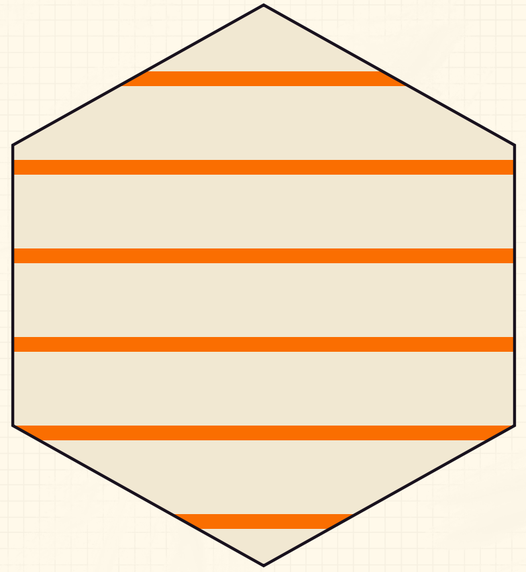
THE TRIAL · POLLINATOR 53 · UMM EL FAHM

# Engineering the future of pollination.



An eight-tree, four-branch field trial comparing Primal Bee hives against a standard baseline on the Umm El Fahm almond variety — a commercial almond orchard in Israel.

| SITE | VARIETY · POLLINATOR | OBSERVATION DATES | STATUS |
|---|---|---|---|
| Commercial orchard<br>Israel | Umm El Fahm<br>Pollinator #53 | Feb 5 — bud count<br>Feb 12 — fruit set | Interim · First count<br>Final count to follow |

METHOD · FIVE-STEP PROTOCOL

# How the trial was set up.

01 **Eight trees per treatment**, selected at a uniform distance from the hive — beginning at row 8 and moving outward.

02 To capture plot topography, **four trees were picked across the width** (each in a different row, ~12 m apart); four additional trees were flagged in the same rows.

03 **Four branches per tree** marked at eye level, one in each of the tree's four quadrants.

04 **Feb 5, 2026** — bloom buds counted on every branch.

05 **Feb 12, 2026** — fruit set counted, including small nutlets that may later abort.

16

TREES MEASURED
8 PB · 8 CONTROL

64

BRANCHES TAGGED
AND RECOUNTED

PRIMARY ENDPOINT

Fruit-set percentage — the share of counted buds that became nutlets.

SITE · TWO ADJACENT PLOTS · ONE VARIETY

# Same soil. Same variety. Different hive.

Aerial view removed to protect grower privacy.
Two adjacent plots of the same variety and soil, eight measurement trees per plot.

| | |
|---|---|
| BLUE BLOCK | Turgiz hives — **control plot** |
| ORANGE BLOCK | Primal Bee hives — **treatment plot** |
| RED DOTS | Eight **measurement trees** per plot |

WHY IT MATTERS

Adjacent plots share soil, microclimate, and variety — isolating the hive as the primary variable.

FRUIT-SET · 8-TREE AVERAGES

# A significant lead in fruit-set.

Averaged across 4 branches × 8 trees per treatment, Primal Bee hives delivered a fruit-set rate 11.4 percentage points above the control — a relative lift of ~23% in pollination efficiency.

59.9%



**PRIMAL BEE** N = 32 BRANCHES

48.6%



**CONTROL** N = 32 BRANCHES

+11.4pp

ABSOLUTE LEAD IN FRUIT-SET

+23%

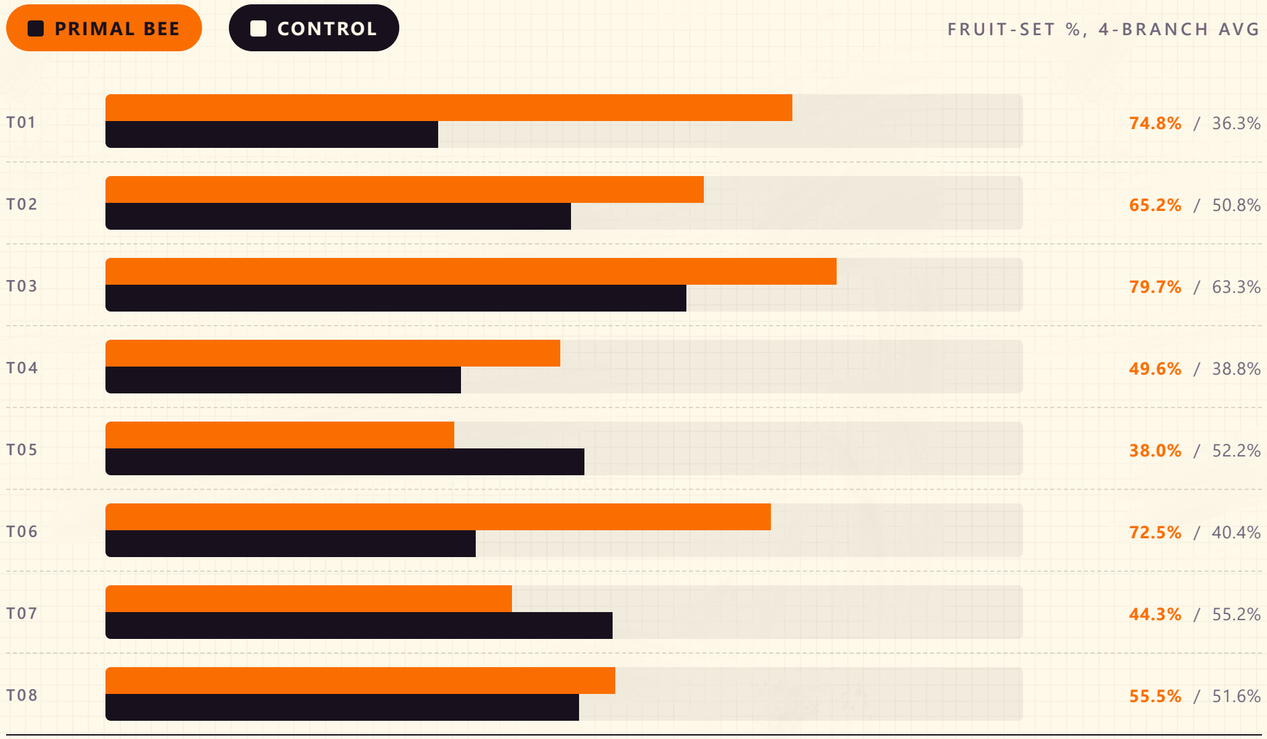
RELATIVE LIFT IN POLLINATION EFFICIENCY

$p = 0.0016$

STATISTICALLY SIGNIFICANT

CONSISTENCY · EIGHT MATCHED TREES

# The lead held in most trees.




## 6 / 8

TREES WHERE PRIMAL BEE LEADS

Stability — the Primal Bee advantage is preserved in the majority of matched trees. Within-tree variation is modest, indicating a well-executed trial.

FOLLOW-UP

Tree 5 shows an anomalously low PB value and is being reviewed for the final count.

PAIRED T-TEST · MATCHED BRANCHES

# The advantage grows where bloom is weakest.

ALL 32 PAIRED BRANCHES

## +11.4pp

Paired mean difference · $p < 0.0016$

Across every matched branch, Primal Bee fruit-set leads the control by 11.35 percentage points — a 23% relative lift in pollination efficiency.

| PRIMAL BEE | CONTROL |
|---|---|
| 59.9% | 48.6% |

SPARSE-BLOOM EDGE · BOTTOM BRANCHES

## +18.8pp

Primal Bee lead on sparse-bloom matched branches

When isolating branches with the fewest buds — where pollinator activity matters most — the Primal Bee advantage nearly doubles.

| PRIMAL BEE | CONTROL |
|---|---|
| 66.9% | 47.9% |

**WHY PAIRED** Bud-count observations suggested the control plot had slightly heavier bloom overall. Pairing matched branches controls for that natural variation and still returns a strong Primal Bee signal.

GROUPED BY BUD COUNT · THREE BUCKETS

# Fruit-set vs. bloom load.

Branches were split into three bloom-potential groups to separate genuine pollination impact from the tree's natural thinning.

LOW BLOOM · AVG ~42 BUDS

## Sparse

Fewest buds per branch

| 64.2% | 35.6% |
|---|---|
| PRIMAL BEE | CONTROL |

+28.6 PP LEAD · LARGEST GAP

MID BLOOM · AVG ~52 BUDS

## Moderate

Middle tier

| 65.1% | 50.3% |
|---|---|
| PRIMAL BEE | CONTROL |

+14.8 PP LEAD

HEAVY BLOOM · AVG ~71 BUDS

## Dense

Heaviest bloom load

| 51.7% | 49.3% |
|---|---|
| PRIMAL BEE | CONTROL |

+2.4 PP · NOT SIGNIFICANT

READING

Under Primal Bee, fruit-set percentage drops as bloom load rises — but the absolute number of nutlets keeps climbing, indicating pollination is keeping up with supply. Under the control, fruit-set is flat while nutlets rise only under heavy bloom, suggesting pollination is the limiter on sparser branches.

INTERIM CONCLUSIONS · WHAT THE FIRST COUNT SHOWS

# Four findings. One signal.

01 The trial shows **strong data uniformity** both between trees and within each tree.

02 Fruit-set differences **significantly favor Primal Bee** pollination ($p = 0.0016$).

03 The improvement is **more pronounced in sparse-bloom branches** than in heavily-blooming ones.

04 The advantage **persists in nominal nutlet counts**, not only in percentages.

**NEXT STEP** A final count after natural nutlet drop stabilizes, expected in the coming weeks. That reading will convert the interim signal into a season-level yield estimate.