Outline of the presentation

- What is the need of a new concept
- What is the concept of Sustainable Animal Diets (SAD)
- What is new in this concept
- Some options for its implementation
Feed: place in sustainable livestock development

- Product quality & safety
- Reproductive efficiency
- Environment
- Animal welfare
- Animal health
- Land use and land use change
- Water use & water pollution
- Economic viability (driver of production systems)
Feed Production and the environment

- Area dedicated to feed-crops
  -- 33% of total arable land

- Irrigation of feed crops consumes
  -- Over 90% of total global human water use in livestock sector

- Production, processing and transport of feed account
  -- 45% of GHG from livestock sector

- $N_2O$ through the fertilization of feed crops & deposition of manure on pastures
  -- represent together 50% of feed emissions = 25% of livestock sector’s total emissions

- An increase in feed digestibility of 10% units
  -- decrease GHG emission/kg of milk or meat by 25%
Approximately 140 million tonnes of coarse grains used for biofuel production

Increased volatility in price of feed

High cost of feed

Feed driven land use change

Currently 1/3 of total grain production goes for livestock feed

Feed and feeding must change
A holistic view of how this should happen is necessary
Sustainable animal diets

Core traits:
- Balanced in all nutrients, free from deleterious components, meet production objective, generate animal products safe for human consumption

Economic
Main feature: promotes economic growth

Environmental
Main feature: Protects environment & natural resource base

Socio-cultural
Main feature: Socio-culturally acceptable and beneficial

Ethical
Main feature: In harmony with animal welfare & food security

Ruminants: Is no grains an option?
Non-ruminants: Aim at reducing grains, and if possible use non-food grade grains, novel feeds

Current status in most situations
What is new in the concept

- a thematic focus -- improving feed (nutrient) use efficiency while conserving the environment, biodiversity and natural resources;

- multi-dimensional scope, embracing socio-cultural, ethical and environmental dimensions in addition to the economic one;

- an action-oriented holistic approach, targeting change in practices; and

- multi-stakeholder participation, harnessing synergies and complementarities.
Objectives of the survey

- Prioritise the main constituent elements of the concept; and

- Take opinion on how to translate this concept into action by integrating its elements/components into sound management practices.
Survey results

- Global analysis
- Region-wise analysis
- Sector-wise analysis
Global analysis
Region-wise Distribution of Respondents

- East or Southeast Asia: 114
- Europe: 338
- Latin America/Caribbean: 184
- North Africa/Middle East: 63
- North America: 91
- Oceania: 59
- South Asia: 126
- Sub-Saharan Africa: 220

Total: 1195
Relative importance of SAD elements that aim to protect environment and natural resource base (Planet dimension of the sustainability)

1=Not important   2=Some what Important   3=Reasonably important   4=Important   5=Extremely Important

- SAD should not 'Use antibiotic or synthetic growth promoters'
- SAD should 'Preferably use locally available feed resources'
- Production of SAD and its feeding should 'Use minimum energy'
- Production of SAD and its feeding should 'Use minimum water'
- Production of SAD and its feeding should 'Leave minimum carbon footprint'
- Production of SAD and its feeding should 'Minimize water pollution'
- Production of SAD and its feeding should 'Minimize air pollution'
- Production of SAD and its feeding should 'Enhance resilience of the livestock production system' floods, earthquake etc.)
- Production of SAD and its feeding should not 'Lead to deforestation and land degradation'
- Production of SAD and its feeding should 'Enhance or at least do not decrease biodiversity'
- Production of SAD and its feeding should 'Respect landscape diversity and aesthetic value'
Relative importance of socio-cultural elements of SAD that provide benefits for people (People dimension of the sustainability)

1=Not important    2=Some what Important    3=Reasonably important    4=Important    5=Extremely Important

<table>
<thead>
<tr>
<th>Relative Importance</th>
<th>Importance Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production of SAD and its feeding should 'Consider social aspects of rearing livestock'</td>
<td>3.83</td>
</tr>
<tr>
<td>Production of SAD and its feeding should not be 'Culturally offensive to producers and consumers of the animal products'</td>
<td>3.79</td>
</tr>
<tr>
<td>Production of SAD and its feeding should 'Respect perceptions, beliefs, values, taboos and be socially acceptable'</td>
<td>3.58</td>
</tr>
<tr>
<td>Production of SAD and its feeding should 'Empower women'</td>
<td>3.43</td>
</tr>
<tr>
<td>Production of SAD and its feeding should 'Break social barriers and promote social harmony'</td>
<td>3.37</td>
</tr>
<tr>
<td>Production of SAD and its feeding should 'Avoid exacerbation of unfavorable legal processes' (e.g. 'land grab')</td>
<td>3.99</td>
</tr>
<tr>
<td>Production of SAD and its feeding should 'Be a part of corporate social policy'</td>
<td>3.65</td>
</tr>
<tr>
<td>Production of SAD and its feeding should 'Promote and preserve local knowledge' (e.g. biodiversity management)</td>
<td>4.05</td>
</tr>
<tr>
<td>Production of SAD and its feeding should not 'Compete with human food'</td>
<td>4.02</td>
</tr>
<tr>
<td>Production of SAD and its feeding should 'Result in animal products that are affordable to consumers'</td>
<td>4.21</td>
</tr>
</tbody>
</table>
Relative importance of economic elements of SAD (Profit dimension of the sustainability)

1=Not important  2=Some what Important  3=Reasonably important  4=Important  5=Extremely Important

Production of SAD and its feeding should 'Enhance Benefit : Cost ratio for all stakeholders'

Production of SAD and its feeding should take into account 'Environmental and social costs of negative externalities such as environmental degradation, greenhouse gas emissions and loss of biodiversity'

Production of SAD should not 'Enhance volatility in prices of feed ingredients'
Relative importance of other elements of SAD

1=Not important  2=Some what Important  3=Reasonably important  4=Important  5=Extremely Important

- Use/feeding of SAD should be given incentives
- Production of SAD should be given incentives
- SAD should ‘Use feed ingredient produced through high input…
- SAD should ‘Use GMO crops’
- SAD should ‘Use food grains in ruminants feed’
- SAD should ‘Use food grains in monogastrics feed’
- SAD should ‘Reuse food waste after ensuring its safety’
- SAD should ‘Contain a feed ingredient produced using public…

Scores:
- Use/feeding of SAD: 3.57
- Production of SAD: 3.59
- Use feed ingredient: 2.51
- GMO crops: 2.52
- Use food grains in ruminants: 2.75
- Use food grains in monogastrics: 3.21
- Reuse food waste: 4.21
Extent of agreement on integration of the ethical dimension into SAD

- Strongly Disagree: 1.34%
- Disagree: 2.43%
- Neither Agree nor Disagree: 12.05%
- Agree: 49.04%
- Strongly Agree: 35.15%
Who should take initiative first to restructure feed production and use system to meet requirements for SAD?

1=Not important   2=Some what Important   3=Reasonably important   4=Important   5=Extremely Important

- **Regulatory bodies**: 3.94
- **Civil societies**: 3.59
- **Farmers and farmers’ associations**: 4.29
- **Scientists**: 4.25
- **Industry**: 3.92
- **Consumers (claiming for more sustainable…)**: 3.70
How to operationalise SAD?

1=Not important  2=Some what Important  3=Reasonably important  4=Important  5=Extremely Important

- Develop guidelines/good practices for SAD
- Encourage industry to develop voluntary guidelines and to follow them
- Introduce incentives for farmers for using SAD
- Introduce incentives for feed industries to produce SAD
- Make consumers aware of the benefits of SAD
- Make civil societies aware of the benefits of SAD
- Create environmental certifications for products obtained by using SAD
- Achieve broad stakeholder engagement
- Secure corporate commitment to SAD
- Promote "green procurement practices" among customers
- Promote "green procurement practices" among customers

Score ratings:
- 3.00
- 3.50
- 4.00
- 4.50
- 5.00

Scores:
- Promote "green procurement practices" among customers: 3.83
- Achieve broad stakeholder engagement: 4.10
- Secure corporate commitment to SAD: 3.78
- Create environmental certifications for products obtained by using SAD: 3.91
- Make civil societies aware of the benefits of SAD: 3.99
- Make consumers aware of the benefits of SAD: 4.28
- Introduce incentives for feed industries to produce SAD: 3.64
- Introduce incentives for farmers for using SAD: 3.86
- Encourage industry to develop voluntary guidelines and to follow them: 3.90
- Develop guidelines/good practices for SAD: 4.20
Casting of 100 votes to sustainability dimensions of SAD
Region-wise analysis
Sector-wise analysis
(Not presented in the interest of time)
Sustainability quadrant – Current and Ideal situations

A journey, following the desired change that all stakeholders agree with.

Aims at getting better and better with time.
Study has helped to:

a) set direction of positive change
b) priorities various elements
c) identify sectors that should take initiative
d) Identify modes to put the concept in practices
• A global framework for multi-criteria evaluation of feed resources

• A basis for monitoring R&D priorities of R&D institutions and donors, and to align them to the needs of producers

• A framework to identify future R&D priorities, driven by sustainability principles.