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ADVANCED ANIMAL NUTRITION

STRESS PREVENTION STRATEGY

with LiquiPower products

Targeted nutritional support via drinking water during moderate and severe stress periods



Stress in Poultry Production

A hidden driver of performance losses and production cost

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Even moderate stress can negatively affect:

- Feed and water intake
- Daily gain and FCR
- Egg production and shell quality
- Immunity and vaccination response
- Flock uniformity and survivability

TYPICAL STRESS FACTORS

1. **Heat** — Temperature
2. **Vaccination** — Immune challenge
3. **Transport** — Handling
4. **Density** — Overcrowding
5. **Feed** — Transition
6. **Water** — Quality shortage
7. **Disease** — Pathogens
8. **Management** — Errors

Moderate vs. Heavy Stress

The intervention intensity should match the physiological burden

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MODERATE

Typical situations

- Mild heat stress
- Vaccination reactions
- Feed transition
- Short-term water shortage
- High stocking density
- Handling and transport

Main impact

- Reduced feed intake
- Lower daily weight gain
- Worse FCR
- Temporary drop in egg production
- Reduced shell quality
- Lower uniformity of the flock

HEAVY

Typical situations

- Heat + infection
- Heat + poor ventilation
- Mycotoxins + disease challenge
- Transport + pathogen exposure

Main impact

- Immune suppression
- Mortality risk
- Sharp drop in eggs or growth
- Poor feed efficiency
- Liver and metabolic disorders
- More secondary infections

Why Drinking Water

Stress negatively influences performance, immunity, feed conversion and profitability

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FAST ABSORPTION

Nutrients are rapidly absorbed

even when feed intake decreases.



EFFECTIVE TOOL

Stabilizes birds

One of the most effective tools during challenging periods.

How it works

1. Stress factors
2. Feed intake decreases
3. **Drinking water support**
4. Birds stabilized in challenging periods

Prevention of Moderate Stress

LiquiPower B Mix for routine metabolic and recovery support

LiquiPower B Mix

Designed for predictable or moderate physiological and metabolic stress.

0.5–1.0 L per 1000 L drinking water

Application:

- 3–5 days during predictable stress periods;
- before/after vaccination;
- during mild heat stress.

WHEN TO USE

- Vaccination
- Feed changes
- Handling and transport
- Mild heat stress
- Peak production
- Temporary reduction of feed intake
- Recovery after mild disease challenge

EXPECTED BENEFITS

- Better stress tolerance
- Improved feed and water intake
- Stabilized production performance
- Faster recovery after vaccination
- Nervous system & metabolism support
- Better flock uniformity
- Improved feather condition & vitality

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B Mix: Functional Architecture

B vitamins support the high metabolic demand created by stress

B1	**Energy from carbohydrates** Appetite & nervous system	**Nicotinamide**	**Energy metabolism** Feed intake & stress resilience
B2	**Cellular energy** Growth, vitality & tissue recovery	**D-Panthenol + Calcium D-Pantothenate**	**Adrenal support** Energy, recovery, heat / production stress
B6	**Protein metabolism** Enzymes & immunity	**Biotin**	**Skin & feather integrity** Metabolic stability and claw health
B12	**Blood formation** Recovery & efficiency		

MODERATE STRESS



Goal:
maintain energy turnover, appetite, resilience and recovery capacity.

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Heavy Stress Strategy

LiquiPower A+SE + LiquiPower B Mix for broader protection

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LiquiPower A+SE

Antioxidant · Immune · Recovery Support

Vitamin A — mucosal integrity, first barrier against infections

Vitamin D3 — calcium & immune stability

Vitamin E + Selenium — strong antioxidant cell protection

Vitamin K3 — blood clotting & metabolism

B vitamins — energy metabolic recovery

Amino Acids:

- Lys · Met · Thr — growth & repair
- Tryptophan — stress tolerance
- Glutamic acid — gut health

+

LiquiPower B Mix

High B-vitamin for severe metabolic demand

Supports **energy metabolism**

Helps maintain **feed intake**

Reduces **metabolic exhaustion**

Supports **nervous system stability**

Improves **recovery capacity**

Why: during severe stress, B-vitamin requirements rise sharply as energy turnover and metabolic demand increase.

COMBINED RESPONSE

- **Stress resistance**
- **Stronger immunity**
- **Less oxidative damage**
- **Lower mortality**
- **Faster recovery**
- **Vitality & performance**
- **Vaccine protection**

Heavy Stress: Expected Benefits & Dosage

Support before, during and after demanding stress events

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Recommended dosage

A+SE	1.0–1.5 L / 1000 L drinking water
B Mix	0.5–1.0 L / 1000 L drinking water

Application period

- Typically 3–7 days depending on stress severity.
- Before, during, and after predictable stress events.
- Especially relevant during heat waves, vaccination programs, transport or disease challenge.

- ↓ Oxidative damage
- ↑ Immune response
- ↓ Mortality risk
- ↑ Recovery capacity
- ↑ Vaccination response
- ↑ Flock vitality

Moderate Heat Stress Trial

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30,000 Broilers Cobb • Turkey • 28–35 days • 35 ± 2°C

B Mix 1.0 L / 1000 L of drinking water for 8 hours

Parameter	Control	B Mix
BW (g)	2004	2040
BWG (g)	1961	1998
Feed Intake (g)	3075	3115
FCR	1.570	1.560
EPEF	333.3	357.9
Mortality %	8.75	4.38

−50%
Mortality
8.75% → 4.38%

+7.4%
EPEF
333.3 → 357.9

+36 g
Final BW
2004 → 2040 g

≈ 3,660 kg **additional live weight per 30,000 broilers**

Benefit came from both better growth and significantly reduced mortality during heat stress.

Severe Stress Trial

15,000 Ross 308 parent birds • Greece • 32 weeks • peak production

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Trial design

CONTROL 7,500 birds

No supportive treatment

TREATED 7,500 birds

B Mix + A+SE

1.0 L / 1000 L each **7 consecutive days** around vaccination

Parameter	Control	B Mix + A+Se
Body weight, g	3570	3548
Eggs / hen / day	0.83	0.89
Hatchability, %	89.7	93.0
AI antibodies, Log2	6.8	8.6
H/L ratio (10 days)	1.1	0.38

Simultaneous stress load

1. **Peak production**
2. **Heat stress**
3. **AI vaccination**

H/L ratio = stress biomarker

Heterophils / Lymphocytes

Low stress:
H/L ratio 0.2–0.4

Moderate stress:
H/L ratio 0.4–0.7

Severe stress:
H/L above 1.0 – immune suppression risk

Severe Stress Trial: Results

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The treated flock maintained lower physiological stress and stronger production performance

0.38
H/L ratio
Control: 1.10

0.89
Eggs / hen / day
Control: 0.83

93%
Hatchability
Control: 89.7%

8.6 Log2
AI antibody level
Control: 6.8 Log2

Interpretation

Stress resistance
Treated birds stayed in the low-stress range; control reached severe stress.

Production stability
Treated hens maintained higher egg output under stress.

Egg & embryo quality
Indicates better eggs, embryos and breeder condition.

Vaccine response
Higher antibody titer shows stronger seroconversion and immune response.

DRIVERS

Antioxidant protection
Vitamin E + Selenium

Metabolic support
High B-vitamin levels

Amino acid support
Recovery & immune competence

Economic Benefit

Severe stress trial · 7,500 parent birds · 7-day stress period

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STEP 1
Additional eggs

Difference per hen
0.89 − 0.83 = 0.06 eggs / hen / day

For 7,500 hens
7,500 × 0.06 = 450 eggs / day

Over 7 days
450 × 7 = 3,150 eggs

STEP 2
Additional chicks

Hatchability difference
93% − 89.7% = +3.3 pp

Additional DOCs from 3,150 eggs
3,150 × 3.3% = 104 chicks

STEP 3
Total saleable DOCs

Eggs + hatchability gain
3,150 + 104 = 3,254 DOCs

DOC price
0.59 USD per chick

ADDITIONAL REVENUE
3,254 DOCs × 0.59 USD

≈ 1,920 USD*

additional income for only 7,500 parent birds during this short stress period

* Study conducted in 2025. For an up-to-date estimate, recalculate using current prices and costs.

Conclusion

This field trial demonstrates that the combination can substantially reduce severe stress in broiler breeder flocks

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FLOCKS EXPOSED TO

- Heat stress
- Peak production pressure
- Vaccination challenge

THE COMBINATION

LiquiPower B Mix

+

LiquiPower A+SE

substantially reduces severe stress

THE COMBINATION IMPROVED

- Stress resistance
- Production
- Hatchability
- Vaccine response
- Overall economic performance

Practical Application Guide

Match the stress level with the appropriate LiquiPower intervention

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PREDICTABLE / MODERATE STRESS

B Mix

DOSAGE

0.5–1.0 L / 1000 L water

TIMING

3–5 days

USE FOR

Vaccination · feed changes · transport · mild heat · intake drop

SEVERE / COMBINED STRESS

A+SE + B Mix

DOSAGE

A+SE 1.0–1.5 L / 1000 L water
B Mix 0.5–1.0 L / 1000 L water

TIMING

3–7 days, by stress severity

USE FOR

Heat + infection · peak production · severe vaccine reactions · disease challenge

INTERVENTION PRINCIPLE

Water-first, targeted support

STRESS EVENTS TIMING

- **Before**
- **During**
- **After**

Act early, when feed intake and metabolic stability are at risk

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ADVANCED ANIMAL NUTRITION

PROTECT PERFORMANCE BEFORE STRESS COSTS YOU

LiquiPower turns drinking water into a precision intervention tool during critical production periods.

CONTACT US

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