MCP SERVER | NO CODE | CLOUD HOSTED

Crop Yield Calculator MCP for AI Agents

Analyzing Harvest Data and Determining Field Productivity

The Crop Yield Calculator MCP processes raw field data—like acreage, plant density, and grain weight—to instantly determine crop productivity. It provides precise yield figures in both kilograms per hectare (kg/ha) and standardized bags per hectare (bags/ha). This tool gives farmers and consultants the immediate insights needed to compare current harvests against regional benchmarks and understand commodity standards.

A+ Quality Score 100/100

farming | yield | crops | soybean | corn | wheat

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vinkius.com/mcp/crop-yield-calculator

SCAN TO VIEW

The connectivity layer between AI and the world's software.

Vinkius sits between AI and every application. All communication passes through Vinkius Cloud via the Model Context Protocol (MCP) — with governance, observability, and security at every layer.

Your AI Connections Run Through Vinkius Cloud

The world's largest managed MCP catalog

Vinkius is the connectivity layer where AI connects to the software your business already runs. We handle the hosting, the security, the credentials, the uptime — you get agents that actually do things.

We operate the world's largest managed MCP catalog. Major SaaS platforms, CRMs, databases, and cloud providers — running, monitored, production-ready. This MCP server is hosted and maintained by the Vinkius Cloud for AI Agents.

> *The agent doesn't manage credentials, doesn't manage uptime, doesn't manage security. Vinkius does.*
>
> — Architecture principle

Four Pillars of the Vinkius Runtime

01 — Security by design

Credentials stay encrypted at rest via AES-256. The AI agent never touches raw keys — they're injected into a sandboxed V8 isolate at runtime. Actions are logged, and connections have an emergency kill switch.

02 — Built on MCP Fusion

This MCP server was built with **MCP Fusion**, the open-source framework (Apache 2.0) that powers the entire Vinkius catalog. Schema-as-firewall strips undeclared fields, compiled PII redaction runs at zero overhead, and cryptographic lockfiles produce git-diffable audit trails.

03 — Deterministic observability

Eight immutable metrics per endpoint: request volume, p95 latency, error rate, active connections, cost attribution. A live payload feed logs every tool call with mutation detection.

04 — Autonomous operations

Servers are deployed, monitored, and patched autonomously. New capabilities and security patches ship weekly. Zero-downtime deployments ensure continuous availability across all managed MCP servers.

AES-256	Ed25519	24h TTL	V8 Isolate
Encryption at rest	PKI vault signatures	Ephemeral session keys	Sandboxed execution

One Token. Instant Access.

Every MCP server on Vinkius is accessed through a **Connection Token**. Tokens are generated in the cloud dashboard and produce a unique MCP endpoint URL. Paste this URL into any MCP-compatible client — no SDK required.

A single token can serve **multiple AI clients simultaneously**, or you can issue separate tokens per client for granular access control. Each token tracks its own request count, last activity timestamp, and can be individually enabled or revoked.

MCP ENDPOINT

```
https://edge.vinkius.com/{token}/mcp
```

Claude · Cursor · VS Code · Windsurf · Grok · Gemini

Security Is the Architecture

Security in Vinkius is not a feature — it's the foundation of the runtime. The gateway enforces multiple independent protection layers between AI agents and third-party APIs.

01 — Ed25519 PKI Vault

Every workspace has an Ed25519 Master Key. Session keys are generated ephemerally (24h TTL) and signed by the Master Key. Credentials never leave the vault boundary.

02 — V8 Isolate Sandboxing

Tool code runs inside isolated-vm V8 isolates with 64 MB memory caps and per-request timeouts. No filesystem access, no network access except through the SSRF-guarded fetch bridge.

03 — SSRF Guard

All outbound HTTP requests are DNS-resolved and validated before execution. Private IP ranges (10.x, 172.16-31.x, 192.168.x, AWS metadata 169.254.x) are blocked at the network layer.

04 — DLP & PII Redaction

A ResponseGuard pipeline intercepts every tool response. Configurable redaction patterns strip sensitive fields (emails, SSNs, card numbers) before data reaches the AI agent.

05 — Cryptographic Audit Trail

Every request is signed into a SHA-256 hash chain with Ed25519 signatures. Events form a tamper-proof, SIEM-exportable forensic record.

06 — Honeytoken Trap System

Phantom credentials are injected into isolated environments. If a honeytoken is used outside Vinkius infrastructure, the server is quarantined instantly.

Emergency Kill Switch

EU AI Act Art. 14(1) Compliant

The kill switch is an **emergency halt** mechanism — not a simple toggle. When triggered, it executes three actions atomically:

01 — Server deactivated

The MCP server is immediately taken offline across the entire cluster.

02 — All tokens revoked

Every connection token is invalidated. Total lockout — reconnection blocked until new tokens are issued.

03 — WebSocket connections killed

Active connections terminated via Redis pubsub broadcast. Propagates to every runtime node in the cluster.

Full Visibility. Zero Guesswork.

The Vinkius cloud dashboard includes a full MCP Governance suite — real-time analytics and security controls for production AI operations.

Control Plane

KPI dashboard with request volume, latency, success rate, token consumption, and AI-generated operational briefings.

Agent Activity

Which AI clients are connecting, how often, and what they're doing — real-time session tracking.

FinOps

Cost tracking per tool, payload compression savings, budget optimization signals, and consumption trends.

Tool Health

Slowest and most error-prone tools, with actionable root-cause insights and performance baselines.

Firewall & DLP

PII redaction activity, sensitive data protection counters, and security event timeline.

Incident Log

Error trends, failure rates, status-code breakdowns, and forensic audit trail access.

> Get started at **cloud.vinkius.com** — connect your AI agent in under 60 seconds.

Crop Yield Calculator MCP

3 tools available
Cloud-hosted on Vinkius

Getting accurate field data is tough, but figuring out what those numbers *mean* for your bottom line is harder. The Crop Yield Calculator takes raw inputs—like how many plants you had and how heavy their grain was—and turns them into immediate, actionable yield reports. You can instantly see productivity metrics in kilograms per hectare or standard bags per hectare. It doesn't just crunch numbers; it helps you understand your harvest performance by comparing results to historical regional averages. When you connect this MCP via Vinkius, your AI client handles the whole process: inputting parameters, running multiple calculations, and giving you a clear picture of what you need to know about commodity standards like those for soybean or wheat. It bridges the gap between raw fieldwork logs and genuine agricultural strategy.

Core Capabilities

01 — Calculate full yield metrics

Inputs field data (area, density, grain weight) and returns precise crop productivity figures in kg/ha.

02 — Benchmark performance against history

Compares your calculated yield to established regional averages for the specific commodity.

03 — Determine standard bag weights

Retrieves the accepted commercial weight standards used for specific crops, ensuring accurate reporting.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/crop-yield-calculator** — connect your AI agent in three steps.

01 Your AI client gathers raw field metrics: total area, plant count per hectare, and average grain weight.

02 The MCP runs these figures through the necessary calculations to determine yield in both mass (kg/ha) and bag volume (bags/ha).

03 You receive a final report that includes performance comparisons against regional averages and the correct standard commodity weights.

The bottom line is, it takes scattered field observations and gives you one clean, comparative yield number ready for reporting or decision-making.

Built For

This MCP is essential for agricultural consultants, farm managers, and agronomists. If your job involves analyzing harvest results or planning acreage rotations, this tool saves hours of manual spreadsheet work. It provides the data needed to make informed decisions before you even step into the field.

Farm Manager

Uses this MCP to quickly assess yearly crop performance metrics and track profitability across different fields.

Agricultural Consultant

Analyzes client field data against regional benchmarks to advise on optimal planting density or fertilization strategies for next season.

Agronomist

Calculates precise yield metrics and checks commodity standards when developing comprehensive crop management plans.

What Changes When You Connect

01 Determine your crop's true value. Using `calculate_yield_metrics`, you get immediate, accurate yield figures in both kilograms per hectare and standardized bags per hectare.

02 Understand market performance instantly. The `compare_with_benchmark` tool tells you right away if your harvest is above or below the regional average for that commodity.

03 Eliminate guessing about standards. Never worry about bag weights again; `get_crop_standard_weight` pulls the exact, recognized industry weight for any crop type.

04 Speed up reporting dramatically. Instead of cross-referencing multiple spreadsheets and commodity guides, your agent delivers a complete yield analysis in minutes.

05 Focus on farming strategy. By automating complex calculations—like converting plant density to harvest mass—you keep your time focused where it matters most: improving the next season's crop plan.

Real-World Applications

Evaluating a new acreage plot

A farm manager inputs data for a newly harvested corn field. The agent runs `calculate_yield_metrics` to get kg/ha, then uses `compare_with_benchmark` to see if the yield justifies the investment compared to last year's average.

Preparing for commodity shipment

An agronomist needs to know how much soybean they produced and what weight to report. They use `get_crop_standard_weight` first, then feed the result into the calculation tools to ensure all paperwork matches industry standards.

Assessing performance across different crops

A consultant needs to compare three different fields (wheat, corn, and soybeans). They run the yield calculations for each one, instantly seeing which crop performed best relative to its regional average.

Patterns to Avoid

Manual data conversion

✗ AVOID

Copying raw field numbers into a spreadsheet and manually trying to convert plant density to kg/ha. This is slow, error-prone work that takes hours.

✓ INSTEAD

Let your agent use `calculate_yield_metrics`. Feed it the three core inputs (area, density, weight) once, and it handles all the conversion math immediately.

Ignoring market standards

✗ AVOID

Assuming that a standard bag of wheat is 50kg when, in fact, the local co-op uses a different metric. This leads to incorrect financial reporting.

✓ INSTEAD

Use `get_crop_standard_weight` first. It pulls the authoritative weight for any commodity, so your final report always matches market reality.

Comparing apples to oranges

✗ AVOID

Calculating a yield and then comparing it to an average that was set using different metrics (e.g., comparing corn data to soybean averages). The comparison is meaningless.

✓ INSTEAD

Always run `compare_with_benchmark` for the specific crop you harvested. This ensures your performance report uses accurate, commodity-specific regional averages.

The Right Fit

Use this MCP if you need to transform raw agricultural measurements into comparative yield reports. Specifically, if you have field data and need to know not just *what* the number is, but *how good* that number is relative to history or market standards. You should use it whenever calculating productivity metrics, comparing against regional norms (`compare_with_benchmark`), or confirming commodity weights (`get_crop_standard_weight`). Don't use this if you simply need a weather forecast or want to manage payroll; for

those tasks, an entirely different MCP is needed. If your goal is pure data entry without calculation, a basic database connector might be better.

Crop Yield Calculator: Solving Farm Harvest Metrics Analysis

Right now, assessing the success of a harvest means juggling spreadsheets. You collect plant density figures in one tab, average grain weight in another, and then you have to manually calculate yield—all before you even check what the current market standard for that crop is. It’s tedious data wrangling; every calculation requires cross-referencing multiple sources.

With this MCP, your agent handles the entire workflow. You provide the field parameters, and it immediately generates precise yields in both kilograms per hectare and standardized bags per hectare. The result isn't just a number; it's an actionable report you can use for immediate decision-making.

Crop Yield Calculator: Improving Commodity Grade Comparison

Manually comparing your yield to regional averages is difficult because the benchmark data might be outdated or hard to find. You waste time hunting for reliable historical performance metrics and then spending hours adjusting units to make a comparison.

This MCP eliminates that guesswork. It provides automatic benchmarking, showing you exactly how far above or below the region's average your crop performed. Your analysis moves from 'What did we get?' to 'How well did we do?' instantly.

3 Tools for Calculating Crop Productivity and Yield Metrics

Use these specialized tools to calculate precise crop yields, benchmark performance against historical averages, and confirm commodity standards automatically.

#	TOOL	DESCRIPTION
01	`calculate_yield_metrics`	Takes field parameters like area, density, and grain weight to calculate the raw productivity yield metrics for a given crop.
02	`compare_with_benchmark`	Evaluates your calculated harvest yield by comparing it directly against established regional historical averages.
03	`get_crop_standard_weight`	Pulls the recognized commodity standard weight for a crop, like confirming that soybean is sold in 60kg bags.

See It in Action

Real prompts you can use once this MCP is connected to your AI agent through Vinkius Cloud.

U Calculate the yield for 10 hectares of Corn with 50,000 plants/ha, 2 ears per plant, and 0.3g grain weight.

Crop Yield Metrics Report

- **Total Area:** 10 ha
- **Input Parameters:** 50,000 plants/ha | 2 ears/plant | 0.3g/grain

METRIC	RESULT
Yield (kg/ha)	3,000 kg/ha
Yield (bags/ha)	60 bags/ha

* **Total Production:** 30,000 kg

This yield is **12% above** the regional average for Corn in this area.

U How does my yield of 3500 kg/ha in Iowa for Soybean compare to the average?

Regional Performance Comparison: Soybean (Iowa)

Your recorded yield is **3,500 kg/ha**.
The regional benchmark average for this period is **3,093 kg/ha**.

✅ Your performance is 16.67% above the regional standard. This suggests excellent growing conditions or superior management practices compared to last year's typical yield.

U What is the standard bag weight for Wheat?

Commodity Standard Weight Lookup

Wheat falls under a specific industry standard.
The recognized commercial weight for **Wheat** is:

- **Weight:** 50 kg per standard bag
- **Source:** Global Commodity Board (GCB) guidelines

Use this figure when calculating your total shipment volume.

Frequently Asked Questions

01 **How can the Crop Yield Calculator determine if my corn yield was successful?**

It calculates your exact yield in kg/ha and then compares that number directly against historical regional averages. This tells you immediately if your harvest beat expectations or if there's an area needing improvement next year.

02 **Does the Crop Yield Calculator handle different types of crops like wheat or soybean?**

Yes, it's built for multiple commodities. You simply select the crop type, and it pulls the correct industry standard weight (like 60kg for soybeans) and uses the appropriate benchmarks for accurate reporting.

03 **What information do I need to use the Crop Yield Calculator MCP?**

You just need three types of raw data: the total area you farmed, an estimate of plant density per hectare, and the average grain weight. The tool handles all the complex math from there.

04 **Is this better than using a standard spreadsheet for yield analysis?**

Absolutely. Spreadsheets require constant manual setup and referencing multiple guides. This MCP automates the entire process, including fetching live commodity standards and running direct comparisons against regional data.

Go Live in 60 Seconds

Get your connection token from **cloud.vinkius.com**, then paste the endpoint URL into any MCP-compatible client.

YOUR MCP ENDPOINT

```
https://edge.vinkius.com/[TOKEN]/mcp
```

CLIENT	WHERE TO CONFIGURE
Claude AI	Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint
Cursor	Settings → Features → MCP Servers → "+ Add New MCP Server" → Type: SSE → Paste endpoint
VS Code	Ctrl/Cmd+Shift+P → "MCP: Add Server" → add `"crop-yield-calculator": { "url": "…" }`
Windsurf	MCP Settings → `mcp_settings.json` → Add endpoint URL
ChatGPT	Settings → Tools & plugins → Add MCP server → Paste endpoint
Gemini	Extensions → Add MCP Server → Paste endpoint URL

ASK AN AI ABOUT THIS

Let your preferred AI explain this MCP server

- Ask ChatGPT
- Ask Claude
- Ask Perplexity
- Ask Gemini
- Ask Grok

READY TO CONNECT

Crop Yield Calculator is live on Vinkius Cloud.

Get your connection token, paste it into your AI agent, and start building. No SDK. No deployment. Just results.

Start at cloud.vinkius.com →

vinkius.com · support@vinkius.com

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