

## DORB in Livestock Feed: Quality, Safety and Responsible Use



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### Abstract

De-Oiled Rice Bran (DORB) is an important agro-industrial feed ingredient produced after oil is extracted from rice bran. Its value lies in the nutrients that remain available after processing, but its practical usefulness depends on much more than crude protein. Fibre, sand silica, acid-insoluble ash, moisture, total ash, physical condition, storage and formulation context all influence the quality decision. This article explains how farmers, feed buyers and feed manufacturers can evaluate DORB responsibly, avoid common procurement mistakes and use the material as part of a balanced ration. The emphasis is on buyer education, batch transparency and qualified nutritional supervision rather than on any single supplier or guaranteed animal response.

### Introduction: from rice-milling by-product to feed ingredient

Rice milling creates several useful fractions, including rice bran. When crude rice bran oil is extracted, the remaining solid material is known as De-Oiled Rice Bran, commonly abbreviated as DORB. It can contribute protein, energy, phosphorus, B-complex vitamins, vitamin E and fibre to animal-feed systems. Because rice is processed in large quantities, DORB also represents an opportunity to convert an agro-industrial by-product into a useful component of the livestock economy.

However, calling DORB a feed ingredient does not mean that every batch has the same value. Processing conditions, raw-material freshness, cleaning, oil extraction, blending, transport and storage can all alter the final material. Two lots may appear similar in colour or carry similar crude-protein numbers while differing in fibre, mineral contamination, moisture or digestibility. Responsible use therefore begins with a shift in mindset: DORB should be evaluated as a quality-controlled ingredient, not as an undifferentiated filler purchased only on rate.

### Why crude protein is only the beginning

Crude protein is usually the first number a buyer notices because it appears to offer a simple comparison. It is important, but it is not a complete measure of feeding value. The test estimates protein from nitrogen; it does not by itself prove how much of that nitrogen will be digested and used by the animal. Protein may also be affected by processing damage, poor storage or non-protein nitrogen that makes the number look stronger than the underlying nutrition.

The more reliable approach is to read a batch report as a pattern. A practical review should consider crude protein together with fibre, sand silica, acid-insoluble ash (AIA), moisture, total ash, residual oil, energy estimates, aflatoxin where relevant, and physical observations such as smell, colour, texture and free flow. If one attractive number is contradicted by several warning signs, the buyer should pause and investigate rather than approve the lot automatically.

### Fibre: nutrition and procurement information in one parameter

Some fibre is naturally present in rice-bran-derived ingredients. The concern is excessive or poorly digestible fibre, especially when it indicates husk, sawdust or other non-nutritive material. In poultry and fish diets, excess fibre can dilute usable energy and reduce the predictability of feed conversion. Ruminants can tolerate more fibre because of rumen fermentation, but lignified or silica-heavy material still adds bulk without equivalent nutritional value.

As a buyer-awareness reference, premium DORB is often discussed around 9-11 percent fibre, while values above approximately 13 percent deserve closer investigation. These are practical checkpoints, not a substitute for the species-specific specification agreed between a buyer, supplier and nutritionist. Fibre should never be read in

isolation; its meaning becomes clearer when compared with sand silica, AIA, moisture and the material's physical condition.

#### **Sand silica and ash: identifying non-nutritive load**

Sand and silica add weight but do not add useful nutrition. High sand silica can result from soil, dust, rice husk, sawdust or inadequate cleaning. Acid-insoluble ash is useful because it helps identify mineral matter that remains undissolved in acid. Total ash, on the other hand, measures the inorganic residue after a sample is burned and may include both natural minerals and contamination. The interpretation must therefore consider the combination rather than treating every ash value as proof of adulteration.

A commonly used quality-awareness checkpoint is sand silica below 3 percent for a premium batch. A value substantially above that level should trigger a request for clarification, representative sampling and confirmatory testing. The commercial issue is straightforward: a buyer paying feed price for non-nutritive material is paying for weight rather than useful nutrition. In fish farming, excess mineral material may also contribute to undesirable pond loading; in poultry, it can reduce effective nutrient density; in cattle, it can lower ration efficiency even when higher fibre is tolerated.

#### **Moisture and storage: quality after the laboratory**

DORB is an organic, moisture-absorbing material. A sound batch can deteriorate after dispatch if it is placed directly on a damp floor, pressed against a wet wall, stacked without air movement or left uninspected during humid weather. Clumping, local heating, a musty smell, rancidity, fungal growth and mycotoxin risk can develop in pockets within a stack. The outside of a bag may look normal while the inner or lower bags are already affected. Moisture below 11 percent is a useful quality and storage checkpoint, while lower moisture may provide a safer starting point for longer storage when warehouse conditions are appropriate. Buyers should use pallets or a moisture-resistant base, leave space from walls, maintain inspection lanes, protect bags from leaks, keep stacks ventilated and follow first-in, first-out rotation. Torn or wet bags should be isolated immediately, and surrounding stock should be inspected rather than simply mixed together.

#### **Adulteration: why an informed buyer matter**

Adulteration is not only a laboratory problem; it is a supply-chain and animal-health problem. Rice husk, sawdust, sand, silica-rich material, dolomite, marble powder, salt or inferior by-products may be introduced to increase weight, alter apparent protein or hide poor processing. Urea and other non-protein nitrogen sources are particularly concerning when a buyer relies on crude protein alone. They can raise a nitrogen-based reading without providing the balanced protein and energy contribution required in a poultry or aquaculture ration.

The buyer's protection is a combination of physical and documentary checks. Request a batch-specific report rather than a generic certificate. Match the report to the lot or truck. Sample from multiple bags and stack positions, mix the portions properly, retain a sealed counter-sample and record the lot number. Inspect smell, colour, texture, flow, clumping and unusual dust. When the pattern is inconsistent, seek independent testing or qualified technical advice before using the material.

#### **Species and formulation context**

DORB does not have one universal inclusion rule. Poultry diets are sensitive to energy density and fibre. Fish diets require attention to digestibility, feed conversion and pond-water consequences. Dairy and other ruminant diets use the rumen differently, but still require attention to balance, mineral supply and the quality of accompanying ingredients. The same batch may therefore be acceptable for one formulation only after a nutritionist has considered the animal species, age, production stage, health status, local ingredients and the complete ration.

DORB should not be treated as a one-for-one replacement for every protein or energy ingredient. Its practical role is to contribute to a balanced formula at a suitable inclusion level, with quality parameters and animal response monitored. Final inclusion and any change in ration should be approved by a qualified animal nutritionist or veterinarian responsible for the feeding programme.

#### **A responsible DORB purchasing checklist**

Ask for the current, batch-specific laboratory report.

Read protein with fibre, sand silica, AIA, moisture and ash rather than alone.

Compare the report with the physical lot and the purchase specification.

Sample multiple bags and retain a sealed reference sample.

Check for fresh odour, uniform colour, free flow, clumps, heating and unusual dust.

Store on pallets, away from walls, with airflow and first-in, first-out rotation.

Escalate suspected contamination or spoilage to an independent laboratory and qualified adviser.

### Conclusion

DORB can support livestock-feed economics and resource efficiency when its quality is understood and its use is disciplined. The right question is not simply, “What is the protein percentage?” It is, “Does this batch show a consistent pattern of usable nutrition, low non-nutritive load, controlled moisture, sound storage and suitability for the intended ration?” Better answers come from transparent reports, representative samples, careful warehouses and qualified formulation decisions. Quality awareness protects the farmer first and helps the feed industry use an important rice-based ingredient with greater confidence.

