

Two Things Worth Tracking

Milk per cow, and yield per field. What the options are, what they cost, and how to start this fall.
Prepared for Dani · September 2026

The short version. Both records are easier to keep than they sound, and the best first step for each is cheap.

- **Milk per cow:** monthly DHIA testing. A technician weighs every cow's milk once a month and sends samples to a lab. You get pounds, butterfat, protein, and somatic cell count for every cow, plus 305-day projections, for roughly \$25 to \$50 per cow per year. Most 40 to 300 cow herds do not need anything more than this to make good decisions.
- **Yield per field:** a weight for every load, tied to a field, with a moisture reading. A notebook, a scale, and a moisture tester beat an expensive app that gets fed guesses. If the combine already has a yield monitor, the maker's cloud account is free and does the summaries for you.
- **The link between them:** on a dairy, forage yield in *dry-matter* tons per acre matters more than grain yield, because feed is half or more of the cost of making milk.

Part 1 · Milk production per cow

The three ways to get a per-cow milk weight

Method	How it works	Fits
DHIA test day	A technician (or you, as an "owner-sampler") hangs portable meters on test day, records each cow's weight, and pulls a sample for the lab. Once a month or every 4 to 6 weeks.	Most conventional herds, 40 to 300 cows. The best value by far.
Permanent parlor meters or robots	Every milking is weighed automatically and lands in the equipment maker's software (DeLaval DelPro, GEA DairyPlan, BouMatic, Afimilk, Lely Horizon).	Herds with a modern parlor or robots. If you have these, the data already exists. Do not retype it.
Weigh jar or bucket scale	Divert one cow's milk and weigh it. Simple and cheap for a few cows.	Tie-stalls, fresh-cow pens, or checking one suspicious cow between tests. Too much labor for a whole herd above about 50 cows.

A common misconception. You do not need a weight for every cow at every milking. Monthly test-day numbers are enough to see the lactation curve, catch chronic low producers, find high somatic cell cows, and decide who to cull or dry off. Daily weights only pay when they come from meters that already exist and someone acts on the alerts every day.

What DHIA gives you

- Test-day milk pounds for every cow, plus fat and protein percent and pounds, and somatic cell count (SCC).
- Days in milk, lactation number, projected 305-day milk, and mature-equivalent records for fair cow-to-cow comparison.
- Herd reports: fresh-cow list, dry-off list, cows over 200,000 SCC, which cows contribute most cells to the bulk tank, rolling herd average, and benchmarks against similar herds.
- A web portal and a monthly herd summary (often called the "202 sheet").

Cost. Planning range is about \$2 to \$5 per cow per test plus a stop charge, which works out to roughly \$25 to \$55 per cow per year. Penn State Extension cites about \$25 per cow per year. Every-other-month testing is cheaper. Get a written quote from your local affiliate (Dairy One in the Northeast, AgSource in the upper Midwest, Lancaster DHIA in Pennsylvania, or the regional DHIA for your state).

How to read the numbers

Always compare cows within the same lactation number and stage. A first-calf heifer at 70 days in milk and a fourth-lactation cow at 240 days should never be ranked against each other. Group as: first lactation vs. mature, and fresh (0 to 30 days), early (31 to 100), mid (101 to 200), late (over 200).

Term	What it means and what to look for
Peak milk	Highest test-day weight in the lactation. First-lactation cows peak around 50 to 90 days in milk; mature cows around 45 to 70. A mature cow that never rises after calving needs a transition-cow look (intake, ketosis, crowding).
Persistency	How well a cow holds milk after peak. This month divided by last month. Mature cows typically lose 7 to 10% per month after peak; heifers 4 to 7%. A whole-group drop means feed, heat, or facility. A one-cow drop means health, feet, mastitis, or a wrong ID.
305-day (actual / projected)	Lactation total standardized to 305 days. A projection is an estimate, not milk sold. Reliability improves as tests accumulate.
Mature equivalent (ME)	Adjusts for age so a heifer can be compared to a mature cow. Use for comparing and breeding decisions, never for cash-flow.
Rolling herd average	Herd production over the past 12 months. Moves slowly. Good for direction, useless for catching this month's problem.
SCC and linear score	200,000 cells/mL or higher suggests an infected quarter. The legal Grade A limit is 750,000. Linear score doubles with each doubling of SCC: 100k = 3, 200k = 4, 400k = 5, 800k = 6. Watch new infections (was low, now high) and chronics (high two tests in a row).

Five things to check every month

1. **Test-day milk by lactation group and stage.** Look for group changes before individual outliers.
2. **Peak (or "summit") milk by lactation group.** Tells you whether fresh cows are transitioning well.
3. **Persistency.** This test vs. last test, by group.
4. **Shipped vs. test-day comparison.** Penn State says if bulk tank pounds and the sum of test-day weights differ by more than 5%, something is wrong: withheld milk, or bad weights.
5. **SCC.** Percent of cows over 200,000, new infections, chronics, and the top contributors to the tank.

Decisions the records drive

- **Culling.** Never on one low test. Check the ID, days in milk, pregnancy, SCC history, feet, and what she earns over feed cost. A pregnant healthy late-lactation cow may deserve to stay at low milk; a high-producing chronic mastitis cow may be the expensive one.
- **Dry-off.** Set by expected calving date: 45 to 60 days dry. If she is still at 45 to 55 lb near dry-off, talk to the vet and nutritionist about how to take her down.
- **Feeding groups.** Move cows on two tests, not one. Frequent pen moves cost intake.
- **Mastitis.** Culture the chronic and new-infection cows rather than treating every high SCC.

Tools, cheapest to most expensive

Tool	Rough cost	Notes
Paper or spreadsheet	\$0	Fine for 20 to 100 cows if one person owns it. Two sheets: a cow list, and one row per cow per test day.
Cattly, DairyFarmManager, Zisk	Free tiers	Phone apps that store per-cow milk. Check that they export your data as a file before relying on one.
CattleMax, Herdwatch	\$9 to \$30/month	Good for IDs, treatments, breeding. Weak on dairy analysis (no lactation curves or 305-day math).
Farmbrite	\$29+/month	One app for cows and fields. Shallower on dairy than the DHIA tools.
PCDART (DRMS) or DHI-Plus (Amelcor)	\$300 to \$1,500/year, often bundled with DHIA	The dairy-specific programs that come with your DHIA records. Best value for 40 to 500 cows on test.
BoviSync	~\$1 to \$4/cow/ month	Task lists, protocols, employee workflows. More than a family herd needs.
DairyComp 305	~\$1,500 to \$6,000/ year	The big commercial-dairy database. Powerful, steep learning curve.

Prices are 2026 planning ranges from vendor pages and third-party listings. Vendors change plans often; confirm before buying.

If you have no meters and 40 to 200 cows: join monthly DHIA, order milk + fat + protein + SCC, use the PCDART or DHI-Plus option if your affiliate offers it, and keep a spreadsheet between tests. Fix your cow IDs first (one permanent number per cow, never reused). That is the whole recommendation.

Part 2 · Yield per field, per crop

Where the number comes from, most to least reliable

#	Source	Use it for	Watch out
1	Certified scale ticket (elevator, co-op, truck scale)	The control total for the whole crop	Must be tied to a field. "Paid" bushels may already have shrink and dockage taken out.
2	Grain cart scale	Splitting production by field	Check it against a certified scale several times a season.
3	Combine yield monitor	Field totals and maps	Uncalibrated, it can be off 5 to 15%. Calibrate every crop, every season.
4	Bin, silo, or bunker measurement	Inventory cross-check	Density guesses cause big errors.
5	Wagon or truck counts	Last resort	"Full" is never the same twice.

The rules that make the records worth keeping

1. **One load, one field.** Write the field on the load ticket when the truck is loaded, not later. If a load must mix fields, split it by cart weight before unloading.
2. **Weigh, don't guess.** A moisture tester and a scale of some kind are the first purchases, before any software.
3. **Harvested acres, not FSA acres, not planted acres,** go in the denominator.
4. **Correct everything to the same moisture** before comparing fields or years.
5. **Never correct twice.** If the elevator ticket already shows dry bushels, do not apply the formula again.
6. **Keep the originals.** Scale tickets, monitor files, and the notebook. Crop insurance reviewers want them, and they are the proof if two totals disagree.

Moisture correction (grain)

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Corrected lb = wet lb × (100 - harvest moisture) ÷ (100 - standard moisture)
Bushels      = corrected lb ÷ standard lb per bushel
Yield        = bushels ÷ harvested acres
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Crop	Standard moisture	Lb per bushel
Corn (grain)	15.5%	56
Soybeans	13.0%	60
Wheat	13.5%	60
Oats	14.0%	32

Worked example. A 12-acre field weighs out at 112,000 lb of corn at 21% moisture. Corrected: $112,000 \times 79 \div 84.5 = 104,710$ lb. Bushels: $104,710 \div 56 = 1,870$. Yield: $1,870 \div 12 = \mathbf{155.8 \text{ bu/acre at } 15.5\%}$. Call it "yield at 15.5%", not "dry yield". Grain at 15.5% still has water in it.

Forage: use dry-matter tons, not wet tons

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Dry-matter tons = as-fed tons × (100 - moisture) ÷ 100
DM tons/acre    = dry-matter tons ÷ harvested acres
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Corn silage example. 40 acres, 600 wet tons over the scale, 67% moisture (33% dry matter). $600 \times 0.33 = 198$ DM tons. $198 \div 40 = \mathbf{4.95 \text{ DM tons/acre}}$. The wet number was 15 tons/acre. Two fields at 15 wet tons but 60% and 70% moisture are not the same field. Sample moisture on every field and every harvest day, and weight the average by load size.

Dry hay. Weigh a few real bales. The baler's "1,200 lb" setting is not a weight. $100 \text{ bales} \times 1,200 \text{ lb} \times 0.85 \text{ dry matter} = 51 \text{ DM tons}$.

If the combine has a yield monitor

- **Calibrate with 4 to 6 loads** spanning low to high grain flow, each 3,000 to 6,000 lb, weighed on a real scale. One load is not a calibration. Recalibrate for each crop, when moisture changes a lot (corn dropping from mid-20s to high teens), after any sensor or header change, and whenever a check load is off by more than 2%. (Ohio State, Purdue, Iowa State guidance.)
- **Check the moisture sensor** against a bench meter or the elevator's reading several times a season.
- **Use the free cloud account that matches the combine.** John Deere Operations Center is free and gives harvested acres, total bushels, average yield, and moisture per field, plus multi-year comparison. Case IH / New Holland have AFS Connect / FieldOps. Ag Leader has SMS (desktop, about \$800 to \$1,200) and AgFiniti. Get the field names consistent before uploading or you will end up with "North 80" and "north 80" as two fields.
- **Reconcile the monitor to the scale tickets.** If the monitor says 9,850 bu and the tickets say 10,000, scale the monitor data by 1.015 and note it.

Tools, cheapest to most expensive

Tool	Rough cost	Notes
Load sheet + spreadsheet	\$0	A "Loads" sheet (one row per load) and a "Field Summary" sheet. Columns listed on the template page.
Moisture tester	\$300 to \$1,000 grain; \$450 to \$900 forage (Koster)	First purchase.
John Deere Ops Center, CNH FieldOps	Free core	Free with the equipment. The best deal in farm software if you run that color.
Bushel Farm (formerly FarmLogs)	From \$199/year	Field records, grain inventory, contracts. Closest simple record-keeper for a small grain farm.
Climate FieldView	From \$99/year; Plus tier roughly \$300	Mixed-brand fleets, maps on an iPad. Needs the Drive hardware.
Ag Leader SMS Basic	~\$800 to \$1,200 once	Reads most brands' monitor files. Good durable archive.
Grain cart scale retrofit (Digi-Star/Topcon, Scale- Tec)	\$4,000 to \$10,000+	Assigns weighed loads to fields. Not legal for trade.
Traction Ag, Conservis	\$1,000 to \$15,000+/ year	Accounting tied to fields. For bigger or multi-entity farms.

If you hire custom harvesting: put the records in the deal. Ask for the monitor files, a per-field summary with harvested acres and average moisture, field-tagged load tickets, and copies of scale tickets within ten days of finishing each crop. "Field 12 made about 185" is not a record.

What the records are good for

- **Which ground pays.** Rank fields by yield relative to the farm average that year ($\text{field} \div \text{farm average} \times 100$). Three years is a first pattern; five is when the ranking means something.
- **Crop insurance APH.** Reviewers accept scale tickets and settlement sheets as hard evidence, with load and yield-monitor records to split by unit. Records must show buyer, date, gross, tare, net, moisture, and field or unit. Keep them at least three years; ten is better.
- **Landlord and lender reports.** One page per field: acres, crop, variety, yield at standard moisture, five-year average, what went on it.
- **Nutrient plans.** Real yields give real removal numbers and real yield goals.

Part 3 · Putting the two together on a dairy

Feed is typically 50 to 60% of the cost of making milk, and most of it is grown at home. So the field records that matter most to a dairy are the **forage fields in dry-matter tons per acre**, and the cow records that matter most are **milk and components per cow against what the feed costs**.

Days of feed

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Usable DM    = harvested DM × (1 - storage loss)           [12% is a common starting guess for  
Daily DM use = Σ (head × lb forage DM per head per day)   [include dry cows and heifers]  
Days of feed = usable DM lb ÷ daily DM use
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Example. 1,000 wet tons of corn silage at 35% DM = 350 DM tons. Less 12% loss = 308 usable DM tons = 616,000 lb. 100 milking cows at 24 lb corn-silage DM plus 20 dry cows at 12 lb = 2,640 lb per day. $616,000 \div 2,640 = \mathbf{233 \text{ days}}$. Not a year. Run this for silage, haylage, and dry hay separately; the ration is limited by the one with the fewest days.

Income over feed cost (whole-herd, not per cow)

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Milk income per cow per day = milk lb × milk price per cwt ÷ 100  
IOFC                        = milk income - feed cost per cow per day
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80 lb at \$20/cwt = \$16.00. 52 lb dry matter at \$0.14/lb = \$7.28. IOFC = **\$8.72 per cow per day**. That is not profit; it still has to cover everything else. Do it by pen or whole herd. Without individual feed intake gates, a per-cow IOFC is a made-up number. Do not cull on it.

This fall: the first four weeks

Week	Fields	Cows
1	Master field list with one permanent ID each. Confirm harvested acres. Decide how every load gets weighed. Set up the moisture tester. Label every bunker, bag, and silo. Measure opening feed inventory.	Ask DHIA to verify IDs, lactation numbers, fresh dates. Note current milk shipped, cows, fat, protein, SCC. Get the ration in as-fed and DM pounds.
2	A ticket for every load: field, weight, moisture, destination. No mixed loads. Compute DM tons/acre each evening while the crew remembers the loads.	Record daily bulk tank and cows shipped. Note ration changes. Save the DHIA exception list.
3	Total each field. Weighted-average DM per field. Send forage samples to the lab. Reconcile storage additions to field totals.	Nutritionist updates ration DM from the new samples. Compute DMI, feed cost per cow, milk per lb DMI, IOFC.
4	Rank fields by DM tons/acre. Flag the odd ones. Days of feed by type.	Review low cows in context: DIM, lactation, SCC, health, pregnancy. Fix at most three record problems for next month. Back everything up.

Ten questions that decide which tools fit

1. Are per-cow milk weights already captured anywhere (parlor, robot, DHIA)?
2. What decision should the cow records support first: fresh cows, culling, SCC, or the lender?
3. Are feed groups stable enough to compute group intake?
4. Who harvests each forage crop, and who holds the load records?
5. Where can loads be weighed today?
6. Can every load go to one field and one storage structure?
7. Who tests moisture, and how fast is the result usable?
8. What software is already on the farm (DHIA portal, Ops Center, accounting)?
9. Does every system export a plain file you can open in Excel?
10. Who owns the records, and how much time do they actually have?

Questions for your advisers

DHIA technician: Which test plan fits us? Can you audit our cow IDs? Which reports show 305-day, ME, DIM groups, and SCC exceptions? Can I get the data as a spreadsheet? What are the 2026 fees? Who owns the records if we switch?

Nutritionist: Every ration in as-fed and DM pounds. What DM change should trigger a ration adjustment? Storage-loss and refusal assumptions to start with. Expected DMI per pen. A monthly feed-cost-per-cow worksheet.

Crop adviser or Extension: Are our acres measured right? How should the scale or monitor be calibrated for this crop? How many moisture samples per field? What explains the weak fields? A local DM yield benchmark.

Paper templates

Copy these. One line per load; one line per cow per test day.

A. Harvest load ticket

Ticket #	Date	Field ID	Crop / cutting	Truck / wagon	Gross lb	Tare lb	Net lb	Moisture %	Destination	Notes

B. Field completion summary

Field ID	Crop	Year	Harvested acres	Total net lb	Wtd. avg moisture %	Bushels at std. moisture	bu/ acre	As-fed tons/ acre	DM tons/ acre	Lab sample #

C. Per-cow milk sheet (test day or backup)

Date	Cow ID	Pen	Lact. #	Fresh date	DIM	AM lb	PM lb	Total lb	Fat %	Prot %	SCC (ooo)	Preg?	Event / note

D. Bulk tank (daily)

Date	Milk shipped lb	Withheld lb	Cows milking	Fat %	Prot %	Tank SCC	Ration change / weather / note

Common mistakes

Cows

- Ranking cows without accounting for days in milk and lactation number.
- Culling on one low test.
- Buying meters before fixing cow IDs.
- Assuming the robot's conductivity alert is an SCC.
- Looking at fat percent instead of fat pounds. Percent goes up when milk goes down.
- Treating projected 305-day or ME as milk sold.
- Doubling the AM milking to get a daily total.
- Recording milk but not fresh date, events, or pregnancy.
- Saving data nobody reviews.

Fields

- Planted or FSA acres in the denominator.
- Calling settlement bushels "harvested" without checking shrink and dockage.
- Calibrating the monitor with one load, at full flow.
- Comparing forage on wet tons.
- One moisture sample for a whole field or day.
- Mixing fields in a truck with no load log.
- Nominal wagon capacity or bale weight instead of a real weight.
- Losing raw monitor files when the display changes.
- Field names that differ between family, the custom operator, FSA, and the agronomist.

Free resources

Where	What
Penn State Extension, Dairy extension.psu.edu/animals-and-livestock/dairy	"Analyzing the 202", "Evaluating milk peak and persistency using DHIA data", "Income over feed cost", "Feed inventory for the dairy herd".
Ohio State, Ohioline ANR-8 ohioline.osu.edu/factsheet/anr-8	Tips for calibrating grain yield monitors.
Purdue, Corny News Network agry.purdue.edu/ext/corn	"Yield monitor calibration: garbage in, garbage out."
Iowa State Ag Decision Maker extension.iastate.edu/agdm	Crop budgets, machinery costs, silage pricing, lease tools.
Illinois farmdoc farmdoc.illinois.edu	Crop budgets, FAST spreadsheets, crop insurance tools.
Cornell Nutrient Management Spear Program, Fact Sheet 71	Measuring corn silage yield.
Cornell Small Farms smallfarms.cornell.edu	How to establish crop production history for crop insurance.
USDA RMA rma.usda.gov/policy-procedure	Crop Insurance Handbook, APH review procedures, what production evidence counts.
National DHIA · DRMS · Dairy One · AgSource dhia.org · drms.org · dairyone.com · agsource.com	Find your local affiliate, testing plans, PCDART, forage lab.
National Mastitis Council nmconline.org	SCC interpretation, aseptic sampling, mastitis control.
USDA Web Soil Survey websoilsurvey.nrcs.usda.gov	Soil maps by field, for explaining the weak ground.

Glossary

As-fed

Weight including water.

APH

Actual Production History; the yield history crop insurance uses to set your guarantee.

DHIA / DHI

Dairy Herd Improvement; the testing organizations and the records they produce.

DIM

Days in milk, days since calving.

DM

Dry matter; feed with all the water removed. The only fair basis for comparing feeds.

DMI

Dry-matter intake, lb per cow per day.

ECM

Energy-corrected milk; milk adjusted for fat and protein so herds and breeds compare fairly. $0.327 \times \text{milk lb} + 12.95 \times \text{fat lb} + 7.2 \times \text{protein lb}$.

IOFC

Income over feed cost. Milk income minus feed cost. Not profit.

Linear score

SCC on a log scale; each point doubles the count.

ME

Mature equivalent; a lactation adjusted for the cow's age.

Persistency

How well a cow holds production after peak.

RHA

Rolling herd average, 12-month herd production.

SCC

Somatic cell count, cells per mL; an udder-health indicator.

Shrink

Feed lost between harvest and the cow's mouth.

Standard moisture

The moisture grain is priced and reported at (corn 15.5%).

Test day

The day DHIA weighs and samples every cow.

Prepared from a cross-check of two AI research systems (GPT-5.6 and Claude) against university extension, DHIA, USDA, and vendor sources, September 25, 2026. Prices are planning ranges; confirm with your local DHIA affiliate and dealers. Nothing here is veterinary, agronomic, financial, or insurance advice.