

Trust layer for bee-dependent economies

Make Pollination Visible



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Bee labeling: AI draft vs human-corrected (Unit 04)

AI draft yellow = found by AI red = removed by human cyan = added by human



Human-corrected ground truth: 30 bees



Human-verified bee labels (Unit 04)

green = kept from AI draft cyan = added by human

33 bees labeled



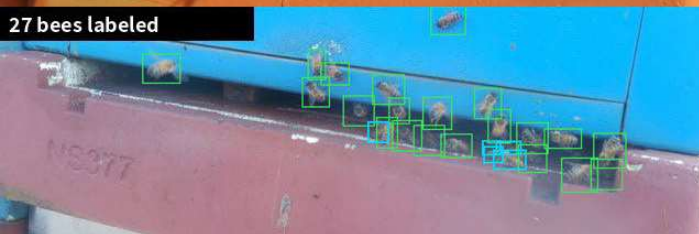
30 bees labeled



28 bees labeled



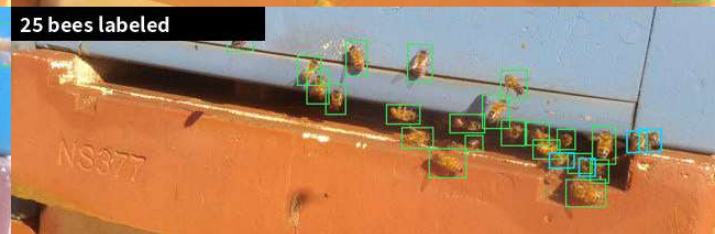
27 bees labeled



26 bees labeled

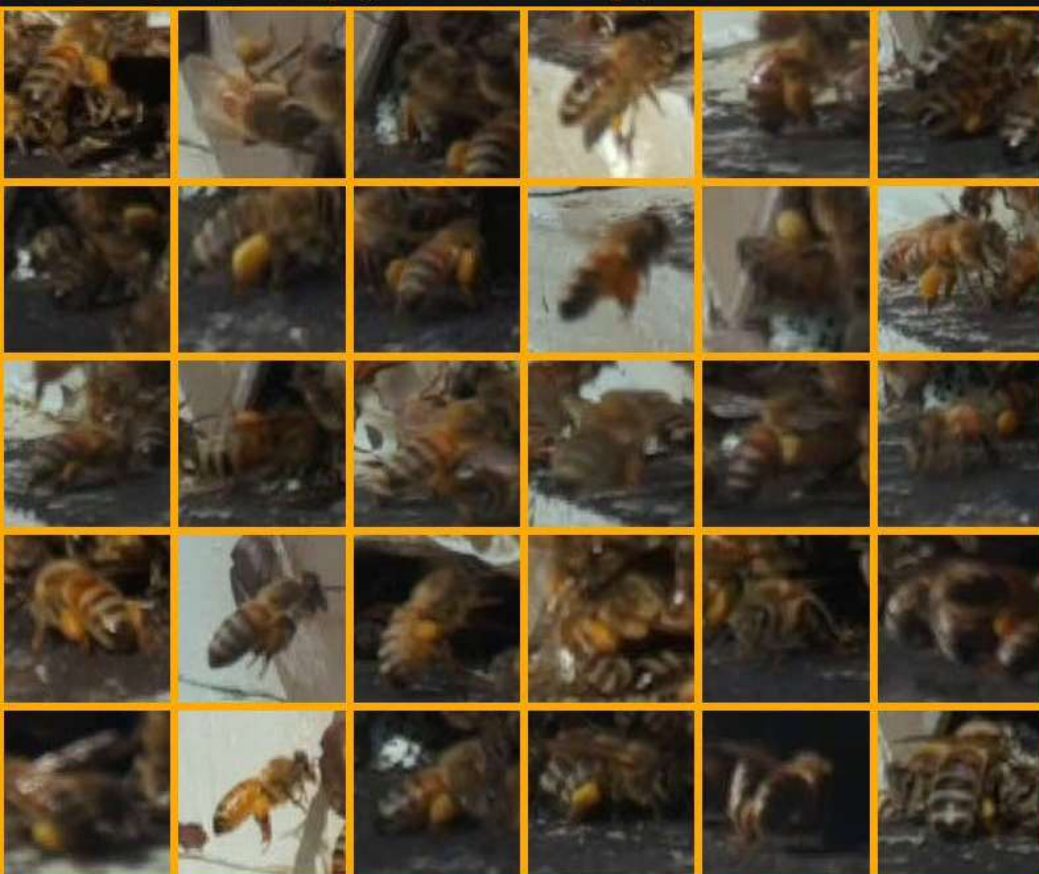


25 bees labeled

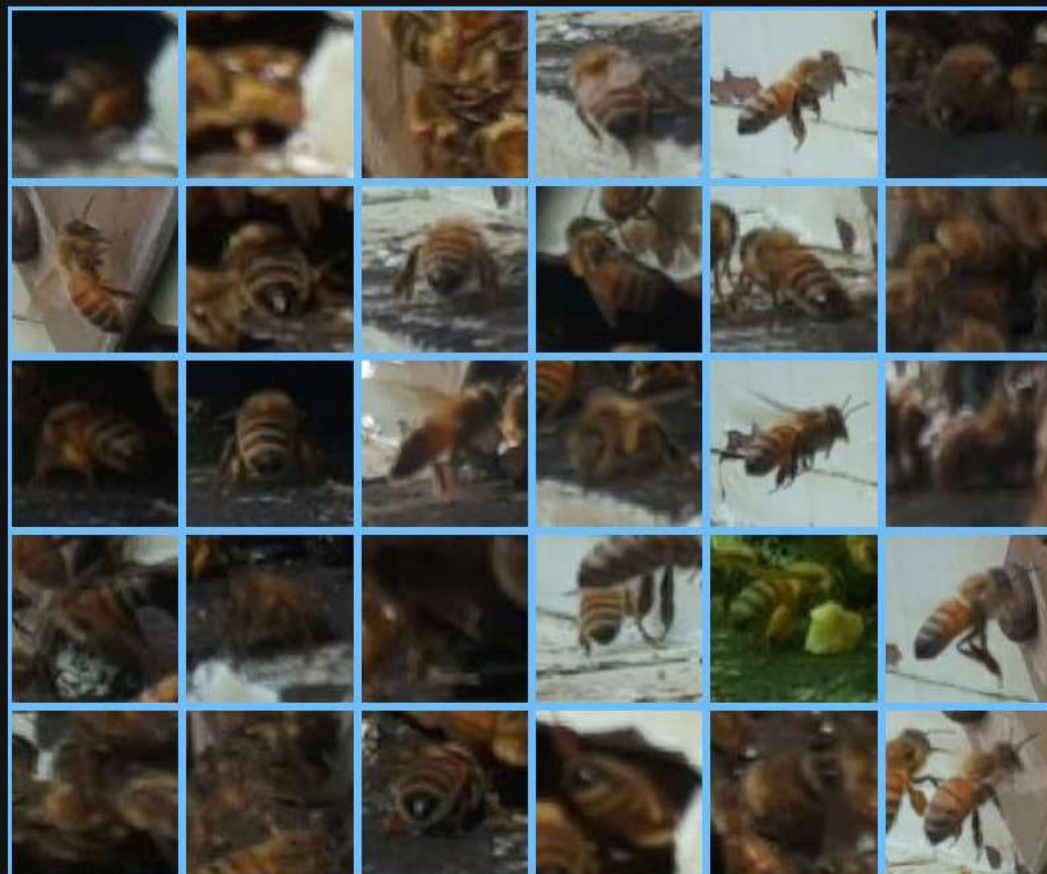


Pollen labeling examples, judged by humans (Unit 02)

POLLEN (yellow/orange pellets on hind legs) n=39



NO POLLEN n=70



BeeSTAR

Management for Your Operation & Economies



Measurable

- IoT sensors capture vital signs from every hive
- Proprietary AI turns raw telemetry into colony health scores
- Colony performance quantified per site and per season



Visible

- Grower dashboard shows real-time hive status across your operation
- Shared data layer between grower and beekeeper removes guesswork
- Alerts flag problems before they affect your crop

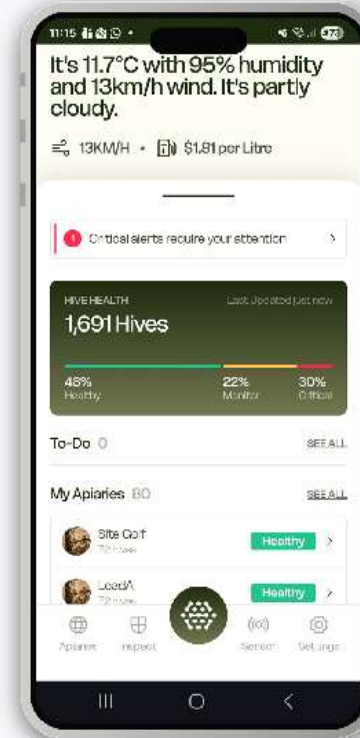


Manageable

- Coordinate spray schedules around pollination windows
- Contract compliance backed by verified hive data
- Benchmark suppliers and sites to improve outcomes year on year

BeeSTAR

Digital Infra-Structure for Bee-Dependent Economy



Overview

Hive Health

Map

Devices

NDVI

BPM

SALES DESK

Shipments

Inspections

Announcements

App Customers

Manage

Edit layout

RK Ray Kwon
ray@beestars.com.au

RYG insight toggles 2 active

TOTAL HIVES

1,691 — vs yesterday 1,691

HEALTHY (GREEN)

748 ↑1 vs yesterday 747

MONITOR (YELLOW)

394 ↓1 vs yesterday 395

CRITICAL (RED)

549 — vs yesterday 549

Hive sensor comms



24 hrs 1,172 -55 (69.3%)
7 days 125 +95 (7.4%)
30 days 247 (14.6%)

Hive sensor battery



Normal >2.9V 1,273 +242 (75.3%)
Warning 2.5-2.9V 368 -239 (21.8%)
Critical <2.5V 49 -10 (2.0%)

Gateway comms



RYG insight toggles

4 active

Yesterday's flight: 5 of 6 hours captured - 83%

TOTAL HIVES

45

vs yesterday 45

HEALTHY (GREEN)

27

vs yesterday 27

MONITOR (YELLOW)

6

vs yesterday 6

CRITICAL (RED)

12

vs yesterday 12

FLIGHT TODAY

83%

5 of 6 hours captured

Map

Satellite

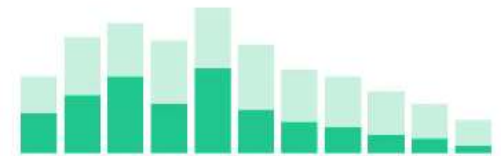
Strong flight today 22°C - SE wind 7 km/h - tunnel humidity 68%



B-12 East

12 hives - Sarah K. (beekeeper)
Performance ratio 62 / 100 ± 18

Today's flight activity



Predicted
Actual

BPM brain

Auto routing log

⊙ Cause classified, colony state not weather
Today 09:12 - 94% confidence
⊙ Routed to Sarah K. via app and SMS
Today 09:14 - acknowledged 09:18
⊙ Diagnosis, small hive beetle in 4 of 17 hives

[View diagnosis flow →](#)

🔴

B-12 East - Critical

12 hives - Tunnel B2 zone - Beekeeper: Sarah K.

Flagged Today 09:00 - First anomaly 3 days ago - Performance ratio 62 / 100

Back to Map

Colony Diagnosis Routing Flow

➡ BPM brain confidence 94%

1

Detect

09:00 today

2

Classify

09:12 today

3

Route

09:14 today

4

Diagnose

1:54B today

5

Plan

14:00 today

6

Verify

2 Jun expected

BPM BRAIN

Stage 2 - Classification: weather vs colony state

🌤️

Weather conditions within normal flight range

22°C, 5L wind / km/h, humidity 60% - all 3 metrics in nominal band

RULED OUT

🏠

Peer clusters at same site show normal activity

A West, A East, C East all reading 95-100% of baseline today - regional weather effect ruled out

RULED OUT

⚠️

Activity 30% below 14-day baseline, 3 days running

Persistent drop independent of weather - cluster specific pattern - matches colony stress signature

CONFIRMED

🐛

Pattern signature matches pest/disease history

Drop curve - humidity temp profile - cluster compactness all correlate with small hive beetle prior cases (n = 47)

CONFIRMED

CLASSIFICATION

Colony state issue - route to beekeeper

94%

Activity vs baseline

-30%

3 days running

Baseline (14-day avg)

Routing decision

☑️ Sarah K. assigned (primary beekeeper, 12 km away)

☑️ Notified via app + SMS at 09:14

☑️ Acknowledged 09:18 - on-site 13:30

➡ BPM brain

Diagnosis outcome

Small hive beetle confirmed in 4 of 12 hives

Treatment: traps deployed today, follow-up Jun 2,

Expected return to baseline: 7-10 days.

Message Sarah K.

Open inspection report

View raw sensor data

Auto-routed without human intervention - ⌚ 12 min from detection to dispatch

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— BeeSTAR Dashboard

Overview

Map

Hives

Diagnostics

Schedule

Spray

Communication

Contracts

Reports

Inspections

ANALYSIS

Simulation

SPRAY EVENTS · JUN

7

across 3 tunnels

CONFLICTS DETECTED

1

caught 13 days ahead

HIVES AT RISK

12

B-12 East cluster

AVG LEAD TIME

11 days

vs 2-day legacy

June 2026

MON	TUE	WED	THU	FRI	SAT	SUN
25	26	27	28	29	30 TODAY	31
1	2 B-12 treatment	3	4	5 Fungicide A1+A2	6 Move bees prep	7
8 Inspect B-12	9	10 Insecticide C1	11	12 CONFLICT Synthetic pyrethro... 12 hives in zone	13	14
15 Add bees A	16	17 Fungicide B1	18	19	20 Weekly check	21

Spray conflict · Jun 12

13 DAYS AHEAD

Planned spray	Synthetic pyrethroid
Spray zone	Tunnel B1 + B2
Bees in radius	B-12 East (12 hives)
Re-entry interval	48 hours
Detected by	BPM brain

Resolution options

RECOMMENDED

Move spray to Jun 9 (Tue)

3 days earlier - bees in zone are still on watch, no field activity scheduled

Impact: none on yield window

Accept —

Move bees to staging Jun 11-13

Beekeeper moves B-12 East cluster 800m west for 48h re-entry interval

Impact: 2 days lost pollination

Accept —

Switch to bee-safe alternative

Sulfur-based fungicide, applied Jun 12 as planned, no re-entry interval



Contracts

5 active contracts · Goldfields PC-2026-08 selected · Settlement ready

FILTER

Riverlands Berry, North Site

Command

BeeSTAR

30/05/2026



BeeSTAR Dashboard

Overview

Map

Hives

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ANALYSIS

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ACTIVE CONTRACTS

5

3 sites · 2 growers

CONTRACTED VALUE YTD

\$112,400

\$86,750 invoiced

DEDUCTIONS YTD

\$3,850

7 SLA events · 3.4% of value

COMPLIANCE RATE

96.6%

vs 91.2% last season

Search contracts

PC-2026-08
Goldfields Avocado
\$17,600 · 88 hives

ACTIVE

PC-2026-04
Riverlands Berry · N
\$9,100 · 45 hives

ACTIVE

PC-2026-05
Riverlands Berry · S
\$11,400 · 57 hives

ACTIVE

PC-2026-02
Sunraysia Almond
\$48,000 · 240 hives

COMPLETE

PC-2026-11
Mildura Citrus
\$29,100 · 142 hives

DRAFT

CONTRACT ID

Goldfields Avocado · PC-2026-08

Period 22 Apr – 30 May 2026 · 88 hives · Daniel Moersdorf (grower) · Sarah K. (beekeeper)

PDF

Issue final invoice

Settlement waterfall

Auto-reconciled by BPM team

Base contract value

88 hives × \$200 / hive × 1.0 (full term)

\$17,600.00

Deduction · Hive presence shortfall

Clause 4.2 · 2 hives below 96 hive minimum for 4 days (16–19 May)

- \$400.00

Deduction · Activity SLA miss

Clause 5.1 · 8 cluster avg below 70% baseline for 3 consecutive days (28–30 May)

- \$1,250.00

Deduction · Inspection cadence

Clause 6.3 · 1 weekly inspection missed (week of 11 May)

- \$400.00

Net payable to beekeeper

3 SLA events deducted from base · final invoice ready

\$15,550.00

SLA clause compliance

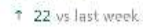


CLAUSE 3.1 - PLACEMENT DATE

Hives placed within 48 hours of bloom start signal

Met by 22 hours

PASS



Y-axis: performance ratio /100.

FARM	HIVES	PERFORMANCE	CRITICAL	CONTRACT	
Riverlands Berry - N Polytunnel berry - Ray Kwon	45	67 / 100	12	\$9,000	Open
Riverlands Berry - S Polytunnel berry - Ray Kwon	57	75 / 100	0	\$11,400	Open

Ranked by BPM brain by impact.



[View diagnosis →](#)



Open spray calendar →



Review settlement →

88 / 100

2 vs last wuck

96.6%

5.4 vs last season

SPRAY CONFLICTS PREVENTED

① This is a **theoretical model** for live discussion. All figures are illustrative on a wholesale price basis and must be validated by a field trial. Adjust any input to see the result update live.

Raspberry

Blueberry

CROP GROSS VALUE

\$21.17M

84 ha - 7 t/ha - \$36/kg

BPM ANNUAL FEE

\$10,546

9.3% of APV

BREAKEVEN YIELD

0.05%

yield lift to cover fee

RETURN ON FEE

50x

net \$519k

Assumptions

Wholesale price basis. Edit any field to recalculate.

Hives contracted

210

Hives per hectare ^[1]

2.5

Yield (t/ha) ^[2]

7

Wholesale price (\$/kg) ^[3]

36

Hive rental (\$/hive/month)

90

Pollination months / yr ^[4]

6

BPM fee (% of APV)

9.3

Wholesale ~\$36/kg (~\$4.50 per 125g punnet). Retail ~\$9.99/125g.

Yield improvement from BPM

2.5%

Field evidence: previous pollination management produced +13% fruit, +12% weight, +12% firmness vs conventional ^[5]

Result

Pollination window ~6 months (Oct flowering through autumn cropping).

Pollinated area

84 ha

Annual Pollination Value (APV)

\$113,400

BPM fee

\$10,546

Fee as % of crop value

0.05%

Breakeven yield lift

0.05%

BPM fee

\$10,546

Yield benefit

\$529,200

The BPM fee is a rounding error against crop value. The only real question is whether BPM moves yield at all, not whether the fee is worth it.

Field evidence to date: +13% fruit from better pollination management

Nature designed pollination.
We make it measurable and visible.



BeeSTAR Group · Brisbane, Australia · Ray Kwon, Founder and CEO