

Summary of the United States dossier

Irrigation water, climate, fertilisers and crops. The essentials of the 52-page dossier and its ten regional studies.

Key figures

Figure	What it means
80.9 M af	Irrigation water applied on farms in 2023 (99.8 bn m³), on 53.1 million acres (USDA).
54%	Share of this water pumped from wells. Several major aquifers are falling, the High Plains (Ogallala) aquifer first.
10.7 M af	Water saved per year in the central scenario (13.2 bn m³), 13% of irrigation water. Range from 5.3 to 21.3 million acre-feet per year.
13.1 Mt	Extra production per year in the central scenario (corn, potatoes, vegetables, soybeans, small grains).
$7.8 bn	Annual value in the central scenario: $1.0 billion for the water at $94 per acre-foot and $6.8 billion for the yield gain.
$172 bn	Agricultural exports in 2024, for $212 billion of imports (FAOSTAT).
$14.3 bn	Indicative spending on mineral fertilisers in 2024, lower bound, for 11.4 million tonnes of nitrogen (FAOSTAT, World Bank).

M = million · bn = billion · af = acre-feet (1 acre-foot = 1,233 m³; 1 acre = 0.405 ha) · Mt = million tonnes.

Our products

Green Solutions develops products for water, fertilisation and crop protection. Four families concern this dossier.

Product	Claimed use	Published evidence (level)
EVERGREEN® (water retainer)	Holds rain or irrigation water as a gel, close to the roots.	Trials on maize, potato, watermelon, date palm and soybean. Level B to C.
ECOSORB® (water retainer based on maize starch)	Same use; effect lasts 2 to 3 years according to the website.	Soybean trial (China); laboratory acrylamide analysis. Level B to C.
ECOFERT® (fertiliser)	Fertiliser certified by SOHISCERT and EU Organic.	Published certificate; potato trial combined with EVERGREEN®. Level A (certificate), C (results).
Paulownia ALTIFOLIA®	Fast-growing tree for agroforestry.	Website figures; no trial in the United States. Level C.
Water Vital®, NAPEMA®	Outside the scope of this dossier.	No independent source in the documents consulted.

Key points

- **Irrigation feeds a large share of American farming.** 53.1 million acres were irrigated in 2023 on 212,714 farms. Four western regions (Pacific, Mountain, Northern and Southern Plains) apply 82% of the water.
- **Groundwater is the first source, and it is being drawn down.** Wells supply 54% of the water applied. The High Plains aquifer has lost about 286 million acre-feet since 1950, about 10% of its recoverable water (US Geological Survey).
- **A dry, hot West.** From June to August, the atmosphere demands 680 mm more water than the rain brings at Phoenix, and 663 mm at Fresno. In the East, rainfall covers most of the summer demand.

- **The climate is warming and water is being rationed.** The contiguous United States has warmed by 2.5 °F (1.4 °C) since 1970. Arizona has been under a declared Colorado River shortage since 2022, with a cut of 512,000 acre-feet a year.
- **Interrupted irrigation costs yield.** In 2023, 2,022,246 irrigated acres had lower yields because irrigation was interrupted, 850,172 of them by a shortage of surface water.
- **Corn and three regions carry the result.** Corn for grain gives 21% of the central saving. The Pacific, Mountain and Northern Plains regions give 76%.

How to read the figures

Every figure refers to a source with a confidence level. A: Official statistics or international database (USDA, US Geological Survey, Bureau of Reclamation, FAO, World Bank). B: Research institute, university, public body outside statistics, or recognised climate model. C: Manufacturer statement, non-independent demonstration, press or estimate. The sources are listed in Annex A of the dossier.

Water saved by crop (central scenario)

Six crops give 7.5 million acre-feet per year, 70% of the central saving.

Crop	Irrigated acres	Water (thousand af)	Saved (thousand af/yr)
Corn for grain	11,641,724	11,642	2,270
Vegetables and melons (excluding potatoes)	2,065,378	4,407	1,333
Alfalfa	5,408,531	12,440	1,244
Orchards, vineyards and nut trees	5,105,937	12,254	1,225
Corn for silage	1,909,521	4,201	819
Soybeans	8,190,426	5,733	573

By farm production region

The Pacific, Mountain and Northern Plains regions give 76% of the central saving. The summer deficit is the average of the two farm stations of each region.

Region	Irrigated (M acres)	Water (M af)	From wells	Summer deficit (mm)	Saved (M af/yr)
Pacific	10.91	28.77	37%	593	3.83
Mountain	11.51	22.46	32%	634	2.74
Northern Plains	10.26	9.81	94%	332	1.60
Delta States	7.66	8.03	89%	232	0.93
Southern Plains	4.26	5.26	84%	480	0.69
Southeast	2.36	2.74	73%	−30	0.37
Corn Belt	3.04	2.07	95%	150	0.29
Lake States	1.78	1.25	85%	120	0.22
Appalachian	0.41	0.28	57%	106	0.04
Northeast	0.15	0.26	70%	114	0.04

Acres and water: USDA Irrigation and Water Management Survey 2023, states with published acres only. Climate: ERA5-Land, 1991–2020. Details in sections 6 and 11 of the dossier.

External trade

- **Imports now exceed exports.** In 2024, the United States exported $172.4 billion of agricultural products and imported $212.4 billion (FAOSTAT).
- **Irrigated crops among the exports.** Almonds, pistachios, rice, cotton and the corn of the Plains are both irrigated crops and export products: Every acre-foot saved protects export earnings in the dry years.

Full dossier: 52 pages, with a study of each of the ten farm production regions, the sources (Annex A) and the calculation method (Annex B).
Green Solutions · contact@green-solutions-group.com · green-solutions-group.com