Glyphosate Performance Begins with the Water

Cost savings | **Fewer spray events** | **Reduced unnecessary residual exposure**

FOR FARMERS, COMMERCIAL LAND MAINTENANCE, AND PUBLIC LAND MANAGERS

Change the medium first — then let the chemistry perform its intended job.

> The right electrochemically engineered carrier unlocks the full potential of glyphosate — delivering more complete plant uptake and translocation with fewer applications and lower total operating burden.

Farmers
Maximize performance and reduce total cost per acre.

Commercial Land Maintenance
Improve efficiency, reduce re-treatments, and lower operating burden.

Public Land Managers
Better outcomes with responsible use of resources.

Glyphosate Mixing Medium Introduction

Advanced Dual-Polarity Electrochemistry

The Bridge from Quantum Biologics to Agriculture

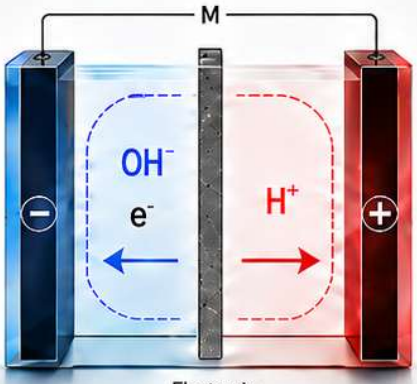
WATER

Raw aqueous state

Heterogeneous – unstructured variable activity

ELECTRICAL PROGRAM

Advanced dual-polarity membrane electrochemistry

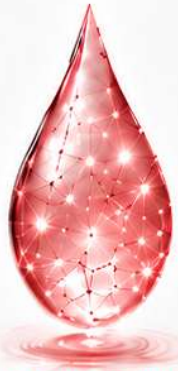


Electronic Polarity Divider

Electrodes apply potential (ΔV) to drive attraction/repelling and polarity separation.

CARRIER STATE

Engineered aqueous carrier



Selected Acidic Output

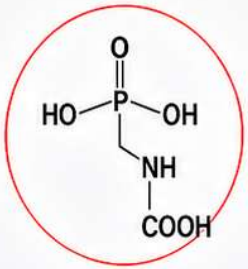
Only acidic stream advances in the program.

Acidic-Side Properties / Constituents (Examples)

H^+ • Ca^{2+} • Mg^{2+} • Mn^{2+} • Cl_2 • H_2O_2 • O_3

AGRICULTURAL CHEMISTRY

Active ingredient in engineered carrier



Glyphosate

Compatible & stabilized in engineered carrier

Label-Recommended Mixing
No Over-Dosing Needed

ORGANIC RECEIVER

Plant uptake and translocation

RESPONSE

Desired biological outcome

- Systemic Activity
- Effective Control
- Improved Performance
- Reduced Operating Burden

Agricultural Application — Glyphosate

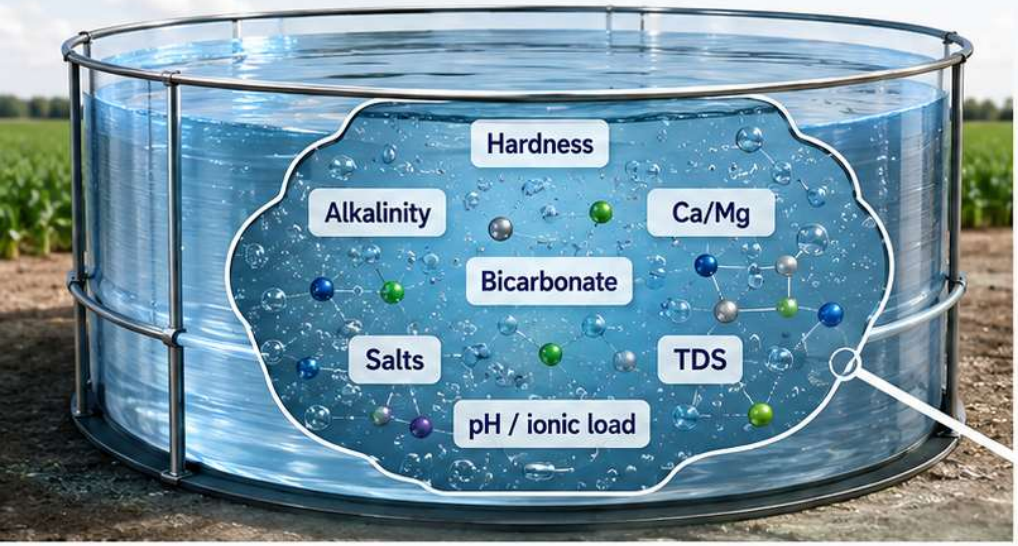
Carrier compatibility • systemic delivery • reduced operating burden

Glyphosate is one application within a broad platform

WATER › ELECTRICAL PROGRAM › CARRIER STATE › AGRICULTURAL CHEMISTRY › ORGANIC RECEIVER › RESPONSE

The Hidden Cost Is Often in the Water

Source water is uncontrolled for the objective.



EXAMPLE A	EXAMPLE B	EXAMPLE C
Farm Raw Well	Residential Raw Well	Commercial Raw Well
pH 7.1	pH 7.9	pH 7.58
Hardness 323 mg/L	Chloride 232 ppm	Hardness 318.65 mg/L
TDS 463 mg/L	Na Sodium 155.64 ppm	Alkalinity 300.51 mg/L
	TDS 974.08 ppm	

Same-looking water → very different chemistry → very different tank behavior

The concentrate does not enter pure H_2O. It enters whatever chemistry is already present in the source water.

If the carrier is uncontrolled, more concentrate and more applications may be needed.

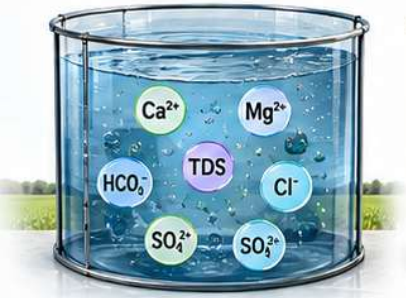
More concentrate | More applications | More labor | More equipment time | More opportunity for drift and residual

Palm Beach Springs Water Company Inc. Redefining H2O

What the Wrong Carrier Costs

Commercial field observations show that incompatible source water increases cost before the chemistry ever reaches the plant.

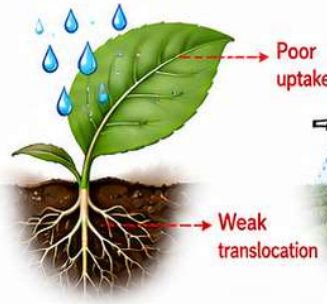
1 Incompatible water → **2 Unstable mixture / residue** → **3 More concentrate needed** → **4 Poor delivery** → **5 Repeat applications** → **6 Higher total operating burden**



Hard, alkaline, high TDS source water

Reaction, precipitation, slime, and residues form

Effective dose at plant requires more product



Poor wetting, uptake, and translocation

More passes to achieve the same outcome

Higher total cost across the entire system

Commercial field observations

- Historical practice: ~5× label amount
- More than one application commonly needed
- Observed suppression duration: ~2.5 months

More labor | **More equipment time** | **More fuel** | **More drift / overspray** | **Higher chemical load**

The cost is not just the chemical — it is the entire application system.

These are commercial field observations, not a universal performance promise.

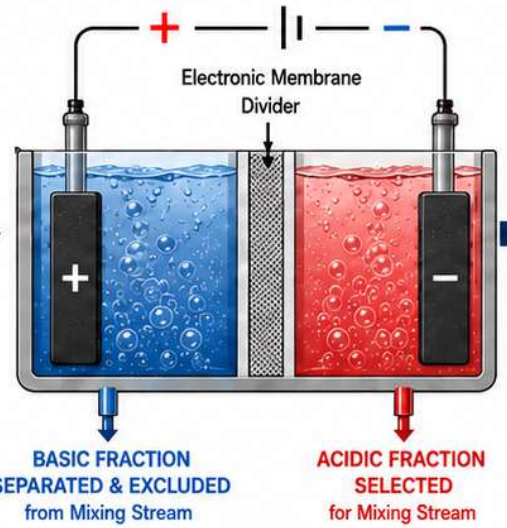
Change the Carrier Before Adding the Chemistry

Dual-polarity membrane electrolysis manufactures the selected mixing medium before glyphosate is introduced.

1 Raw Source Water

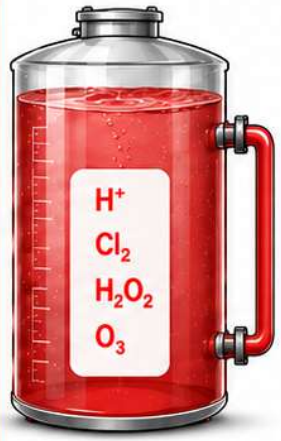
Source water is uncontrolled for the objective.

2 Dual-Polarity Membrane Electrolysis



Not ordinary acid addition. The carrier is manufactured electrochemically.

3 Selected Acidic Carrier



pH pH ≈ 2.4

Strong positive ORP

6.45 Ionic Product (Hanaoka p(IP)) ≈ 6.45

Basic fraction is separated from the mixing stream.

Acidic anode carrier selected for the application objective.

4 Glyphosate Added

- Label-recommended mixing
- No over-dosing needed

Added after the carrier is prepared.

The chemistry should not have to overcome the water first.

Prepare the carrier first, then add the concentrate.

Why the Correct Medium Changes Delivery

Glyphosate is systemic. The right medium keeps it available long enough to reach every part of the plant.

1 Stable Tank Mixture

No dissociation. Remains uniform and available.

Carrier holds glyphosate in solution and ready for uptake.

Result: Available from tank to target.

2 Nozzle Performance + Uniform Foliar Contact

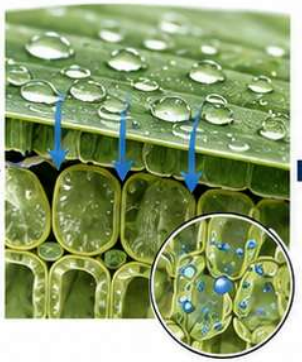
No dissociation means no clogging and even coverage.

- No slime / chunks from tank incompatibility
- Less nozzle clogging and cleaning downtime
- More consistent distribution across the field

Result: Even application. Fewer misses. Less waste. Helps reduce repeat treatments.

3 Leaf Absorption

Available glyphosate enters the leaf and is absorbed.

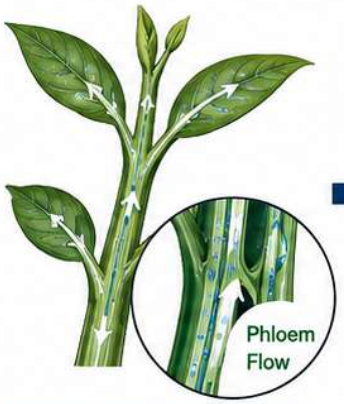


Carrier keeps glyphosate intact at the surface, allowing efficient entry into living tissue.

Result: Efficient uptake. More product enters the plant.

4 Phloem Mobility

Glyphosate moves with the phloem to growing points and sinks.

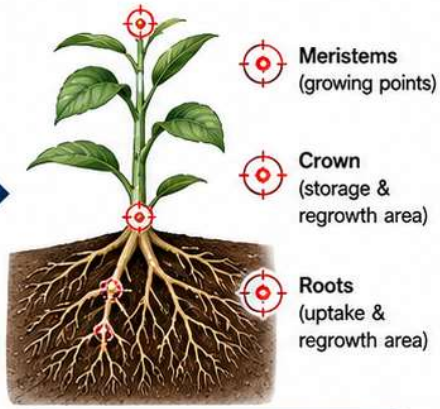


Systemic movement distributes glyphosate throughout the plant via the phloem.

Result: Reaches active growth areas and sinks.

5 Whole-Plant Translocation

Glyphosate reaches the crown, meristems, and roots for complete control.



Complete coverage to all critical sites for maximum effectiveness.

Result: Whole-plant control. Better results with fewer applications.

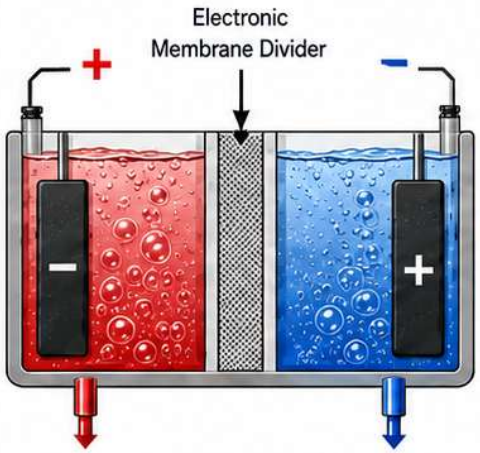
The right medium keeps glyphosate available and mobile from the tank to every critical site.

Stable mixture → Clean nozzles → Uniform coverage → Absorption → Systemic movement → Whole-plant control

The High-pH Fraction Has a Job Too

In this glyphosate application, the basic stream is separated from the mixing medium and redirected for tank cleaning and acidic neutralization.

1 Dual-Polarity Separation



ACIDIC FRACTION USED FOR GLYPHOSATE CARRIER

(continues to carrier preparation)

BASIC FRACTION SEPARATED

Diverted from glyphosate mixing

2 Utility Storage

- High-pH basic stream
- Separated from the glyphosate mixing path
- Held for equipment utility use

3 Tank Cleaning

- Helps remove residues from tanks and lines
- Supports nozzle and equipment clean-out
- Useful between applications or product changes

4 Acidic Neutralization

- Neutralizes remaining acidic solution
- Useful for post-application handling
- Supports return toward a more neutral condition

One separation process creates two useful streams.

Acidic stream for the glyphosate carrier → High-pH stream for tank cleaning and acidic neutralization

What Changed in Commercial Field Experience

Same chemistry. Different carrier. Dramatically different field outcome.

Conventional Brackish / Mineral-Loaded Carrier

Historical Commercial Practice

~5× Practice
Multiple applications commonly required.

Repeat Applications
Needed to maintain control.

~2.5-Month Suppression
Typical commercial control duration observed.

Residue / Slime / Nozzle Problems
Tank incompatibility leads to residue, slime, nozzle clogging and uneven distribution.

Higher Chemical + Operating Burden
More product, more applications, more downtime, more equipment wear, more total cost.

VS.

Correct Electrochemical Carrier

Dual-Polarity Engineered Medium

Less Concentrate Required
Effective performance with less glyphosate concentrate in the tank.

Stable, Uniform Mixture
No dissociation in tank or on leaf.
Clean solution. Clean nozzles. Even coverage.

Complete Systemic Delivery Pathway
Available at the leaf → phloem → crown / meristem / root. Full-plant translocation achieved.

One Application Observed at ~5–6 Months Commercial Control
Longer duration with one well-delivered application.

Fewer Spray Events & Lower Total Burden
Less product, fewer applications, less downtime, lower operating cost, less equipment wear.

Commercial operating observations beginning in 2015;
controlled replicated validation remains the next scientific step.

Savings Go Far Beyond Chemical Cost

One better application affects the entire operating equation.

ONE APPLICATION EVENT

1. Chemical
2. Labor
3. Fuel
4. Equipment Hours
5. Sprayer / Nozzle Maintenance
6. Mobilization
7. Drift / Overspray Exposure
8. Repeat Treatment
9. Administrative / Scheduling Burden

Fewer applications multiply the savings.

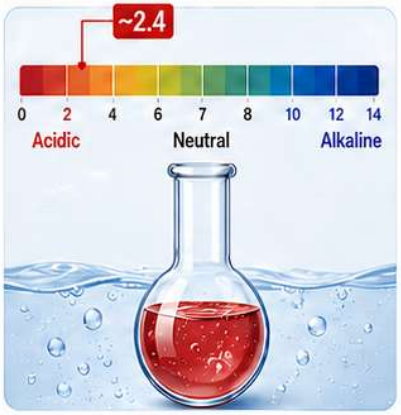
Less total chemical and fewer spray events mean fewer opportunities for drift, overspray, and unnecessary residual deposition.

The savings are not only in the chemical. They extend across the entire operation.

There Is Much More Science Behind the Carrier

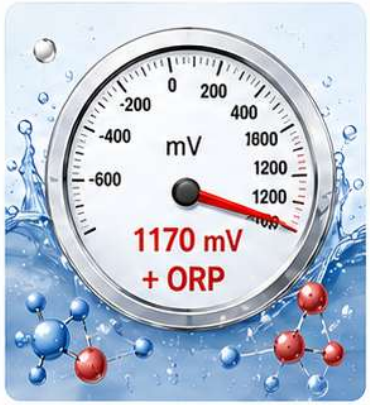
Multiple measured and modeled dimensions work together to create one superior carrier state.

pH
Acidic Compatibility



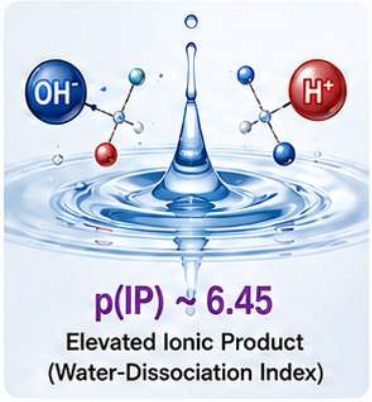
- Acidic range ~2.4 for glyphosate chemical compatibility
- Prevents premature reaction or degradation
- Maintains molecule availability in the tank and on the leaf

ORP / ROS
Oxidation-Oriented State



- Strong positive ORP
- Supports a clean, oxidation-oriented environment
- Controls microbial load and stabilizes the solution

Hanaoka IP
Elevated Ionic-Product State

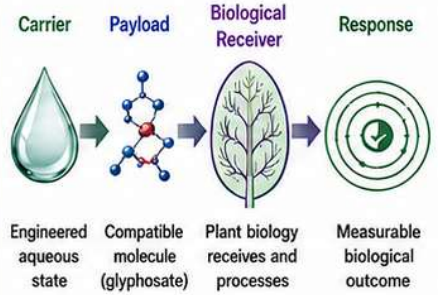


- Hanaoka p(IP) ~ 6.45
- Indicates increased ionic-product state beyond normal water
- More reactive capacity and higher ionic activity

Protonic / Hydration Dynamics

- Protonic charge is carried in structured hydration
- Enhanced hydration shells and network order
- Improved transport, solvation and membrane interaction

Quantum Biologics
From Carrier to Response



- Engineered carrier delivers compatible payload
- Biological receiver engages and processes the signal
- Measurable response in the target plant

These are not independent tricks;
they are different measured and modeled dimensions of one electrochemically reconstructed carrier state.

Change the medium, and you change the operating equation.

The right electrochemically engineered carrier changes everything that follows.

Lower Total Operating Burden

Fewer applications. Less labor, less fuel, less equipment hours, less maintenance, less downtime.

Less Unnecessary Chemical Introduced into the Application Environment

Less total chemical load. Fewer opportunities for drift, overspray, and residual deposition.

More Complete Use of the Chemistry Already Being Purchased

Stable mixture. Complete systemic delivery pathway. Longer control from a single application.

THE INVITATION

*The **introduction** shows the opportunity.*
*The **science presentation** explains why it occurs.*
*The **full application presentation** shows how it can be implemented and evaluated for your operation.*

If your water is causing you to buy more chemical and spray more often,
it's time to understand the medium you've been using.