

Improved Digestibility, Improved Protein Content

Improved protein content in animal feed can positively impact productivity, such as the quality and quantity of meat and milk. With the increase in global demand for meat and dairy products, the increase of protein in livestock diets is extremely important. Key to the absorption of protein in livestock diets is the improved digestibility of protein. For protein to be utilised efficiently by livestock i.e. consumed and converted into body protein and resulting in bigger and better-quality meat, certain amino acids need to be present. Thus, to maximise protein deposition in livestock, the required amino acids must also be included in the feed. Amino acids have been added to livestock feed for over 40-years. The most common amino acids added to feeds are Methionine, Lysine, Threonine, and Tryptophan. With the expansion of inexpensive plant-based proteins (soybeans etc.) and increasing demands for meat, plant-based proteins offer an alternative or supplement to amino-acids, contributing to greater efficiency of conversion of proteins from feed to meat. Plant-based proteins also require less monitoring than synthetic additives, but amino acids are often needed to maintain digestibility. Improved livestock productivity and conversion is climate smart because there is more efficient conversion of food to weight gain and less livestock pressure on land, supporting a more efficient value chain.

MOST SUITABLE AGRO-ECOLOGICAL CONDITIONS

Value chain



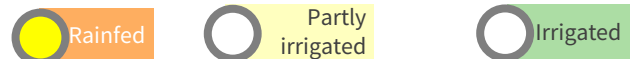
Soil texture



Climatic zone



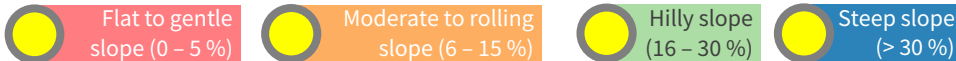
Water source



Annual average rainfall (mm)



Topography



MOST APPROPRIATE CONDITIONS AND REQUIRED INPUTS

Farming system

Does it require collective action



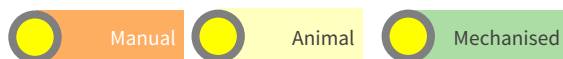
Characteristics



Farm size (ha)

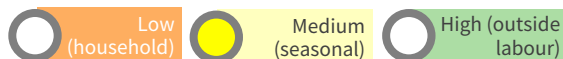


Mechanisation



Human resources

Labour intensity - level of effort

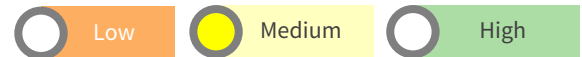


Gender/youth smart (low investment/low labour requirements)

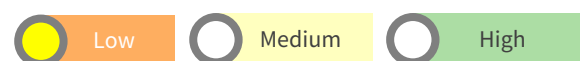


Financial resources

Initial investment



Maintenance Costs



Access to finance capital or credit required



Enabling Environment

Extension support



Access to inputs



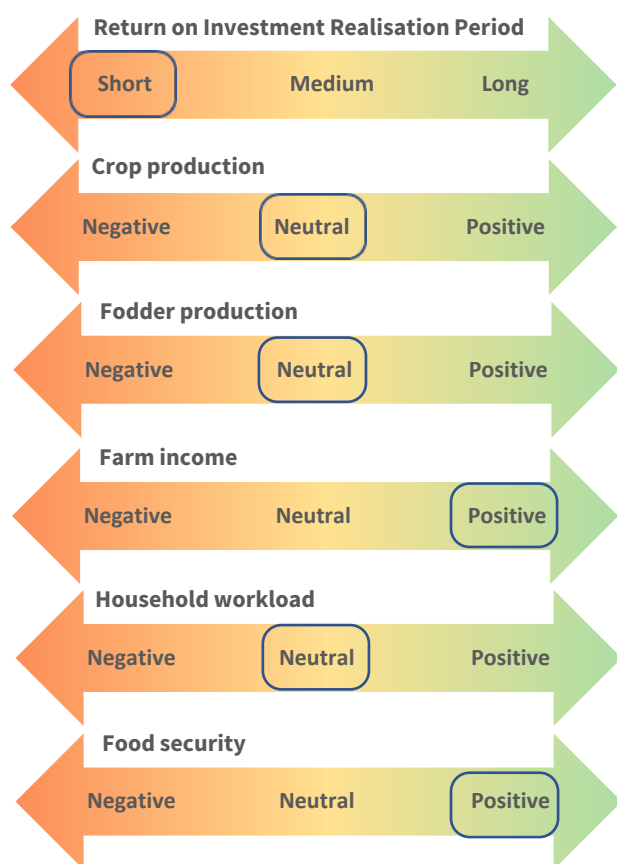
Market access



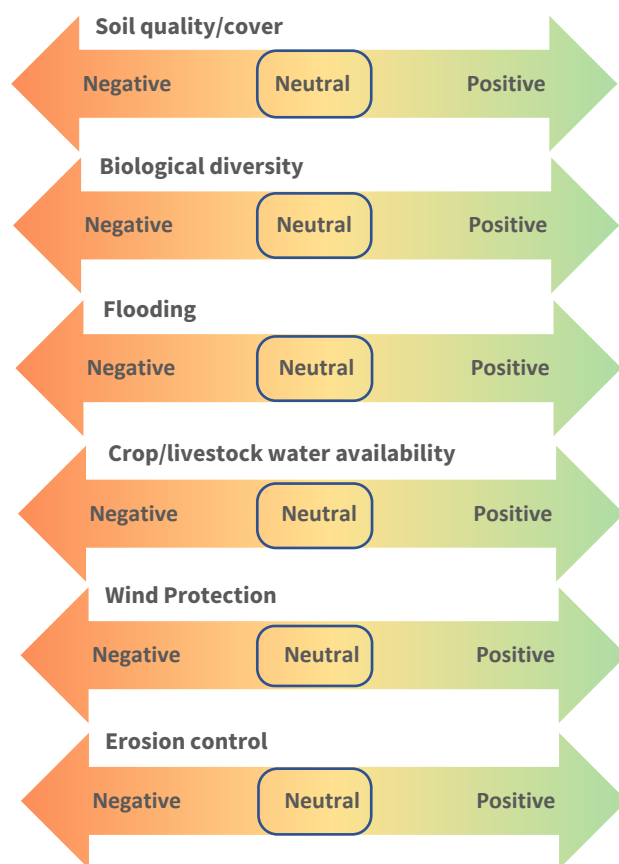
The purpose of this technical brief is to guide where this **practice, technology or strategy** could be applied. It may be applicable in other circumstances, but this brief focuses on where it is possibly **most suitable**. Content is general, and should be contextualised depending upon locality. The brief provides an overview, details of appropriate agroecological characteristics, appropriate conditions and inputs, possible outcomes and impacts, how the **practice, technology or strategy** should be applied, potential benefits and drawbacks, and provides suggestions for further reading in terms of CCARDESA materials and other sources, including those used to develop this technical brief.

POSSIBLE IMPACT/OUTCOMES

Socio-Economic Impacts Positive or Negative



Ecological Impacts Positive or Negative



These descriptors indicate whether the practice, technology or strategy has a positive, neutral, or negative impact or outcome. Those with no box are deemed not-applicable.

TECHNICAL APPLICATION

To effectively implement Improved digestibility, Improved protein content:

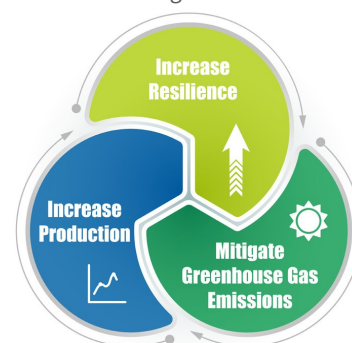
- **Step 1:** Inform farmers of the possible benefits of increased dietary protein in their livestock in order to implement dietary supplements.
- **Step 2:** Identify a supplement contain the key amino acids - Methionine, Lysine, Threonine, and Tryptophan, in consultation with suppliers and veterinarians.
- **Step 3:** Added supplements to green plant residue (silage) as guided on packaging or by supplier to increase the efficiency of protein in livestock. Ensure that supplement amounts are suitable for animals and the type of feed being supplemented.
- **Step 4:** Ensure that supplements sourced will be consistently available from suppliers in the region. These supplements can be purchased at most agricultural shops, including rural areas.
- **Step 5:** As a low-cost option, farmers can formulate rations specific to their livestock. These rations are only for domestic use and not commercial.

CLIMATE SMART AGRICULTURE OUTCOME(S)

Reflecting how this **practice, technology or strategy** contributes to Climate Smart Agriculture outcomes

Less feed is required to reach the same levels of production. Potentially this means less livestock pressure on land.

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SUMMARY/KEY ISSUES

Benefits

- Protein absorption in livestock contributes to increased meat and milk production.
- Less livestock pressure on land.

Drawbacks

- Synthetic amino acids require constant monitoring.

REFERENCE MATERIAL

CCARDESA Related Content

- CCARDESA, 2019. Technical Brief 14, Climate Smart Diet Management Options for Livestock.

Additional Information

- CGIAR, 2011. [Animal feeds component: Background proposals for the CGIAR Research Program on Livestock and Fish](#). Montpellier, France.
- Food and Agriculture Organisation (FAO), 2002. [Protein Sources for the Animal Feed Industry](#). Rome, Italy.