The "Active Feeding" concept: a proactive nutrition strategy for healthier, more resilient pigs

"Active Feeding" is a modern approach to swine nutrition that goes well beyond the classic goal of "covering requirements". It treats feed as a strategic health tool, designed to build intrinsic resilience in pigs and to reduce the impact of the main biological and managerial stressors present in today's production systems. In practical terms, it is a precision-driven, proactive nutritional strategy that aims to prevent and mitigate disease by strengthening the animal "from the inside", through targeted modulation of physiological functions—especially those linked to gut integrity, immune competence, metabolic efficiency, and stress adaptation.

This paradigm is particularly relevant because feed represents the largest single cost in pork production (often cited as 60–75% of total costs). If the main expense on a farm is feed, then improving how feed protects animals against disease and performance losses becomes one of the strongest economic levers available to producers. Under this logic, Active Feeding reframes nutrition not as a routine input, but as an investment in health stability and profitability, turning the largest cost line into a primary defensive tool against the hidden costs of disease: lower growth, poorer feed conversion, higher mortality, more treatments, and reduced uniformity.

Beyond conventional nutrition: what makes "Active Feeding" different?

Traditional feeding programmes have historically focused on maximizing growth and meeting minimum nutritional needs. Active Feeding marks a conceptual shift: it positions nutrition as a front-line strategy for disease prevention and mitigation, rather than a supportive element that only becomes relevant after clinical problems appear.

This change of mindset has two important implications:

1. **Prevention is built into the formulation.** Instead of waiting for problems and reacting with therapeutics, Active Feeding designs diets that reduce susceptibility—especially in predictable "risk windows" such as weaning, regrouping, transport, heat stress, farrowing, and early lactation.
2. **Performance is treated as a health outcome.** In modern pig production, stable average daily gain, feed efficiency, and uniformity are not only economic indicators; they are also sensitive markers of how well animals cope with stressors and pathogen pressure. Active Feeding uses this principle to link biological resilience and farm economics into one integrated objective.

At the same time, Active Feeding does not claim that "feed alone solves everything". A key element of credibility is the explicit recognition that nutrition cannot replace

good management. Overcrowding, poor hygiene, inadequate ventilation, temperature instability, chronic disease pressure, or suboptimal water quality will inevitably limit the response to any advanced feeding programme. In other words, Active Feeding is designed to complement biosecurity, housing, health programmes, and stockmanship—never to substitute them. This integrated view positions the nutrition supplier not only as a feed provider, but as a technical partner within a broader farm-support model.

The biological foundation: gut health as the primary line of defence

The scientific heart of Active Feeding is the understanding that the gastrointestinal tract is far more than a digestive tube. It is a complex biological barrier and a major immune organ that regulates what can enter the bloodstream, how efficiently nutrients are absorbed, and how strongly the immune system is triggered. A stable, balanced gut microbiota produces metabolites that support intestinal function, modulate inflammation, and influence systemic physiology. When gut integrity or the microbiome is disrupted, pigs become more vulnerable—not only to enteric problems, but also to systemic and respiratory disease challenges.

This is why Active Feeding places strong emphasis on maintaining the intestinal microenvironment, particularly in young pigs and during transitions. Weaning is a classic example: it combines nutritional, social, and environmental stress with a sharp change in diet composition. The result is often reduced feed intake, impaired digestion, oxidative stress, barrier dysfunction, and increased susceptibility to pathogens. Active Feeding addresses this predictable vulnerability by designing diets that protect the gut at precisely the time when the gut is most fragile.

A useful way to explain the logic to producers is simple:

- **If the gut barrier works well**, fewer toxins and pathogens cross into circulation, inflammation remains under control, and nutrients can be directed to growth.
- **If the barrier fails**, the immune system is constantly activated, the animal pays a metabolic “inflammatory tax”, and performance declines even if the pig does not show dramatic clinical signs.

Active Feeding therefore targets gut health as the most cost-effective “upstream” control point to improve downstream outcomes: growth, uniformity, treatment rates, and overall farm stability.

Metabolic modulation, stress biology, and immunity: one connected system

A second key pillar is the recognition that nutrition, metabolism, stress responses, and immunity are interdependent. When pigs face an infectious challenge (viral, bacterial, or mixed), the immune response is essential—but it is also expensive in

metabolic terms. Energy and nutrients are diverted away from muscle deposition and toward immune activation, fever, acute-phase proteins, and tissue repair. If this response becomes excessive or poorly regulated, it amplifies damage, reduces feed intake, and worsens feed efficiency.

Active Feeding uses nutrition to shape the quality of the immune response—not to suppress immunity, but to make it more effective and less wasteful. In practice, this means providing a combination of nutrients and functional additives that support:

- **Barrier integrity** (so fewer triggers enter the system),
- **Immune readiness** (so the response is faster and more targeted),
- **Inflammation control** (so energy loss and tissue damage are minimized), and
- **Antioxidant capacity** (to counter oxidative stress, which is common during weaning and disease).

The approach relies on biologically plausible mechanisms rather than generic claims. For example, "functional amino acids" such as arginine, cysteine, glutamine, and glutamate are used not simply as building blocks for protein synthesis, but because they are linked to mucosal immunity, gut barrier function, and redox balance. Together with trace minerals, vitamins, probiotics, organic acids, and other bioactive compounds, they support a coordinated improvement of gut function and immune competence.

The three core principles: precision, proactivity, and resilience

Active Feeding can be summarized operationally through three guiding principles.

1) **Precision nutrition:** Precision means that diets are tailored to the animal's physiological stage (suckling, weaning, starter, grower, finisher, gestation, lactation) and adjusted for genetics and farm-specific conditions. The objective is not only meeting nutrient requirements, but matching nutrient form, digestibility, and functional profile to the biological needs of each stage. Precision is also about reducing "nutritional noise": avoiding excesses or imbalances that can unintentionally support pathogen growth or increase metabolic stress.
2) **Proactive health management:** Proactivity means building protection before problems emerge. This principle has become even more relevant in Europe due to the strong push to reduce antimicrobial usage and to move away from historical crutches such as high zinc oxide programmes in the post-weaning phase. Active Feeding aligns with this direction by focusing on natural immunomodulators, gut-supporting strategies, and integrated

programmes that reduce the incidence and severity of disease rather than relying on reactive treatments.

3) **Enhanced resilience:** Resilience is the final goal: pigs that maintain performance stability despite inevitable stressors—temperature fluctuations, regrouping, co-infections, and physiological challenges such as weaning and farrowing. In farm terms, resilience means fewer "crashes", smoother growth curves, lower variability within batches, fewer secondary infections, and reduced economic volatility. The value proposition is straightforward: a resilient pig is cheaper to produce, easier to manage, and more predictable in output quality.

A practical way to describe Active Feeding to producers

For a professional readership, a clear message is that Active Feeding is not a single additive or a "magic ingredient". It is a programme logic that combines:

- stage-specific formulation,
- gut barrier protection,
- microbiota support,
- immune modulation,
- metabolic efficiency, and
- stress reduction,

into one coherent feeding philosophy. The producer does not need to become an immunologist to understand it: the farm just needs a feeding strategy that makes pigs harder to destabilize and faster to recover.

A compelling example often used to illustrate the concept is the growing evidence around microbiota–immunity connections (including gut–lung interactions in respiratory challenges): modulating the gut ecosystem and reducing inflammatory load can translate into better clinical resilience and improved feed efficiency during disease pressure.

Conclusion: why this "revolution" matters now

Active Feeding responds to the central reality of modern pig farming: biological pressure is increasing (higher productivity, more sensitive genetic lines, tighter margins), while the toolbox of antibiotics and pharmacological shortcuts is shrinking. In this context, nutrition becomes one of the few scalable, daily, farm-wide interventions available.

The concept is therefore best understood as a paradigm shift: nutrition moves from being a cost of production to being a strategic instrument for health stability,

reduced therapeutic dependence, improved welfare, and stronger economic performance. If implemented alongside good management, Active Feeding turns feeding into a proactive system that builds pigs that are not only productive, but fundamentally more resilient.