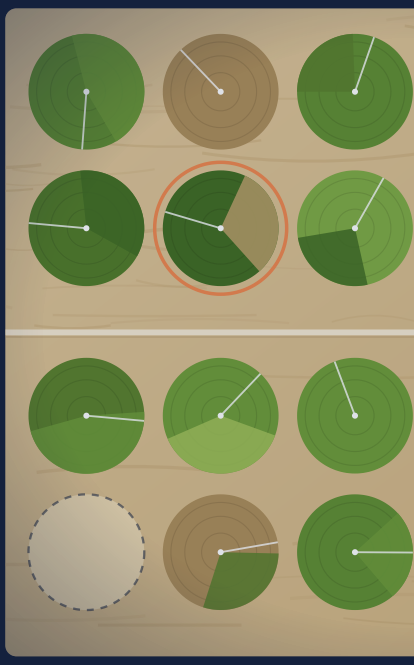
AGRIVENTURE
ADVISORY

PRE-ACQUISITION TECHNICAL REVIEW

Irrigated row-crop farm, 2,400 ha (5,930 acres)

Water, irrigation, soils, yields, infrastructure and the value at risk — prepared for an investment committee.



SAMPLE REPORT · Illustrative only

The farm, location, figures and findings in this sample are fictional. It shows the structure and depth of an AgriVenture Advisory review; it is not advice on any real asset.

Southern Plains, USA (illustrative) · Review period: 3 weeks · Site visit: 2 days

1. Summary

Verdict: proceed only with a price adjustment of US$3.5–5.0m, or conditions on water and capex. The farm is well located with good soils, but the well field cannot supply the irrigated area at peak demand, the vendor's maize yields are about 16% above what the record and satellite history support, and seven pivots need refurbishment or replacement within three years.

US$28.0m	−19%	11.2 t/ha	US$4.6m
Asking price	Well capacity vs peak demand	Supported maize yield (vendor: 13.0)	Value at risk (PV, 10 yrs, 8%)

Finding	Risk	Effect on the investment case
Well field supplies 4,600 m³/h; peak gross demand for 1,250 ha of maize is 5,680 m³/h	High	About 240 ha cannot carry full-season maize; lost margin ~US$0.31m/yr unless cropping changes
Vendor maize yield 13.0 t/ha; records and 2019–2026 satellite history support 11.2 t/ha	High	Revenue ~US$0.38m/yr below the vendor case
5 pivots need major refurbishment, 2 need replacement	Medium	Capex catch-up of ~US$0.46m in years 1–3
Water rights for 3 of 18 wells still under adjudication	Medium	Legal confirmation required before close
Soils: deep loams, low salinity, good drainage	Low	Supports the long-term productive case

Recommended conditions

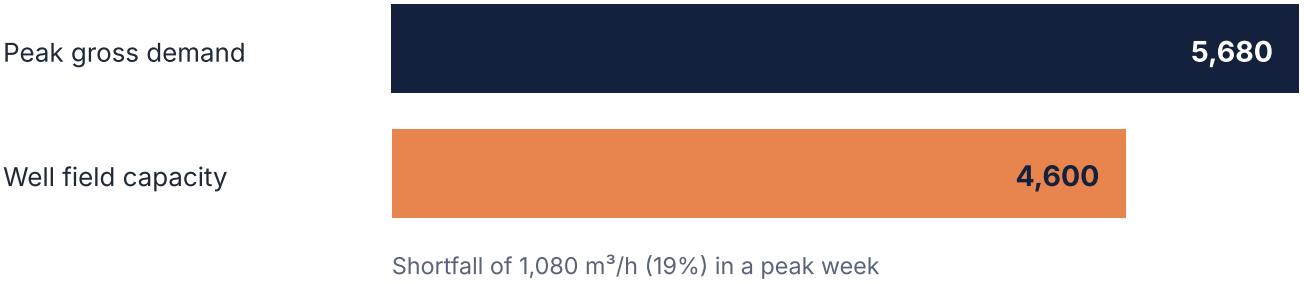
1. Adjust the price by US$3.5–5.0m, or hold back an equivalent amount against water and capex.
2. Obtain pump tests on all 18 wells within 30 days of signing, at the vendor's cost.
3. Confirm the three water rights under adjudication before completion.
4. Re-base the business plan on 11.2 t/ha maize and a 1,010 ha full-irrigation area.

2. Water and irrigation capacity

Peak crop water demand was calculated with the FAO-56 Penman-Monteith method from 20 years of local weather data. Maize at peak uses 8.5 mm a day; at 85% application efficiency the gross requirement is 10.0 mm a day, or **1.26 L/s per ha (8.1 gpm per acre)** over a 22-hour pumping day.

Item	Value	Note
Irrigated area (24 pivots)	1,250 ha	Average 52 ha per pivot
Peak gross demand	5,680 m³/h	1.26 L/s/ha × 1,250 ha
Well field capacity (latest tests)	4,600 m³/h	18 wells; 6 tests older than 5 years
Capacity actually available	1.02 L/s/ha	19% below peak demand
Area supportable at full maize demand	~1,010 ha	Shortfall ~240 ha

Peak demand vs well capacity (m³/h)



Shortfall of 1,080 m³/h (19%) in a peak week

Options. Grow wheat or sorghum (peak 6–7 mm/day) on ~240 ha; drill two replacement wells (~US$0.35m, subject to aquifer data); or accept managed deficit irrigation on the outer spans. Each option is costed in the accompanying model.

Pivot condition

Condition	Pivots	Cost each	Total
Good — routine maintenance	17	–	–
Major refurbishment (gearboxes, sprinkler packages, tyres)	5	US$38,000	US$190,000
Replace (structural corrosion, obsolete controls)	2	US$135,000	US$270,000
Capex catch-up, years 1–3	**7**		**US$460,000**

3. Yields and soils

The vendor's business plan assumes 13.0 t/ha irrigated maize. Elevator receipts for 2021–2025 average 11.4 t/ha, and Sentinel-2 vegetation index history (2019–2026) shows the outer spans of nine pivots consistently below the farm average — consistent with the water shortfall above.

We use **11.2 t/ha** as the supportable base case, rising to 12.0 t/ha if the water options in section 2 are implemented.

Source	Maize t/ha
Vendor business plan	13.0
Elevator receipts, 5-year average	11.4
Satellite-adjusted estimate	11.1
Supported base case	**11.2**

Soils

Deep, well-drained loams over most of the farm; electrical conductivity below 1.0 dS/m in all 36 samples; pH 6.4–7.6. Soil tests on the dryland area are more than five years old and should be repeated before any conversion to irrigation.

4. Value at risk

Item	Annual effect	PV, 10 yrs at 8%
Water shortfall — lost margin on ~240 ha	US$0.31m	US$2.08m
Yield gap to vendor case	US$0.38m	US$2.55m
Pivot capex catch-up (years 1–3)	–	US$0.40m
Total before mitigation		**US$5.03m**
Less: value recovered by cropping change on 240 ha		(US$0.45m)
Net value at risk		**US$4.58m**

Hence the recommended adjustment range of US$3.5–5.0m, depending on how much of the mitigation the buyer is prepared to fund.

5. Data gaps and next steps

Gap	Why it matters	Action
Pump tests older than 5 years on 6 wells	Capacity may be lower than assumed	Vendor to test before close
Water-right adjudication on 3 wells	Legal security of 17% of supply	Buyer's counsel to confirm
Power bills by well	Confirms pumping cost and well use	Request 24 months of bills
Dryland soil tests	Needed for any irrigation expansion	Sample during due diligence

6. How this review was done

- **Records:** 5 years of yields, input and power costs, well logs, pivot service history and water-right files.
- **Satellite:** Sentinel-2 vegetation index and Sentinel-1 radar time series, 2019–2026, pivot by pivot.
- **Water:** FAO-56 crop water demand from 20 years of weather data; hydraulic check of all 24 pivots.
- **Site visit:** 2 days — pivots, pumps, wells, storage, soils and interviews with the farm manager.
- **Model:** an unlocked Excel model of the business plan, re-based on the supported assumptions, handed over with the report.

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