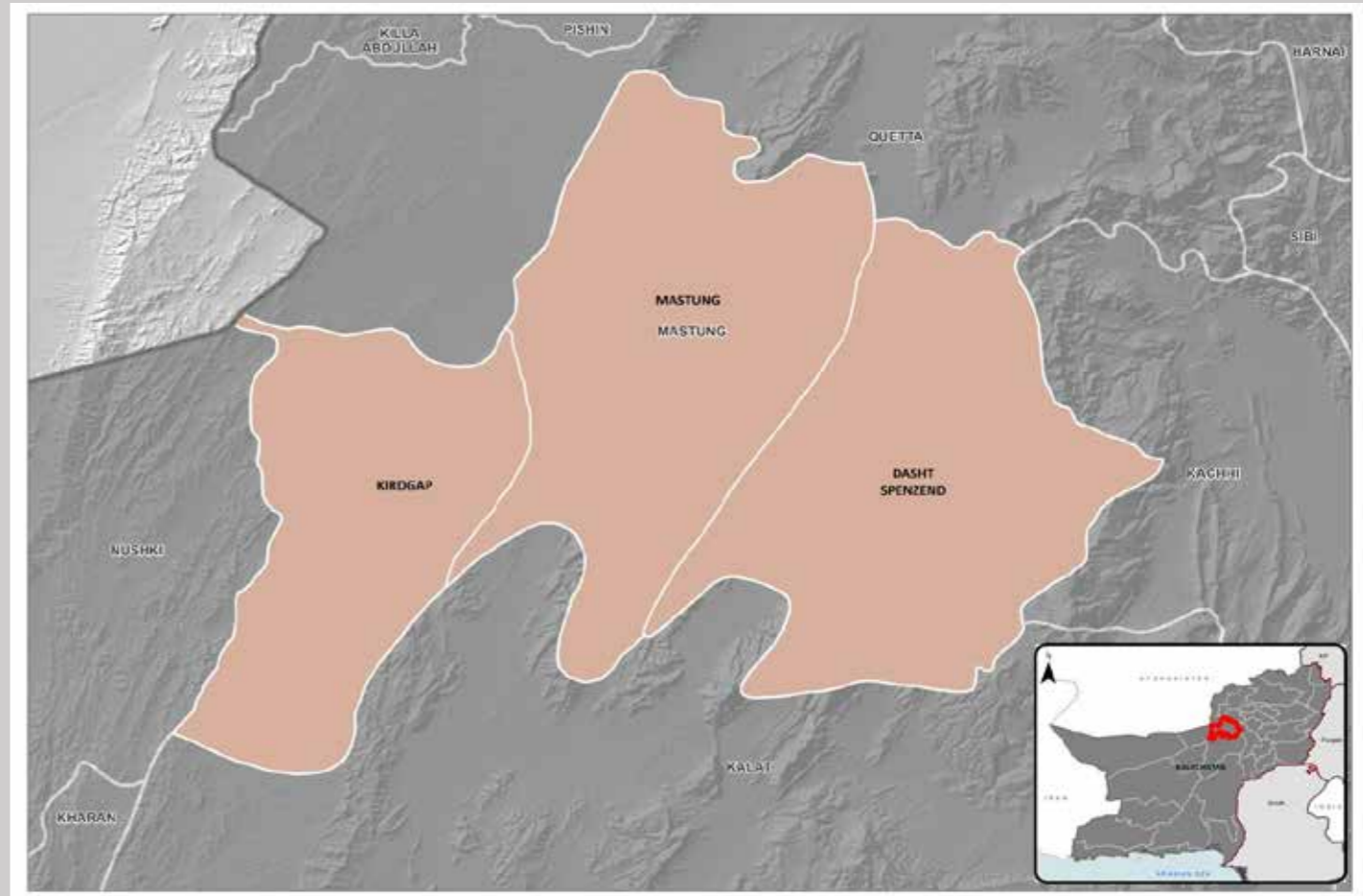
Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	201,342
Total non-cultivated area (hectares)	122,733
Total area under irrigation (hectares)	23,830
Major rabi crop(s)	Wheat, barley, vegetable crops
Major kharif crop(s)	Vegetables, sunflower, fruit crops
Total livestock population	1,039,344

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

Musakhel district lies in the northeast of the Balochistan. It is bounded in the north by Khyber Pakhtunkhwa province and in the east by Punjab province. The climate of Musakhel is semi-arid with warm summer and mild winter. Major crops include wheat, maize, vegetable, fodder and fruit crops. There are four tehsils in the district: Darug, Kingri, and Musakhel. The district headquarter is at Musakhel.

SOIL ATTRIBUTES

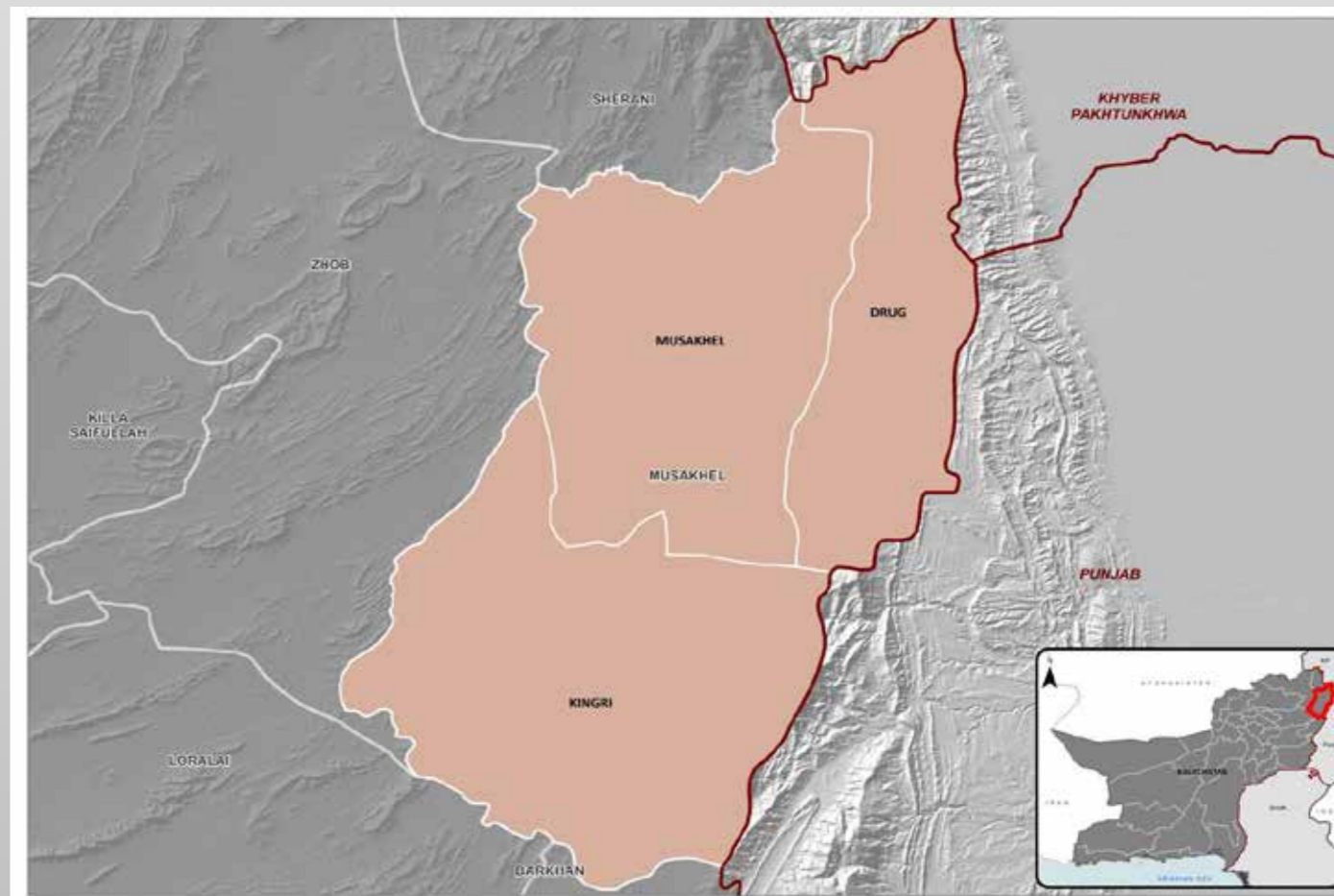
Soil Type/Parent Material	Mainly bare rocks in mountains followed by moderately deep, calcareous, gravelly, medium textured soils in valley
Dominant Soil Series	Murgha, Maslakh, Patki
pH (1:2.5 H₂O)	Data Not Available
Electrical conductivity (1:2.5 H₂O) (dS m⁻¹)	Data Not Available
Organic matter (%)	Data Not Available
Available phosphorus (ppm)	Data Not Available
Extractable potassium (ppm)	Data Not Available
Farmers availing soil testing facility (%)	0 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	0 (Based on crop production zone wise data)

Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

AGRICULTURAL INFORMATION

Total Cultivated Area (hectares)	12,436
Total Non-cultivated Area (hectares)	35,880
Total Area under Irrigation (hectares)	4,268
Major Rabi Crop(s)	Wheat
Major Kharif Crop(s)	Maize
Total Livestock Population	1,911,161

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

NASIRABAD

Nasirabad was formerly a part of Kalat district and was given the status of district in 1974. The climate in the district is extremely hot in summer and moderately cold in winter. Rainfall is scanty and dust storms are common. Main crops include wheat, chickpea, rapeseed, rice, sugarcane, cotton, fodders and fruits. There are four tehsils in the district and the district headquarter is at Dera Murad Jamali.

SOIL ATTRIBUTES

Soil type/parent material	Deep, strongly calcareous, alkaline, fine textured, imperfectly drained soils
Dominant soil series	Jhatpat, Kundi, Jacobabad
pH	7.1 – 8.5 (Alkaline)*
Electrical conductivity (dS m⁻¹)	0.19 – 5.8 (Saline)*
Organic matter (%)	0.22 – 2.0 (Low)*
Available phosphorus (ppm)	1.0 – 14.0 (Low)*
Extractable potassium (ppm)	52 – 490 (Medium)*
Farmers availing soil testing facility (%)	63 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	72 (Based on crop production zone wise data)

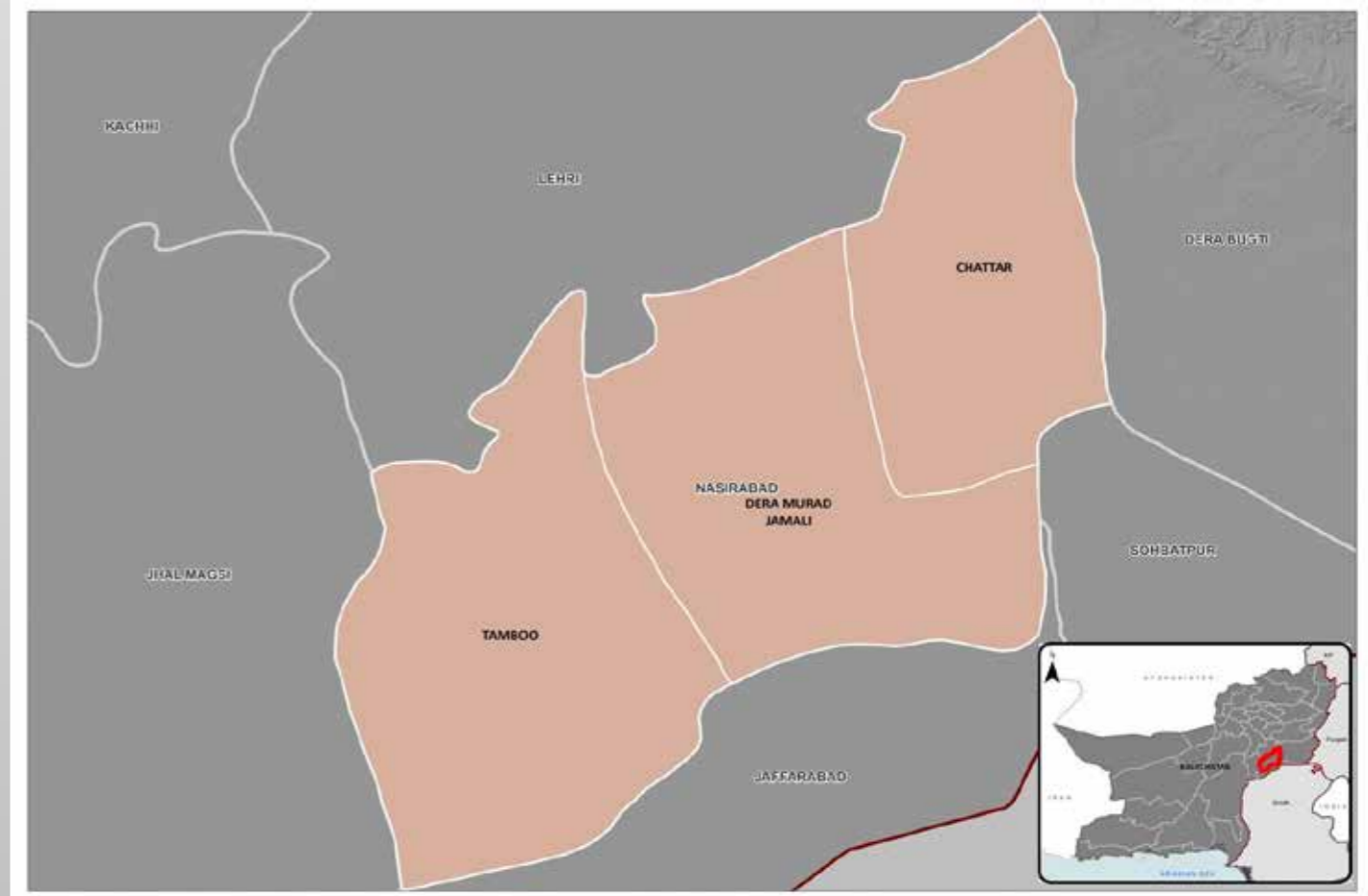
Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	218,856
Total non-cultivated area (hectares)	15,448
Total area under irrigation (hectares)	197,088
Major rabi crop(s)	Wheat, chickpea, rapeseed
Major kharif crop(s)	Rice, sugarcane, fodder crops
Total livestock population	930,523

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

Nushki lies in the northeast of Chagai district, north of Khاران and west of Mastung and Kalat districts of Balochistan. It borders with Afghanistan towards north. The climate is extreme hot in summer and severe cold in winter. Major crops in the district include wheat, rice, maize and fodder crops. There is only one tehsil in the district and the district headquarter is at Nushki.

SOIL ATTRIBUTES

Soil type/parent material	Mostly barren rocks with shallow unstable soils material followed by moderately deep, calcareous, medium textured soil and sand dunes
Dominant soil series	Nokkundi, Dalbindin, Chagai
pH	7.9 – 9.1 (Alkaline)*
Electrical conductivity (dS m⁻¹)	0.13 – 1.36 (Saline)*
Organic matter (%)	0.1 – 0.98 (Low)*
Available phosphorus (ppm)	2.0 – 4.0 (Low)*
Extractable potassium (ppm)	50 – 236 (Medium)*
Farmers availing soil testing facility (%)	2 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	0 (Based on crop production zone wise data)

Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	15,218
Total non-cultivated area (hectares)	75,392
Total area under irrigation (hectares)	15,127
Major rabi crop(s)	Wheat, fodder crops
Major kharif crop(s)	Rice, maize
Total livestock population	Data not available

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

PANJGUR

Panjgur in the west of Balochistan was declared district in 1977. The climate is that of a desert with hot summer and mild winter. Major crops include wheat, maize, cotton, barley, pulses, vegetable, fodder and fruit crops. The land is famous for dates. There are three tehsils in the district and the district headquarter is located at Panjgur.

SOIL ATTRIBUTES

Soil type/parent material	Nearly level to sloppy, moderately deep, strongly calcareous, medium textured soils overlying gravels followed by mostly barren rocks with rocks with shallow unstable soils material.
Dominant soil series	Wam, Shahrig, Khumak
*pH	Data not available
*Electrical conductivity (dS m⁻¹)	Data not available
Organic matter (%)	Data not available
Available phosphorus (ppm)	Data not available
Extractable potassium (ppm)	Data not available
Farmers availing soil testing facility (%)	0 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	0 (Based on crop production zone wise data)

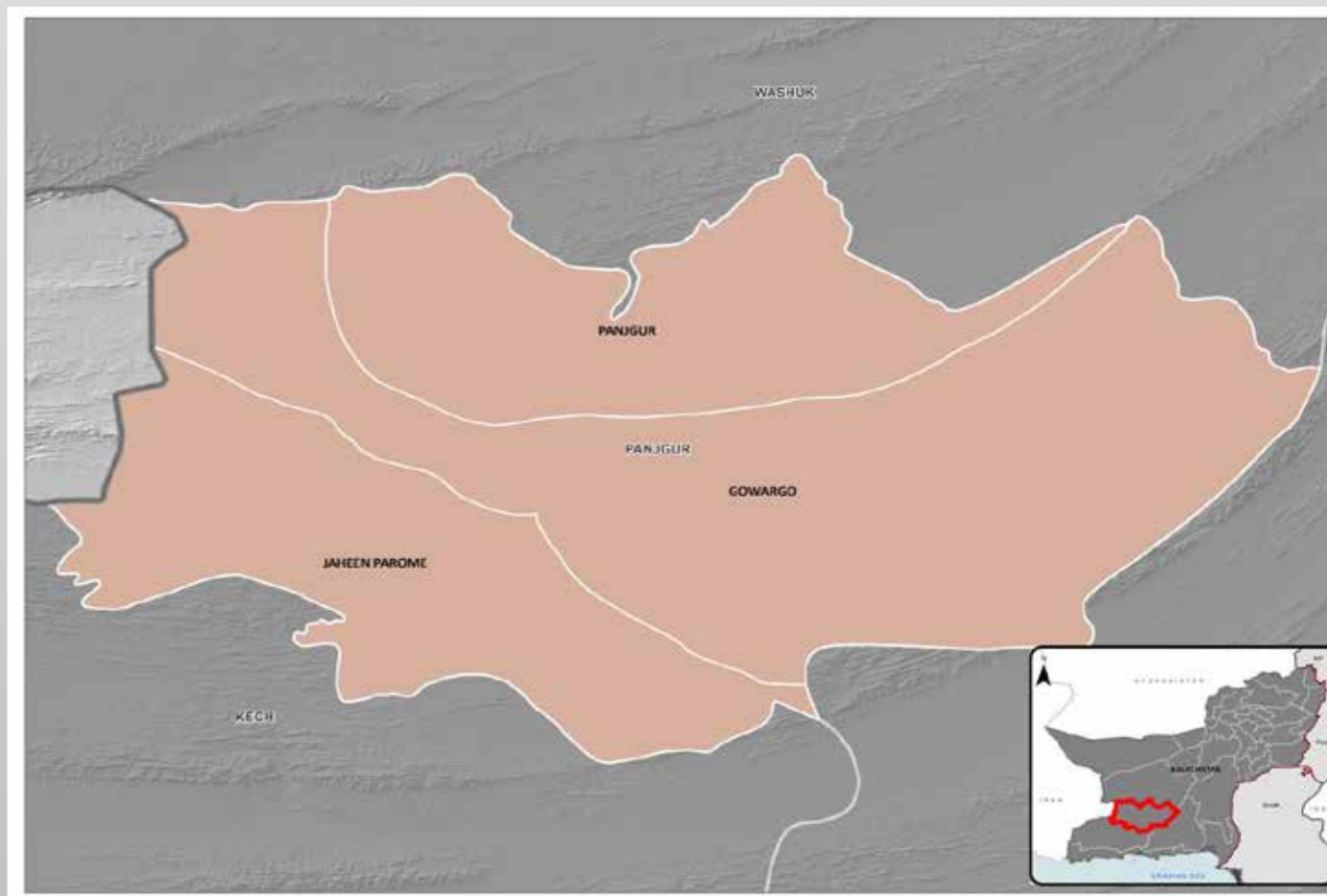
Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

* Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	35,870
Total non-cultivated area (hectares)	637,358
Total area under irrigation (hectares)	26,312
Major rabi crop(s)	Wheat, barley, vegetable crops
Major kharif crop(s)	Maize, cotton, fodder crops
Total livestock population	333,567

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

Pishin lies in the north of Quetta, east of Killa Abdullah and west of Killa Saifullah districts of Balochistan province. The climate is moderately hot in summer and extreme cold in winter. Major crops include wheat, barley, maize, potatoes and fruit crops like apple, apricot, peach and grapes. There are four tehsils in the district: Pishin, Barshore, Karezat and Huramazai. The district headquarter is at Pishin.

SOIL ATTRIBUTES

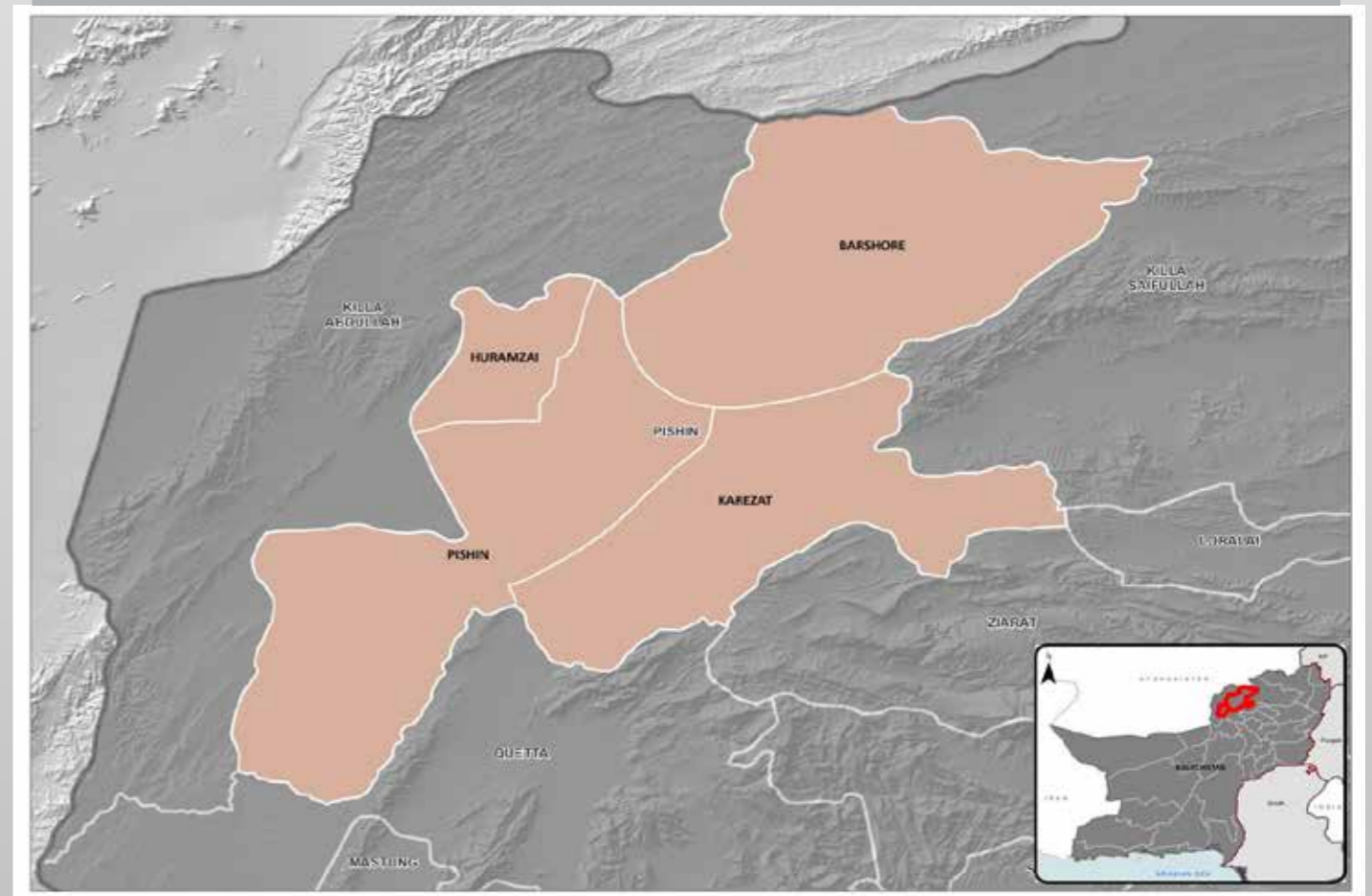
Soil type/parent material	Mostly bare rocks, valleys are moderately deep calcareous medium textured soil followed by nearly level, deep calcareous, alkaline, fine textured soils and few gently sloping, moderately deep, gravelly, coarse textured soils over gravel.
Dominant soil series	Pinkai, Maslakh, Shabaq
pH	7.4 – 9.9 (Alkaline)*
Electrical conductivity (dS m⁻¹)	0 – 60 (Saline)*
Organic matter (%)	0.15 – 2.0 (Low)*
Available phosphorus (ppm)	1.0 – 25.0 (Low)*
Extractable potassium (ppm)	38 – 744 (Medium)*
Farmers availing soil testing facility (%)	24 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	19 (Based on crop production zone wise data)

Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*The fertility class was assessed based on results of the soil samples (≥70%) analyzed

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	155,189
Total non-cultivated area (hectares)	138,679
Total area under irrigation (hectares)	24,485
Major rabi crop(s)	Wheat, barley
Major kharif crop(s)	Maize, vegetable and fruit crops
Total livestock population	1,991,696



Source: Information Management Unit, FAO Pakistan

QUETTA

Quetta in the northwest of Balochistan is the provincial capital. The climate in the district is moderately hot in summer and severe cold in winter. The district is famous for fruit orchards of apple, almond and grape. There are three tehsils in the district: Quetta, Zarghoon and Chiltan. The district headquarter is at Quetta.

SOIL ATTRIBUTES

Soil type/parent material	Pleistocene (Sub recent, middle, late) mountainous outwash deposits
Dominant soil series	Pinkai, Maslakh, Shabaq
pH	7.3 – 9.0 (Alkaline)*
Electrical conductivity (dS m⁻¹)	0.1 – 22.0 Normal)*
Organic matter (%)	0.1 – 2.1 (Medium)*
Available phosphorus (ppm)	1.0 – 4.0 (Low)*
Extractable potassium (ppm)	44 – 494 (Medium)*
Farmers availing soil testing facility (%)	24 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	19 (Based on crop production zone wise data)

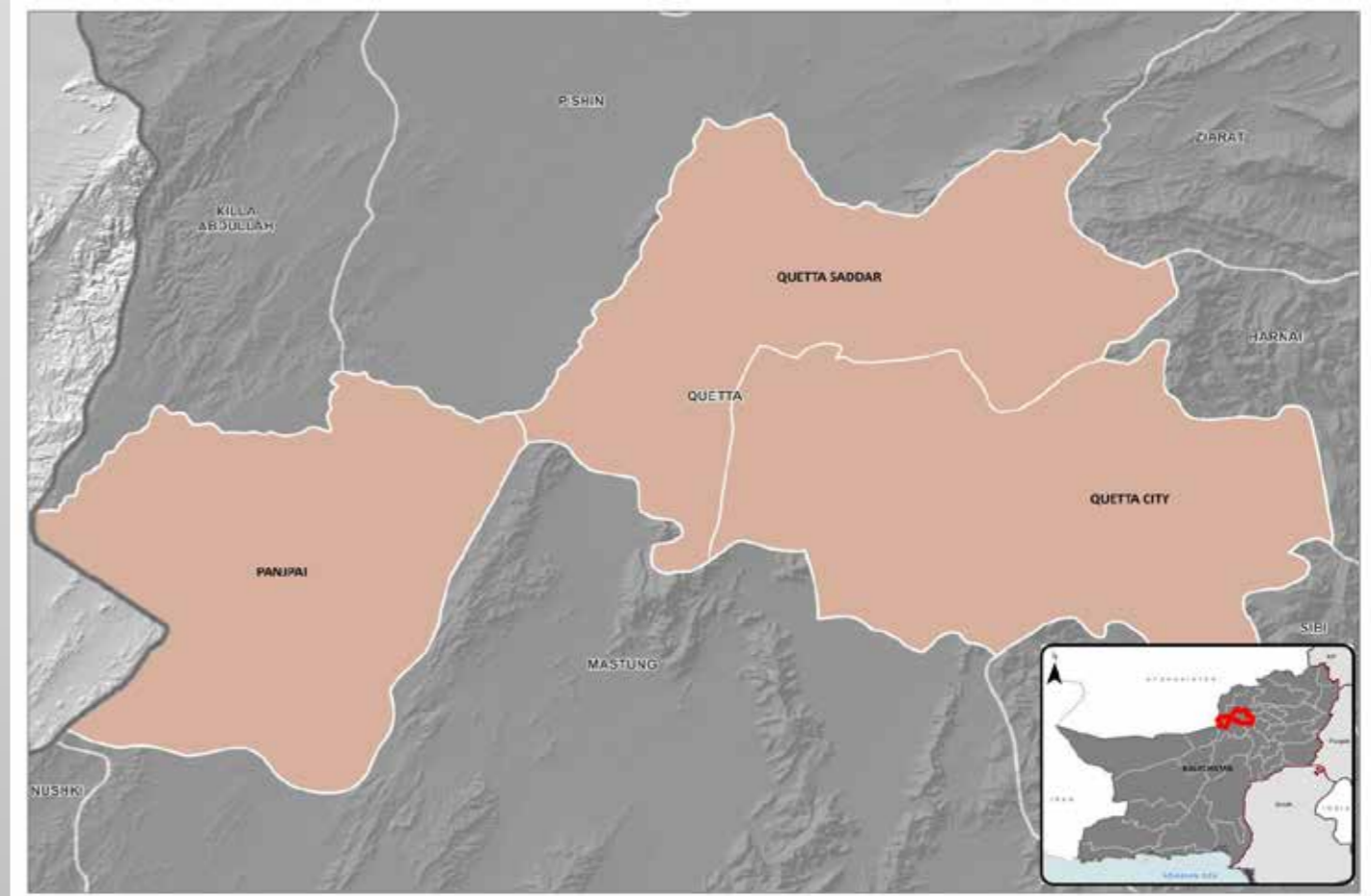
Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	11,486
Total non-cultivated area (hectares)	150,168
Total area under irrigation (hectares)	11,390
Major rabi crop(s)	Wheat
Major kharif crop(s)	Fruit crops
Total livestock population	454,553

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

Sherani district in the northeast of Balochistan was separated from Zhob district in 2006. The climate is moderately hot in summer and extreme cold in winter. The average annual rainfall exceeds 320 mm. Snowfall occurs occasionally during winter on high altitude. Major crops include wheat, maize, vegetable, fodder and fruit crops including almond, melon, apricot, and grapes. There is only one tehsil in the district: Sherani, which is also the district headquarter.

SOIL ATTRIBUTES

Soil type/parent material	Mainly bare rocks in mountains followed by moderately deep, calcareous, gravelly, medium textured soils in valley
Dominant soil series	Murgha, Maslakh, Patki
pH	Data not available
Electrical conductivity (dS m⁻¹)	Data not available
Organic matter (%)	Data not available
Available phosphorus (ppm)	Data not available
Extractable potassium (ppm)	Data not available
Farmers availing soil testing facility (%)	0 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	0 (Based on crop production zone wise data)

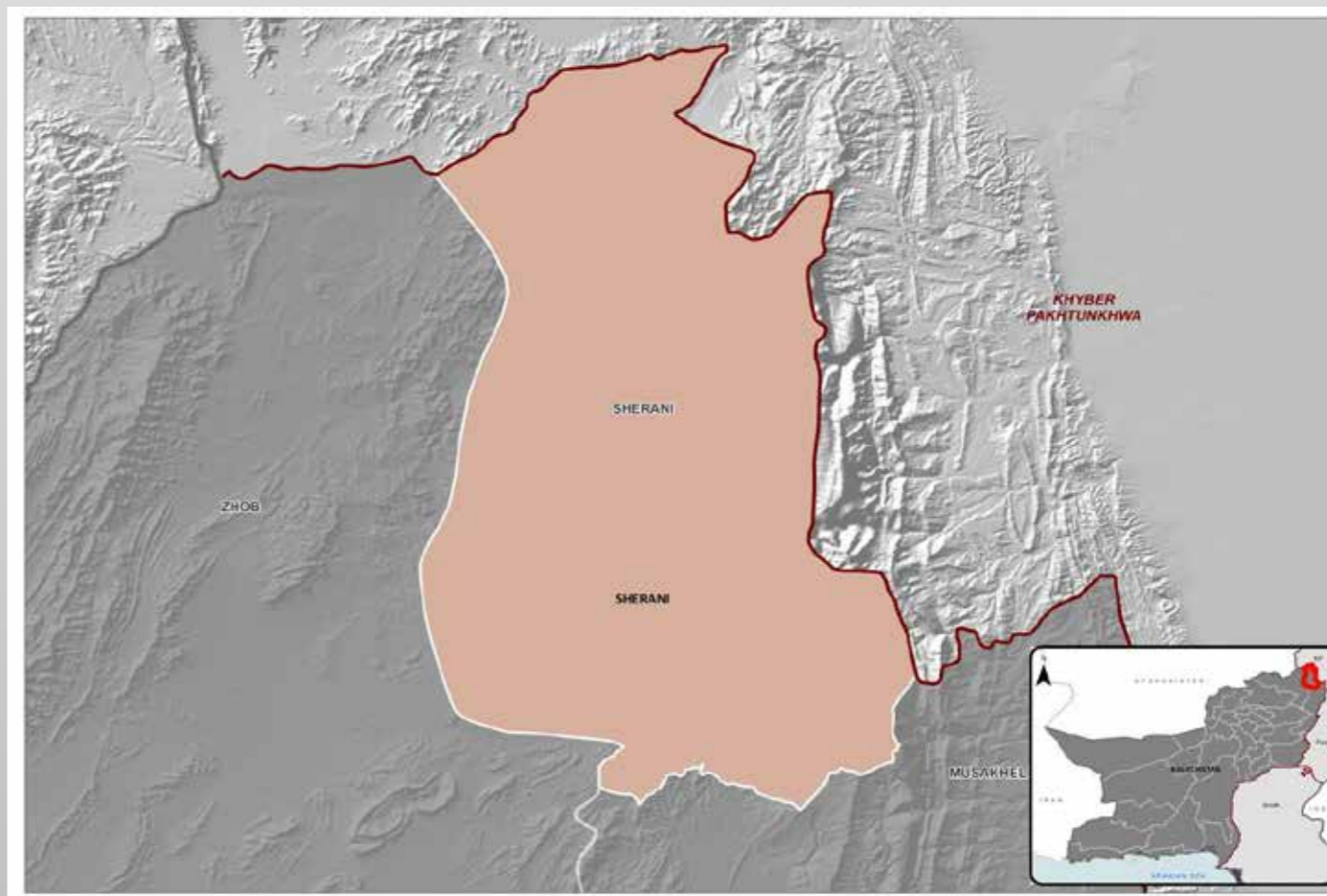
Source:
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 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

* Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	6,795
Total non-cultivated area (hectares)	5,525
Total area under irrigation (hectares)	2,583
Major rabi crop(s)	Wheat, vegetable and fodder crops
Major kharif crop(s)	Maize, sorghum, fruit crops
Total livestock population	Data not available

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

SIBI

Sibi lies in east of Quetta district in the Balochistan. The climate is extreme hot and dry in summer and moderately cold in winter. It is known as the "Hot spot" of Pakistan where the temperature in the summer exceed 52°C. Major crops include wheat, rice, cotton, sugarcane, rapeseed, barley, sorghum and vegetable crops. There are three tehsils in the district and the district headquarter is at Sibi.

SOIL ATTRIBUTES

Soil type/parent material	alkaline, fine textured, well drained soils/ Recent loess redeposits
Dominant soil series	Wam, Shahrig, Khumak
pH	7.7 – 8.8 (Alkaline)*
Electrical conductivity (dS m⁻¹)	0.11 – 31.8 (Saline)*
Organic matter (%)	0.2 – 2.0 (Low)*
Available phosphorus (ppm)	1.0 – 15.0 (Low)*
Extractable potassium (ppm)	72 – 560 (Medium)*
Farmers availing soil testing facility (%)	63 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	72 (Based on crop production zone wise data)

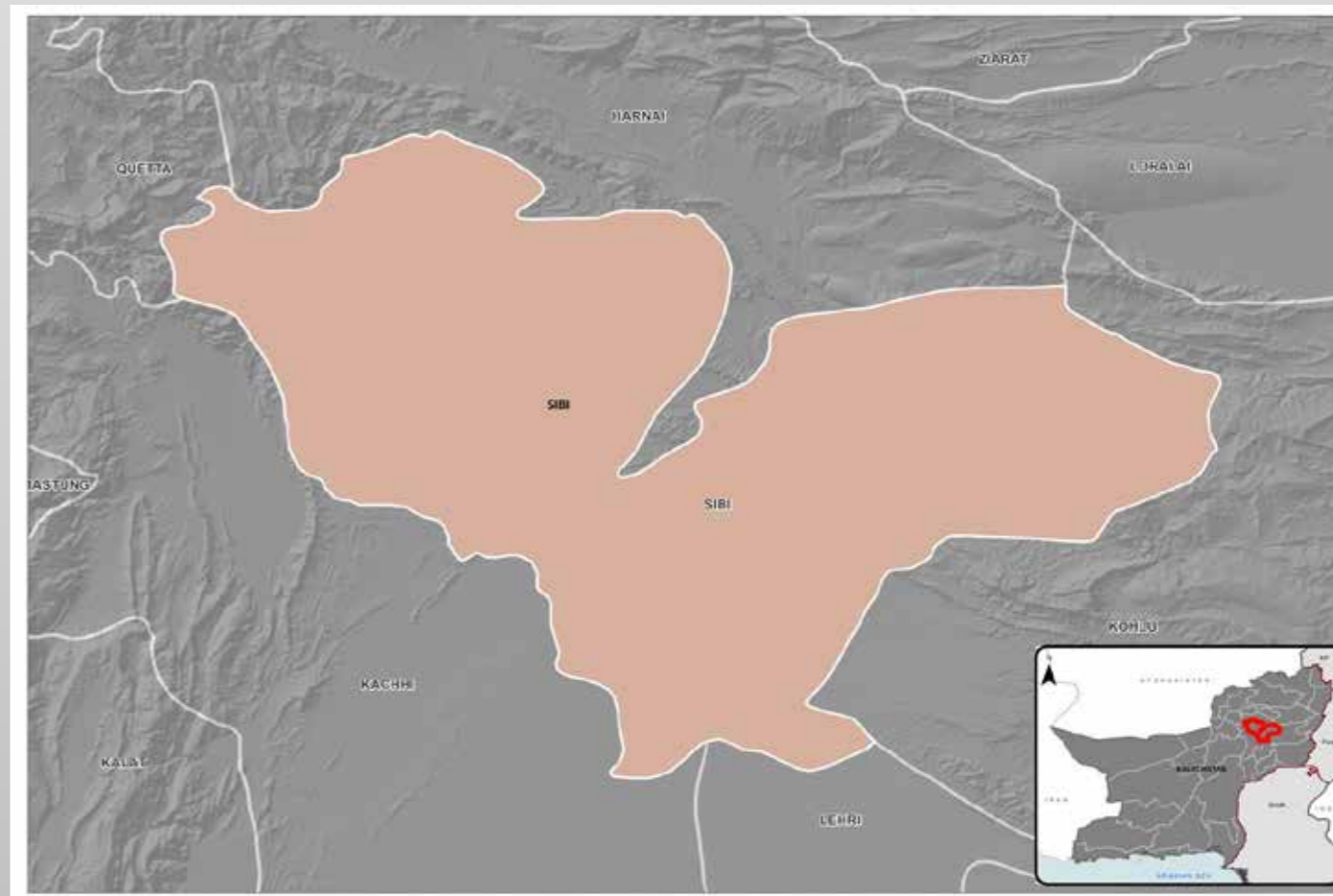
Source:
District Soil Survey Reports, Soil Survey of Pakistan
Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
Inputs Use Assessment, FAO (2018)
Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	302,602
Total non-cultivated area (hectares)	91,245
Total area under irrigation (hectares)	23,730
Major rabi crop(s)	Wheat, rapeseed, vegetable crops
Major kharif crop(s)	Cotton, sugarcane, sorghum
Total livestock population	739,692

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

Sohbatpur in the east of Balochistan was previously a part of Jafferabad district and was declared a district in 2013. The climate is hot and dry in summer and moderately cold in winter. Major crops include wheat, chickpea, rice, fodder crops and fruit crops including guava and citrus. There are four tehsils in the district and the district headquarter is at Sohbatpur.

SOIL ATTRIBUTES

Soil Type/Parent Material	Deep, strongly calcareous, alkaline, fine textured
Dominant Soil Series	Jhatpat, Kundi, Jacobabad
pH (1:2.5 H₂O)	7.5 – 8.6 (Alkaline)*
Electrical conductivity (1:2.5 H₂O) (dS m⁻¹)	0.2 – 12.58 (Saline)*
Organic matter (%)	0.31 – 1.4 (Medium)*
Available phosphorus (ppm)	1.0 – 13.0 (Low)*
Extractable potassium (ppm)	60 – 460 (Medium)*
Farmers availing soil testing facility (%)	63 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	72 (Based on crop production zone wise data)

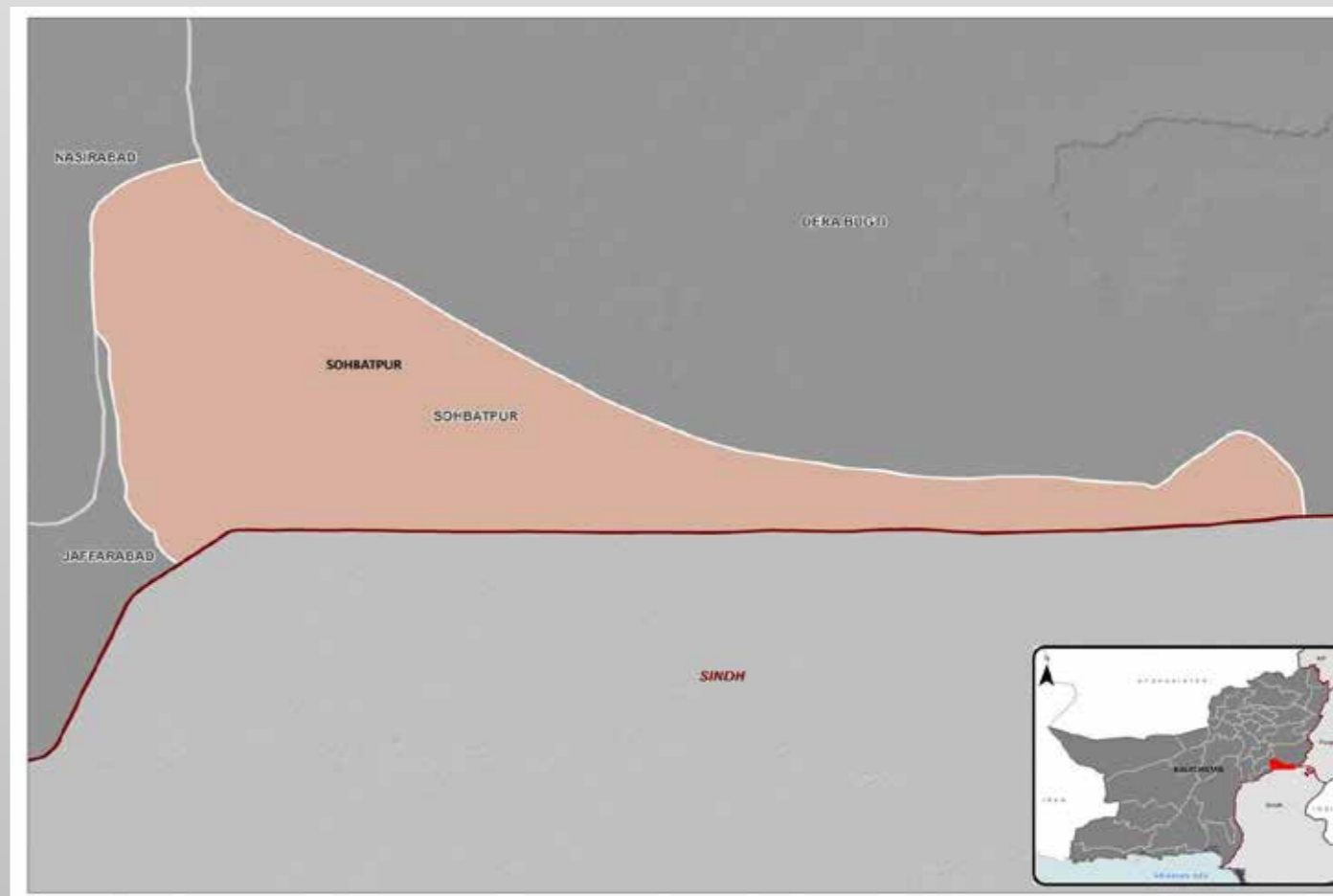
Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*The fertility class was assessed based on results of the soil samples (≥70%) analyzed

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	Data Not Available
Total non-cultivated area (hectares)	Data Not Available
Total area under irrigation (hectares)	Data Not Available
Major rabi crop(s)	Wheat, chickpea
Major kharif crop(s)	Rice, fodder crops
Total livestock population	Data not available

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

WASHUK

Washuk in the west of Balochistan province was previously a part of Kharan district and was declared a separate district in 2007. The climate is dry and hot in summer and mild in winter. Major crops include wheat, rapeseed, barley, cumin, maize, cotton, melon and dates. There are three tehsils in the district and the district headquarter is at Washuk.

SOIL ATTRIBUTES

Soil type/parent material	Dune land, barren followed by nearly level to sloppy, moderately deep, strongly calcareous, medium textured soils overlying gravels
Dominant soil series	Nok Kundi, Dalbindin, Chagai
pH	Data not available
Electrical conductivity (dS m⁻¹)	Data not available
Organic matter (%)	Data not available
Available phosphorus (ppm)	Data not available
Extractable potassium (ppm)	Data not available
Farmers availing soil testing facility (%)	2 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	0 (Based on crop production zone wise data)

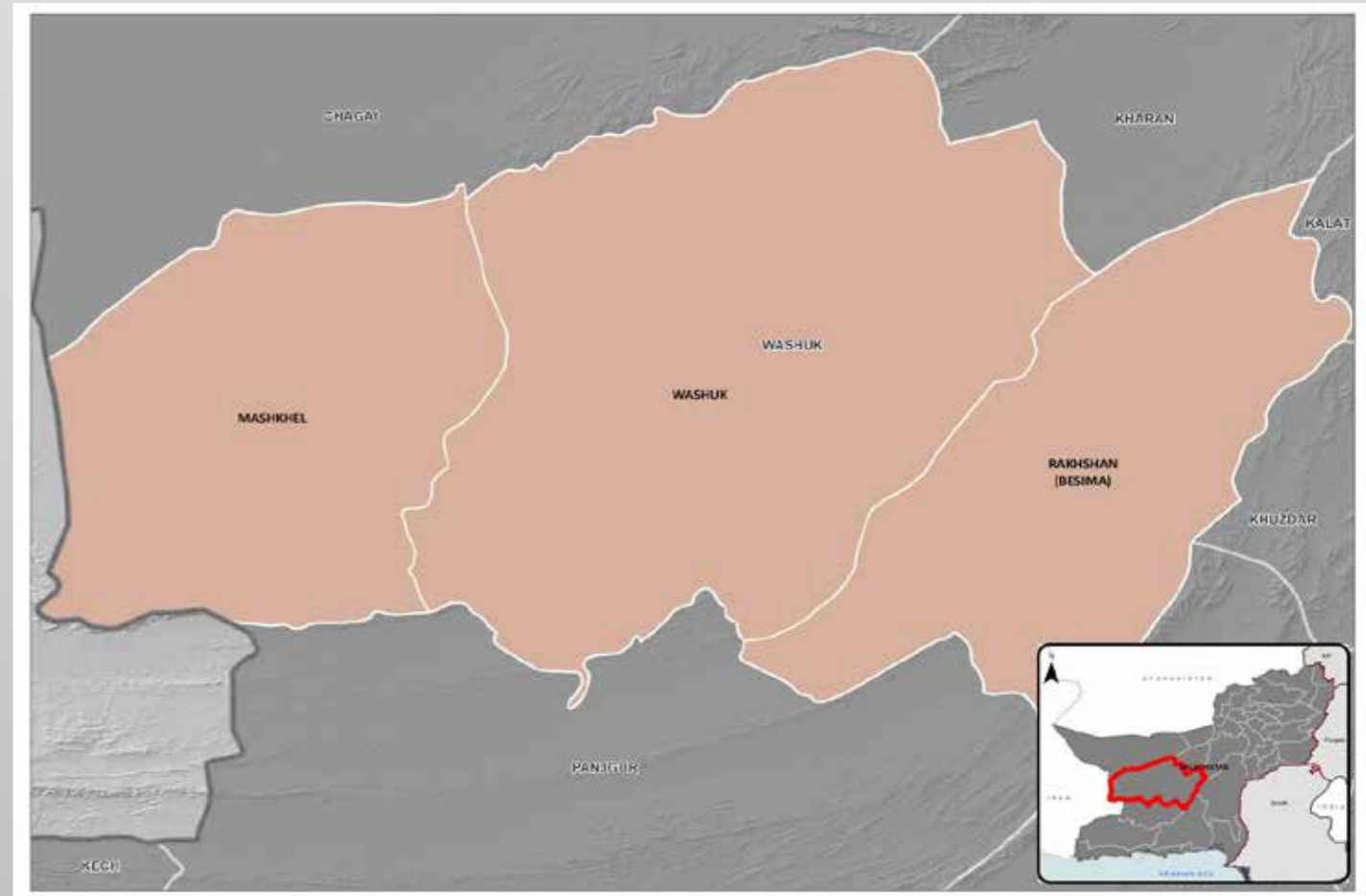
Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

* Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	9,285
Total non-cultivated area (hectares)	Data Not Available
Total area under irrigation (hectares)	8,422
Major rabi crop(s)	Wheat, rapeseed
Major kharif crop(s)	Maize, cotton, fodder crops
Total livestock population	Data not available

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

Zhob in the north of Balochistan is a Provincially Administered Tribal Area. The climate is moderately hot in summer and extreme cold in winter. Major crops include wheat, rapeseed, barley, maize, vegetable, fodder and fruit crops including almond, melon, apricot, and grape. There are two tehsils in the district and the district headquarter is at Zhob.

SOIL ATTRIBUTES

Soil type/parent material	Piedmont alluvial deposits derived from sand, shale and limestone
Dominant soil series	Murgha, Maslakh, Patki
pH	8.1 – 8.4 (Alkaline)*
Electrical conductivity (dS m⁻¹)	0.12 – 0.35 (Slightly saline)*
Organic matter (%)	0.15 – 1.21 (Medium)*
Available phosphorus (ppm)	2.0 – 10.14 (Low)*
Extractable potassium (ppm)	68 – 250 (Medium)*
Farmers availing soil testing facility (%)	0 (Based on crop production zone wise data)
Farmers availing water testing facility (%)	0 (Based on crop production zone wise data)

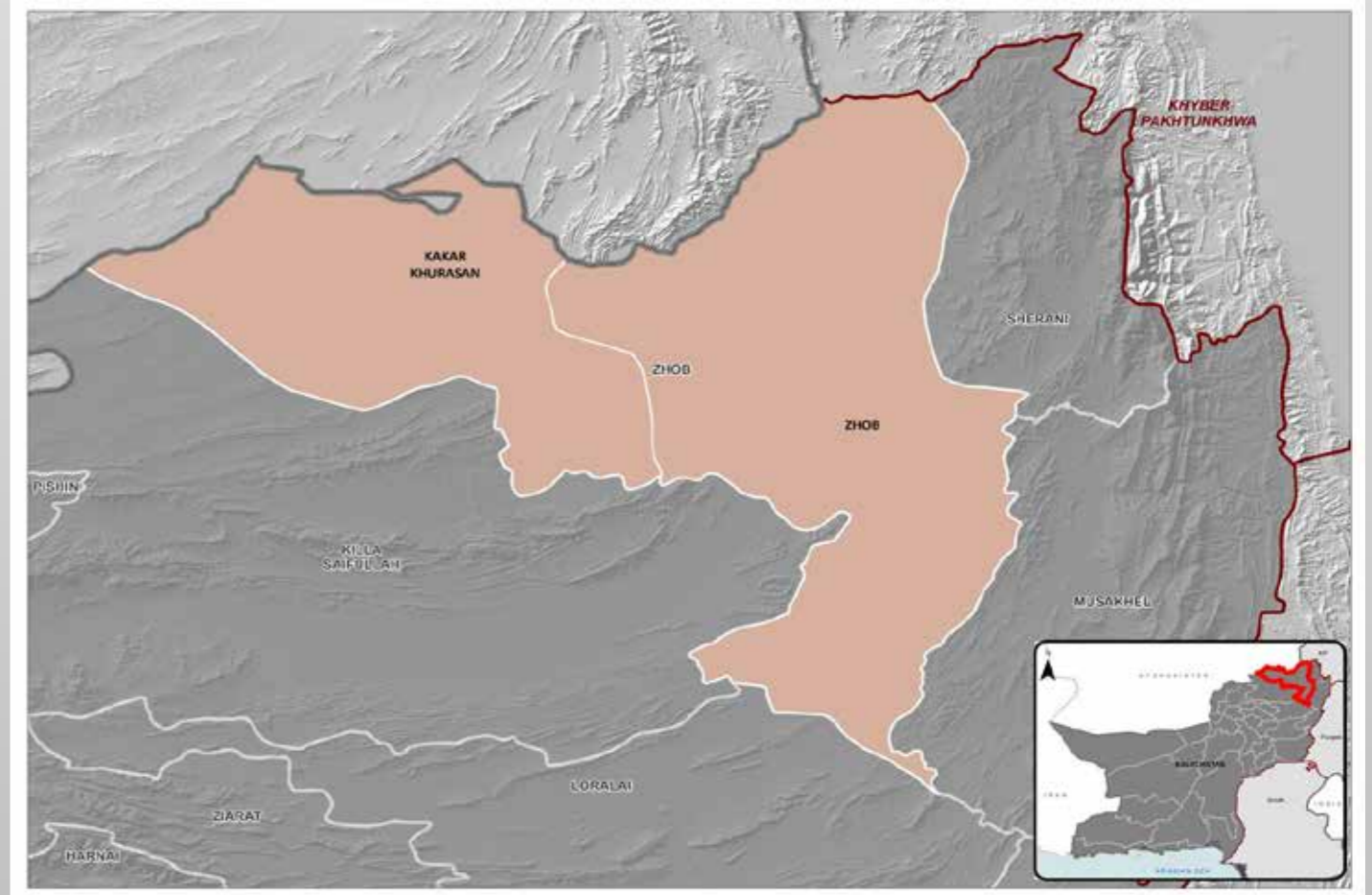
Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*The fertility class was assessed based on results of the soil samples (≥70%) analyzed. Soil pH and electrical conductivity were measured in 1:2.5, soil:water extract.

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	58,355
Total non-cultivated area (hectares)	168,986
Total area under irrigation (hectares)	18,164
Major rabi crop(s)	Wheat, vegetable and fodder crops
Major kharif crop(s)	Maize, fruit crops
Total livestock population	2,484,520

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

ZIARAT

Ziarat is a district in the north east part of Balochistan province. Ziarat has some of the oldest Juniper forests in the world. The climate is pleasant in summer and very cold in winter. The Founder of Pakistan, Muhammad Ali Jinnah spent last days of his life in Ziarat Residency. There are two tehsils in the district: Ziarat and Sinjavi. The district headquarter is at Ziarat.

SOIL ATTRIBUTES

Soil Type/Parent Material	Bare rock with few shallow unstable soil materials on mountains followed by deep/calcareous, alkaline fine textured and well drained soils.	
Dominant Soil Series	Pinkai, Maslakh, Shabaq	
pH (1 : 2.5 H₂O)	8.0 – 8.3	(Alkaline)*
Electrical conductivity (1 : 2.5 H₂O) (dS m⁻¹)	0.19 – 0.7	(Normal)*
Organic matter (%)	0.17 – 1.28	(Medium)*
Available phosphorus (ppm)	2.0 – 13	(Low)*
Extractable potassium (ppm)	58 – 468	(Medium)*
Farmers availing soil testing facility (%)	24 (Based on crop production zone wise data)	
Farmers availing water testing facility (%)	19 (Based on crop production zone wise data)	

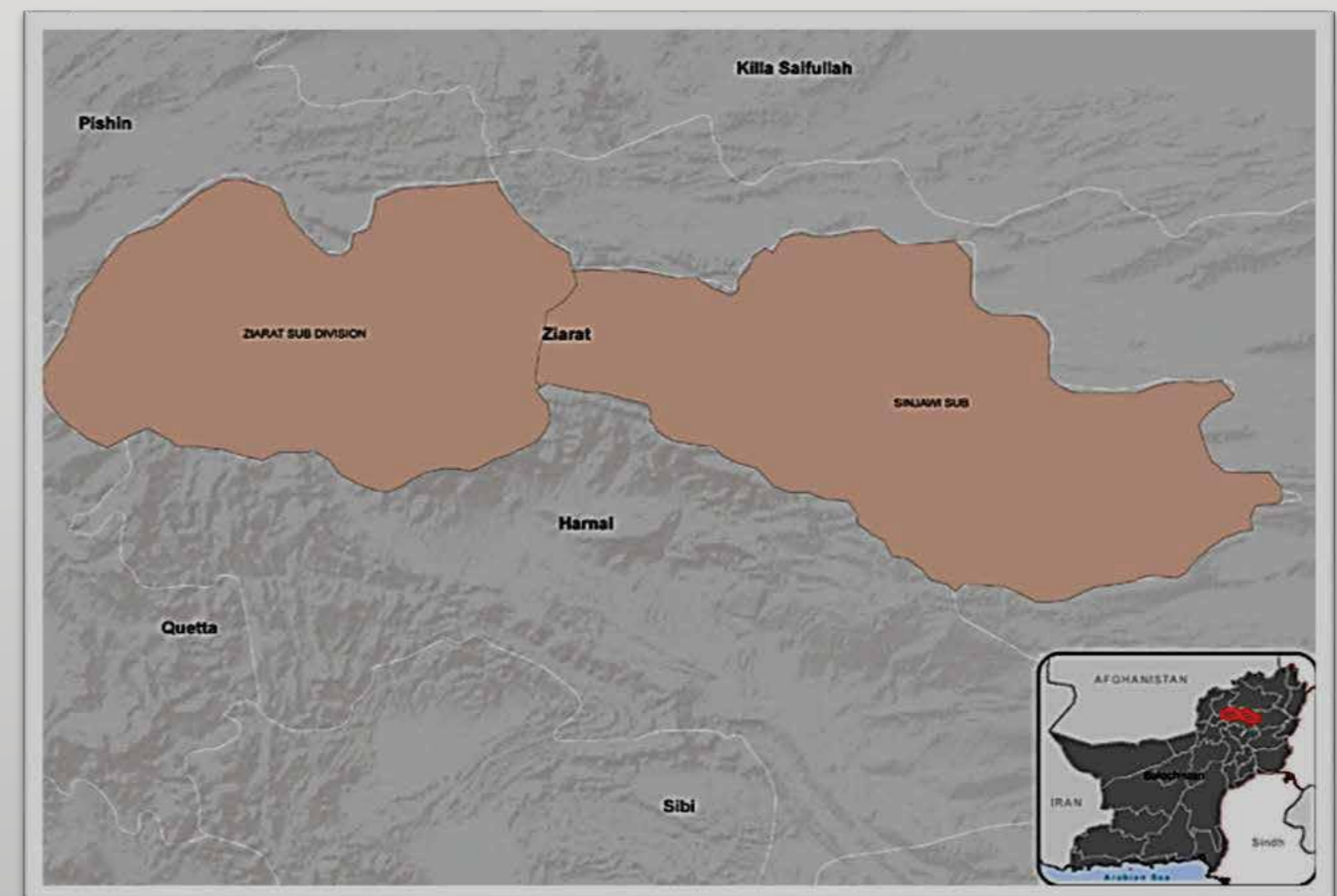
Source:
 District Soil Survey Reports, Soil Survey of Pakistan
 Farm Advisory Centers, Fauji Fertilizer Company Limited (FFC)
 Inputs Use Assessment, FAO (2018)
 Land Cover Atlas of Balochistan (FAO, SUPARCO and Government of Balochistan)

*The fertility class was assessed based on results of the soil samples (≥70%) analyzed

AGRICULTURAL INFORMATION

Total cultivated area (hectares)	6,978
Total non-cultivated area (hectares)	80,990
Total area under irrigation (hectares)	6,648
Major rabi crop(s)	Wheat
Major kharif crop(s)	Vegetable and fruit crops
Total livestock population	311,915

Source: Crop Reporting Services, Balochistan; Agriculture Census 2010; Livestock Census 2006



Source: Information Management Unit, FAO Pakistan

KEY MESSAGES

SOIL HEALTH MANAGEMENT AND CROP PRODUCTIVITY

01

As a result of intensive cropping over the years, most of the agricultural soils in Balochistan have become deficient in various macro- and micro-nutrient. The nutrients are removed at an accelerated rate and not replenished at the same rate. Consequently, the adoption of Fertilizer Best Management Practices (FBMPs) according to specific farming system(s) is essential for sustainable crop production and maintenance of soil health. The following recommendations are, therefore, formulated for the benefit of farming communities.

02

As the Management Practices differ according to different cropping systems, the fertilizers (plant nutrients) should be applied following the guiding principles of **4R Nutrient Stewardship**, as described below:

- Right source (Suitable source of fertilizer and nutrients)
- Right rate (Optimum fertilizer dose according to crop requirement and soil test)
- Right time (Fertilizer applied at the time when crop can best utilize it)
- Right placement (Suitable method of application)

03

Always Use Good Quality Fertilizers: Quality of fertilizer (without adulteration) products is a serious issue in Balochistan and can lead to reduced crop productivity. Unless fertilizers are of good quality, the money and effort to correct nutrient deficiencies in soil-plant system(s) cannot be remunerative. Farmers are, therefore, advised to buy quality fertilizers from trusted/authorized dealers and reputed companies providing/assuring quality control. Presumably, when fertilizer bag is getting out of the factory, the quality is no issue. It is mainly adulteration issue mostly at later stage especially at dealer levels in case of phosphatic fertilizer, mixing of Nitrophos in Diammonium phosphate (DAP) or gypsum is colored like DAP fertilizer. To avoid adulteration, fertilizer act needs to be in place in its true spirit in the province.

04

Soil and Water Testing Facilities: These facilities should be made available to the farmers free of cost or with nominal charges at the district level by the Directorates of Agriculture Research and Extension in Balochistan. National fertilizer companies, e.g., Fauji Fertilizer Company Limited, Engro Fertilizers Limited and Fatima Fertilizers Company/Pak Arab Fertilizers have placed their representatives/agriculture development officers in the province. Farmers can contact officers of the respective companies and should get soil and water samples analyzed. Soil and water sample before planting their crops. The use of optimum and balanced fertilizer inputs based on soil testing results for achieving maximum profitability is recommended. In case, there is any response issue, farmers may feel free to contact at the company's helpline and/or FAO Pakistan.

KEY MESSAGES

SOIL HEALTH MANAGEMENT AND CROP PRODUCTIVITY

05

Integrated Use of Nutrients: Balanced and integrated nutrient management is the key to soil health, high productivity, profitability and environmental protection. Organic sources of nutrients (organic fertilizers: green manure, farm yard manure, compost, poultry waste, sewage sludge, etc.) including bio-fertilizers should be integrated with inorganic fertilizers for enhancing nutrient use efficiency and improving soil health.

06

Use of Poultry Waste: The use of poultry waste is a common practice, particularly in vegetable crops in the districts of Pishin, Killa Saifullah and Loralai of Balochistan, but unfortunately without any research based finding. A scientific evaluation of the nutrient status of poultry waste(s) and its use as an alternate source of plant nutrients, especially phosphorus, is deemed essential. Accordingly, specific recommendations regarding use of poultry waste as supplement of inorganic sources of P may be devised.

07

Crop Residue Management: Crop residues are a source of nutrients as well as soil conditioner that may supplement other nutrient inputs and improve soil physical conditions. The burning of crop residues can lead to an array of different environmental and soil health problems. Therefore, the farm residues should be directly incorporated into the soil or be first charred/pyrolyzed using proper facilities before applying to the soil to enhance soil organic matter content- a key factor in managing soil fertility and health management.

08

Proper Timing of Fertilizer Application: Soil moisture is important for nutrients uptake and plant growth processes. Therefore, i) apply fertilizer when the soil is at field moisture capacity at sowing time, ii) immediately irrigate the field after fertilizer in case the fertilizer is applied/broadcasted in standing crop, iii) apply fertilizer before expected rainfall in rainfed areas, and iv) use half of the N, P and K fertilizers at the time of sowing in rainfed areas. The remaining half of the N may be applied if soil moisture is available at critical stages of crop growth.

KEY MESSAGES

SOIL HEALTH MANAGEMENT AND CROP PRODUCTIVITY

09

Urea Losses: In sandy soils, apply urea in two or more splits, but do not use more than the recommended dose. Excessive use of urea causes succulence (succulence means more tissue water content as a result of excessive N uptake along with excessive water uptake) at vegetative stage. It may damage the crop through insect/pest attack, crop lodging and depress fruiting due to excessive vegetative growth. Apply urea in the late afternoon when temperature is low to avoid volatilization losses. Apply urea in the late afternoon when temperature is low to avoid volatilization losses.

10

Band Placement and Fertigation: Band placement of urea and phosphatic fertilizers 2–3 cm below the soil surface may help reduce N losses and improve fertilizer use efficiency. Split application of N fertilizer may also result in lower N losses. Fertigation saves mobile nutrients (e.g., nitrate) by lowering their losses and enhancing fertilizer use efficiency. Normally, phosphatic fertilizers are band placed so that fertilizer remains close to plant roots for its efficient uptake.

11

Improving Produce Quality: Potassium is a quality nutrient element. Use of K-based fertilizers where soils are K deficient enhances crop productivity and quality, especially for high value crops (apple, tomatoes, potatoes and vegetables).

12

In Salt-affected Areas: The dose of NPK fertilizers in salt affected lands is 25% greater than the regular/ standard recommendations, which leads to good results since nutrient uptake is lower due to the presence of salts at the soil solution-root interface. Bed-and-furrow sowing and more split applications of fertilizers will further enhance nutrient use efficiency of salt tolerant crops.

KEY MESSAGES

SOIL HEALTH MANAGEMENT AND CROP PRODUCTIVITY

13

Brackish Water Management: Management of brackish water is a very important factor for optimal crop production, particularly under salinity stress conditions. Brackish water includes high soluble salts containing water and high residual sodium carbonate (RSC) containing water. Saline water may be used in a cyclic manner, i.e., one or two irrigations using brackish water followed by using canal water or blending of canal water (if available) with brackish water. High RSC water could be used after mixing with canal water to lower down RSC. Brackish water may be used to irrigate salt tolerant crops. If brackish water is the only available source, then high leaching fraction should be maintained to avoid salt build up.

14

Appropriate Amendments/Manures should be applied to maintain soil health under irrigation with poor quality water. When water is sodic, gypsum at the required rate (according to gypsum requirement) should be applied before growing crop. Farmyard manure/green manure may be included/added to enhance soil infiltration, gypsum solubility and soil health in case there is sodicity problem or water of sodium hazard is applied.

15

- **Use of Agricultural Helplines:** Advisory services are available to help the farmers and resolve their problems on priority basis. The farmers are welcome and encouraged to benefit from the toll-free Helplines listed below for farm advisory services and agriculture associated issues:

Fauji Fertilizer Company Limited:	Toll- free Helpline	0800-00332
Fatima Fertilizers Company Limited/Pak Arab Fertilizers:	Toll- free Helpline	0800-91919
Engro Fertilizers Limited:	Toll- free Helpline	0800-00110

KEY MESSAGES

SOIL HEALTH MANAGEMENT AND CROP PRODUCTIVITY

16

- **Use of Micronutrients:** The deficiencies of micronutrients like of zinc (Zn) and iron (Fe) are most common in alkaline calcareous soils. In Pakistan, micronutrients deficiencies especially Zn deficiency is common in rice, boron (B) deficiency in cotton, and iron (Fe) deficiency in the form of chlorosis in deciduous fruits and citrus. Deficiency of micronutrients may be corrected through soil nutrient application or the use of a foliar spray. Wheat grains in Pakistan contain around 25 mg Zn kg⁻¹, as compared to 40–60 mg Zn kg⁻¹ required for good human health. The Zn concentration in wheat grains can be increased effectively through a soil application of zinc sulphate or two foliar sprays of Zn – the first, one week prior to heading and the second, one week after heading or Zn fortification through Zn priming.

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Boron deficiency in cotton crop increases premature flower abortion and in rice crop results in empty panicles on lower end of the ears. Application of B fertilizer in cotton may stop the dropping of bolls/flowers and reduce sterility in rice. The condition when spikelet remains unfilled, it is believed that B is an enzyme carrier to the spikelet. When the enzyme does not get there due to B deficiency, the spikelet remains unfilled. **Soil-applied Micronutrient Fertilizers:** These have beneficial residual effects on soil that can be taken up by the succeeding crops. Therefore, it is not necessary to apply micronutrient fertilizer for each crop. However, periodic soil testing is recommended to ascertain the need for micronutrient application to subsequent crops in the same field.

Micronutrient deficiencies in orchards: Most fruit orchards (apple, peach, plum, citrus, grape) suffer from Zn and Fe deficiencies, which may be corrected by applying 2 to 3 foliar sprays of Zn and Fe source as well as by soil application of micronutrient fertilizers. Further, application of macro- and micro-nutrients in orchards is necessary for quality and optimum yield

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Micronutrient Fertilizers Mixed with Foliar Solutions of Pesticides : Such sprays are equally effective in correcting micronutrient deficiencies. For example, zinc sulfate mixed with Confidor insecticide is effective in ameliorating deficiency of Zn in fruit and vegetable crops. Boron fertilizer can be mixed safely with foliar sprays of pesticides.

KEY MESSAGES

SOIL HEALTH MANAGEMENT AND CROP PRODUCTIVITY

17

Horticultural Crops (fruits and vegetables): These crops have great potential with regard to the export processing zones planned in China-Pakistan Economic Corridor (CPEC). Special focus is required on the production of quality fruits and vegetables for direct export and/or value added products visualizing the future opportunities. Tunnel, as well as greenhouse farming, may be promoted for off-season vegetables to ensure uninterrupted supply to the consumers/markets.

18

Organic Farming: Organic farming is an upcoming but hardly adopted option for production of high value products both for local and overseas markets. Balochistan has vast areas of arable lands not cultivated previously; thus, the immense potential and opportunities for organic farming should be exploited.

19

Rangelands and Livestock Production: Both areas are underutilized vis-a-vis there is great potential in this sector, especially in Balochistan to be exploited. A concerted program may be launched, and the farmers be given incentives to integrate livestock in the existing production systems as well as to develop livestock farms, aiming at the production of dairy products and use for by-products to improve nutrient use and soil health - Integrated Soil Fertility Management (ISFM).