**Rajasthan**

Rajasthan comprises of three Agro Ecological Regions (AER) 2, 4 & 5.

**Agro-Eco Region 2:** AER 2 in Rajasthan comprises of Barmer, Bikaner, Ganganagar, Hanumangarh, Jaiselmer, Churu, Jalor, Jhunjhunun, Nagaur, Pali, Sikar, Sirohi and Jodhpur districts of Western Plain under Agro Ecological Sub Regions (AESR) 2.1 & 2.3.

**Agro-Eco Region 4:** AER 4 in Rajasthan comprises of Alwar, Bharatpur, Dholpur, Jaipur, Ajmer, Bhilwara, Bundi, Dausa, Dungarpur, Karauli, Rajsmand, Swaimadhopur, Tonk, Udaipur and Chittaurgarh districts of Northern Plain and Central Highlands including Aravallis under Agro Ecological Sub Regions (AESR) 4.1 & 4.2.

**Agro-Eco Region 5:** AER 5 in Rajasthan comprises of Bundi, Banswara, Baran, Chittaurgarh, Jhalawar, Kota and Pratapgarh districts of Central (Malwa) Highlands under Agro Ecological Sub Region (AESR) 5.2.

**Major NRM issues :**

**AESR 2.1:** The region is hyper arid ESR with shallow and deep sandy desert soils very low AWC and LGP < 60 days in a year.

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| **Districts** | ***Land degradation*** | ***Soil health & fertility*** | ***Water related constraints*** | ***Environmental constraints*** |
| Barmer | Exclusively wind erosion | Low in OC, Soil deficient in N, P, Zn & Fe | Saline, GW Contaminated with F, NO3 & Fe | Extreme Drought |
| Bikaner | Exclusively wind erosion | Low in OC, Soil deficient in Zn, Fe, Mn & S | Saline, GW Contaminated with F, NO3 & Fe | Extreme Drought |
| Ganganagar | **-** | Low in OC & Soil deficient in Zn | Saline, GW Contaminated with F, NO3, As& Fe | Moderate Drought |
| Hanumangarh | **-** | Low in OC, Soil deficient in N & P | Saline, GW Contaminated with F, NO3 & Fe | Severe Drought |
| Jaiselmer | Exclusively wind erosion | Low in OC, Soil deficient in N, P, Zn, Fe & S | Saline, GW Contaminated with F, NO3 & Fe | Extreme Drought |
| Jodhpur | Exclusively wind erosion | Low in OC, Soil deficient in N, Zn & Fe | Saline, GW Contaminated with F, NO3 & Fe | Extreme Drought |

**AESR 2.3:** The region is hot typic- arid ESR with deep, loamy desert soils (inclusion of saline phase), low AWC and LGP 60-90 days in a year.

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| **Districts** | ***Land degradation*** | ***Soil health & fertility*** | ***Water related constraints*** | ***Environmental constraints*** |
| Churu | Exclusively wind erosion | Low in OC, Soil deficient in N, P, Zn, Fe & S | Saline, GW Contaminated with F, NO3 & Fe | Extreme Drought |
| Jalor | **-** | Low in OC, Soil deficient in N, P & Fe | Saline, GW Contaminated with F & NO3 | Severe Drought |
| Hanumangarh | **-** | Low in OC, Soil deficient in N & P | Saline, GW Contaminated with F, NO3 & Fe | Severe Drought |
| Jhunjhunun | **-** | Low in OC, Soil deficient in N, Zn & Fe | Saline, GW Contaminated with F, NO3 & Fe | Severe Drought |
| Jodhpur | Exclusively wind erosion | Low in OC, Soil deficient in N, Zn & Fe | Saline, GW Contaminated with F, NO3 & Fe | Extreme Drought |
| Pali | **-** | Low in OC & Soil deficient in N, Zn, Fe, B & S | Saline, GW Contaminated with F, NO3 & Fe | Extreme Drought |
| Sikar | Exclusively wind erosion | Low in OC, Soil deficient in N, P & Fe | Saline, GW Contaminated with F, NO3 & Fe | Severe Drought |
| Sirohi | Exclusively wind erosion | Low in OC, Soil deficient in N, P, Zn, Fe & B | Saline, GW Contaminated with F, NO3 & Fe | **-** |
| Nagaur | Exclusively wind erosion | Low in OC, Soil deficient in N, Fe & B | Saline, GW Contaminated with F, NO3 & Fe | Extreme Drought |

**AESR 4.1:** The region is hyper arid ESR with shallow and deep sandy desert soils very low AWC and LGP < 60 days in a year.

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| **Districts** | ***Land degradation*** | ***Soil health & fertility*** | ***Water related constraints*** | ***Environmental constraints*** |
| Alwar | Exclusively water erosion & Ravine | Low in OC, Soil deficient in N & B | Saline, GW Contaminated with F, NO3 & Fe | **-** |
| Bharatpur | Exclusively water erosion & Ravine | Low in OC, Soil deficient in N, P, Zn & B | Saline, GW Contaminated with F, NO3 & Fe | **-** |
| Dholpur | Exclusively water erosion & Ravine | Low in OC, Soil deficient in N & P | Saline, GW Contaminated with F, NO3 & Fe | **-** |
| Jaipur | Ravine | Low in OC, Soil deficient in N, Fe & B | Saline, GW Contaminated with F, NO3 & Fe | Severe Drought |

**AESR 4.2:** The region is hyper hot dry semiarid ESR with deep loamy Gray Brown and alluvium-derived soils, medium AWC and LGP 90-120 days in a year.

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| **Districts** | ***Land degradation*** | ***Soil health & fertility*** | ***Water related constraints*** | ***Environmental constraints*** |
| Ajmer | Ravine | Low in OC, Soil deficient in N, B & S | Saline, GW Contaminated with F, NO3 & Fe | Extreme Drought |
| Bhilwara | Exclusively water erosion & Ravine | Low in OC, Soil deficient in Zn & Fe | Saline, GW Contaminated with F, NO3 & Fe | Severe Drought |
| Bundi | Exclusively water erosion & Ravine | Low in OC & Soil deficient in N | Saline, GW Contaminated with F, NO3 & Fe | **-** |
| Dausa | **-** | Low in OC, Soil deficient in N, P, Zn & Fe | Saline, GW Contaminated with F, NO3 & Fe | **-** |
| Dungarpur | Exclusively water erosion & Ravine | Low in OC, Soil deficient in N, P, B & S | GW Contaminated with F, NO3 & Fe | Extreme Drought |
| Jaipur | Ravine | Low in OC, Soil deficient in N, Fe & B | GW Contaminated with F, NO3 & Fe | Severe Drought |
| Karauli | Exclusively water erosion & Ravine | Low in OC & Soil deficient in N | Saline, GW Contaminated with F, NO3 & Fe | **-** |
| Rajsmand | Exclusively wind erosion | Low in OC, Soil deficient in N & Fe | Saline, GW Contaminated with F, NO3 & Fe | **-** |
| Swaimadhopur | Exclusively water erosion & Ravine | Low in OC, Soil deficient in N, P & Zn | GW Contaminated with F, NO3 & Fe | **-** |
| Tonk | Exclusively water erosion & Ravine | Low in OC, Soil deficient in N, Zn, Fe, B & S | Saline, GW Contaminated with F, NO3 & Fe | Moderate Drought |
| Udaipur | Exclusively wind erosion | Soil deficient in N & B | Saline, GW Contaminated with F, NO3 & Fe | Severe Drought |
| Chittaurgarh | Exclusively wind erosion | Low in OC | Saline, GW Contaminated with F, NO3 & Fe | **-** |

**AESR 5.2:** The region is hot moist semi-arid ESR with medium and deep, clayey Black soils (shallow black soils as inclusions), medium to high AWC and LGP 120-150 days in a year.

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| **Districts** | ***Land degradation*** | ***Soil health & fertility*** | ***Water related constraints*** | ***Environmental constraints*** |
| Bundi | Exclusively water erosion & Ravine | Low in OC & Soil deficient in N | Saline, GW Contaminated with F, NO3 & Fe | **-** |
| Banswara | Exclusively water erosion & Ravine | Low in OC, Soil deficient in N, Zn & Fe | Contaminated with F, NO3 & Fe | Severe Drought |
| Baran | Exclusively water erosion & Ravine | Soil deficient in N & S | Saline, GW Contaminated with F, NO3 & Fe | **-** |
| Chittaurgarh | Exclusively wind erosion | Low in OC | Saline, GW Contaminated with F, NO3 & Fe | **-** |
| Jhalawar | Exclusively wind erosion | Low in OC | Saline, GW Contaminated with F, NO3 & Fe | **-** |
| Kota | Exclusively water erosion & Ravine | Soil deficient in N | Saline, GW Contaminated with F, NO3 & Fe | **-** |
| Pratapgarh | Exclusively wind erosion | Low in OC, Soil deficient in Fe & B | Contaminated with F, NO3 & Fe | **-** |

**Major technological Interventions:**

* *Managing Wind Erosion :* [*http://www.cazri.res.in/publications/Wind-Erosion.pdf*](http://www.cazri.res.in/publications/Wind-Erosion.pdf)
* *Rainwater harvesting in Arid zone:* [*http://www.cazri.res.in/publications/KrishiKosh/114- (RAINWATER%20HARVESTING%20THROUGHT).pdf*](http://www.cazri.res.in/publications/KrishiKosh/114-(RAINWATER%20HARVESTING%20THROUGHT).pdf)
* *Water management for arid agriculture:* [*http://www.cazri.res.in/publications/AnuragSaxena.pdf*](http://www.cazri.res.in/publications/AnuragSaxena.pdf)
* *Solar farming:* [*https://icar.org.in/sites/default/files/Agri-voltaic%20System.pdf*](https://icar.org.in/sites/default/files/Agri-voltaic%20System.pdf)
* *Sustainable agricultural production in arid zone:*
* *http://www.cazri.res.in/publications/AKSharma1.pdf*
* http://www.cazri.res.in/publications/KrishiKosh/109-(DROUGHT.pdf

**Relevant Developmental Schemes:**

National Mission for Sustainable Agriculture (NMSA): [*https://nmsa.dac.gov.in/pdfdoc/NMSA\_Guidelines\_English.pdf*](https://nmsa.dac.gov.in/pdfdoc/NMSA_Guidelines_English.pdf)

*PMKSY operational Guidelines:* [*http://jalshakti-dowr.gov.in/sites/default/files/PMKSY-Guidelines\_0.pdf*](http://jalshakti-dowr.gov.in/sites/default/files/PMKSY-Guidelines_0.pdf)

*Rashtriya Krishi Vikas Yojana* (RKVY) : <http://rkvy.nic.in/static/download/pdf/RKVY_14th_Fin._Comm.pdf>

National Food Security Mission (NFSM): <https://www.nfsm.gov.in/Guidelines/Guideline_nfsmandoilseed201819to201920.pdf>

National Mission on Soil Health Card: <https://soilhealth.dac.gov.in/>

Parampragat Krishi Vikas Yojana (PKVY) : <https://agricoop.nic.in/sites/default/files/Final%20PKVY%20revised%20guideline.%20.pdf>

Organic farming in NEH region: <https://agricoop.nic.in/sites/default/files/movcdner_revised.pdf>

*District Irrigation plan (template):*

[**https://pmksy.gov.in/pdfLinks/DIPTemplate.pdf**](https://pmksy.gov.in/pdfLinks/DIPTemplate.pdf)

**Organization and Establishments for Technology Backstopping**

***ICAR Research Institutes:***

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| Central Arid Zone Research Institute, Jodhpur with Regional Stations at Bikaner, Jaisalmer and Pali | http://www.cazri.res.in/index.php |
| Regional Station of Indian Institute of Soil & Water Conservation, Kota | http://www.cswcrtiweb.org/index1.html?Kota/Kota\_back.html |
| Regional Station of National Bureau of Soil Survey & Land Use Planning, Udaipur | https://nbsslup.icar.gov.in/udaipur |

***SAUs/CAUs:***

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| Maharana Pratap University of Agriculture & Technology, Udaipur | https://www.mpuat.ac.in/ |
| Swami Keshwanand Rajasthan Agricultural University, Bikaner | http://raubikaner.org/ |
| Rajasthan University of Veterinary & Animal Sciences, Bikaner | http://rajuvas.org/ |
| SKN Agriculture University, Jobner | http://sknau.ac.in/ |
| Agriculture University, Kota | http://aukota.org/ |
| Agriculture University, Jodhpur | http://aujodhpur.ac.in/ |

***List of KVKs:*** https://icar.org.in/content/rajasthan

***List of Soil testing Laboratories****:* https://farmer.gov.in/STLDetails.aspx?State=8

**Data Source Links:**

*Soil fertility status:* <https://soilhealth.dac.gov.in/NewHomePage/NutriReport>

*District Contingency Plan:* https://agricoop.nic.in/en/agriculturecontingency/rajasthan

*District ground water status: http://cgwb.gov.in/WQ/Districts%20contamination.pdf*

*District Vulnerability status:*

[*http://www.nicra-icar.in/nicrarevised/images/publications/Vulerability\_Atlas\_web.pdf*](http://www.nicra-icar.in/nicrarevised/images/publications/Vulerability_Atlas_web.pdf)