Strategy to enhance the production and productivity of buffaloes for the growth of Livestock Gross Domestic Product (LGDP) of Nepal

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Background

• Agriculture and forestry contribution to National GDP = 31.23%, 651,469 million NRs (MOE, 2016)
• Agriculture = 26.8% to the National GDP
  o Around 13% of the contribution comes from the livestock sector;
  o Around 6% comes from the buffaloes (MOAD, 2016).

Livestock Statistics

FY 2072/73 (2015/16)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>7.30 million</td>
</tr>
<tr>
<td>Buffalo</td>
<td>5.168 million</td>
</tr>
<tr>
<td>Sheep</td>
<td>0.8 million</td>
</tr>
<tr>
<td>Goat</td>
<td>10.98 million</td>
</tr>
<tr>
<td>Pig</td>
<td>1.29 million</td>
</tr>
<tr>
<td>Poultry</td>
<td>68.63 million</td>
</tr>
<tr>
<td>Milking Cattle</td>
<td>1.02 million</td>
</tr>
<tr>
<td>Milking Buffalo</td>
<td>1.35 million</td>
</tr>
<tr>
<td>Total milk produce</td>
<td>1.911 million mt</td>
</tr>
<tr>
<td>Total meat produce</td>
<td>344 thousand mt</td>
</tr>
</tbody>
</table>

Improved Cattle: 13.0%  
Improved Buffalo: 25.9%

Trend of milk production in Nepal

Buffalo milk production (ltr per animal per year)

Local: 900 ltr  
Improved: 1500 ltr
Buffaloes: A black gold in Nepal

- Reared in plain, mid hills and high hills with minimum cost of investment
- Source of family income
- Source of nutrition
- Indigenous breeds
  - Lime
  - Parkote
  - Gaddi
- Non-descript terai buffalo
- Murrah buffalo breeds
- Crossbred buffalo (mainly murrah bloodline)
Ministry of Livestock Developments’ Commitments

**40 point commitments** of MOLD during its establishment and declaration of self sufficiency in eggs, meat and milk in one, two and three years respectively. (2015-2018)

**Point no 13**

**Improvement of genetic potential: Basis for improving productivity**

- Doubling improved breeds population in 5 years time
- Promoting Artificial Insemination
- Frozen semen from improved breeds
- Liquid nitrogen production, storage, distribution and use

Department of Livestock Services

- **DLS objective and strategies**: promoting production and productivity of different livestock as well as conservation of indigenous breeds
- Set up 4 mission programs: Artificial insemination, Forage mission, Goat and pig mission programs.
- Areas of working: 4 pillars to enhance the production and productivity
  - Animal health
  - Animal breeding
  - Animal nutrition and
  - Market promotion of live animal and products

Breeding Policy

- **Identification, development and extension** of suitable breeds of livestock and poultry for the suitability of different geographical environment and resources.
- Increment of productivity of livestock and poultry through **increase of genetic capabilities**.
- Conservation, utilization and improvement of animal biodiversity.
- Development of livestock and poultry resource centers through public private partnership.
- Conservation, promotion and utilization of high value livestock like deer, musk, yak, chyangra etc.

Buffalo Genetic Improvement Program (BGIP)

- **Implemented by DLS and NARC in collaboration**

<table>
<thead>
<tr>
<th>Milk production</th>
<th>Evening</th>
<th>Morning</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average (MY/day)</td>
<td>2.7</td>
<td>3.2</td>
<td>5.8</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.87</td>
<td>0.97</td>
<td>1.73</td>
</tr>
<tr>
<td>SE</td>
<td>0.02</td>
<td>0.02</td>
<td>0.04</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fat %</th>
<th>SNF %</th>
<th>Protein %</th>
<th>Conductivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>6.1</td>
<td>8.4</td>
<td>3.2</td>
</tr>
<tr>
<td>Std. Dev</td>
<td>2</td>
<td>3.4</td>
<td>0.7</td>
</tr>
<tr>
<td>SE</td>
<td>0.1</td>
<td>0.1</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: NARC, 2016
Youth Focused Livestock Production Program

- Objective: To attract youths in commercial livestock farming (cattle and buffalo) for milk production
- Implemented in 45 districts by providing small grants of 2-4 hundred thousands for farmers having more than 3 buffaloes
- FY 2015/16: Beneficiary farms = 389

Buffalo Conservation

- In-situ conservation in 8 districts.
- Conservation, promotion and utilization policy
- Encouraging farmers for conserving the genetic values of these breeds
- Identification of special characters of these breeds and identify the comparative advantage for selection and breeding.
- Providing grants for AnGR in these conservation sites.
- Community based interaction and awareness programs
- Health programs, vaccination deworming etc.
- Forage seed distribution

Al Mission Program

- Objective: Improve genetic potential of animals
- Program Period: FY 2010/11 – 2015/16 - 5 years
- Total buffalo semen used: Around 5,00,000
- Buffalo: semen of Murrah buffaloes
- Production: National Livestock Breeding Center (NLBC), Pokhara
- Total female calves born: 1,00000
- Estimated milk production/year

8 liter/day
x 250 days = 2000 liter/buffalo
x 100,000 = 2,00000 mt. annually

Mid hills highway and Hulaki (plain terai connecting) Highway focused milk production program

- Increase in 32% in the number of improved buffaloes
- Terai = 10 districts
- Mid Hills = 8 districts
Management of Nucleus herd

- **Livestock Development Farm Pokhara** acting as nucleus herd of Murrah Buffaloes.
- Implementing buffalo genetic improvement program and as a buffalo resource center.
- Rearing breeding bulls.
- Distributed 25 breeding bulls annually.
- The farm contained 214 buffaloes.
- Breeding Calves rearing scheme by selection method.
- Maintained as packet area of buffaloes in but reach stations.

Buffalo resource center/Intensive resource center

- **Public-Private Partnership** model
- Implemented in 18 districts of terai and hills
- Development of pocket area working as a resource center
- Main support in infrastructure development
- Three (3) intensive resource center and two resource center developed.
- Distribution of improved buffalo bulls from resource center.

Breeding bull resource center

- **Aim**: Bull resource center to improve genetic potential of non-descript buffaloes.
- Implemented in Kapilbastu district
- **Public-Private Partnership** model
- One resource center is established with 25 Murrah buffalo bulls.
- Community breeding bull centers

In-country semen production

- National Livestock Breeding Center (NLBC), Pokhara and Lahan
- Murrah semen, frozen
- Producing and distributing frozen semen, liquid nitrogen
- A total of 30 Murrah breeding bulls
- Produced 150,000 buffalo frozen semen annually.
- Technical and consulting service to unproductive and infertile animals
- 25000 semen and 20 bulls imported for BGIP and climate change adaptation project.

Trend of Artificial Insemination in Buffalo

- Number of AIs:
  - 0 - 1000
  - 1000 - 2000
  - 2000 - 4000
  - 4000 - 6000
  - 6000 - 10817

AI coverage for buffaloes in different districts of Nepal FY 2073/74
**Buffalo calf fattening for meat production**

- **Aim:** to address the growing need of buffalo meat requirement in PPP model.
- **Implemented in 74 package programs in different districts.**
- **Rearing of 2000 buffalo bull calves**
- **Meat production contribution:** Annual 600 MT
- **Research based program in these districts:** Nawalparasi, Kaski, Makawanpur, Dhanusha and Siraha.
- **Constraint:** Lack of feed formulation for meat buffaloes.

**Dry-period/Unproductive buffalo protection Scheme**

- **High genetic potential buffaloes**
- **Support in:**
  - Expert technical service
  - Hormonal and other medical treatment
  - Infrastructure development
  - In 9 districts, 450 buffaloes protected from early slaughter and 360 calves were made productive.
  - Medical treatment as advised by experts.
  - **DOOR TO DOOR PROGRAM.**

**Heifer buffalo rearing program**

- **Initially launched in Nawalparasi and Dadeldhura.**
- **For livelihood generation, grant support to dalit backward female.**
- **More than 50 buffalo heifer reared in this program.**
- **Program extended to 5 more districts in FY 2016/17.**
- **Small Farmers’ subsidized grants.**
- **Scheme to be launched in plain hulaki and mid hill highways.**

**Forage mission program**

[Map of Nepal showing forage mission program]

**Miscellaneous programs**

- **Distribution of milking machine** as a grant to promote commercial production
- **Output based subsidy** in milk production
- **Animal health activities, including vaccination (FMD, HS/BQ) and deworming program.**
- **Support to farmers from DLSO including free drugs in aspect to animal health**
- **Model buffalo shed establishment**
- **Nutritional support** of parturition buffaloes
- **Animal insurance**
- **Soft bank loan on 5 % interest.**

**Constraints/Issues/Challenges**

- **Climate change** and poor adaptation
- **Issues in proper performance recording in BGIP program**
- **Technical manpower** limited.
- **Long calving interval** making buffaloes a meat animal.
- **Shortening of milking** days: 150-200 days, very less research. **Seasonal milkers**
- **Low conception** rate in artificial insemination.
- **Non-descript bulls in community and no screening on health and reproductive ability.**
Way forward

- Development of new Breeding Policy
- Commercialization
- Genetic interventions
- Nutritional supplementation
- Studying effects of climate change and its effect minimization
- Product diversification of buffalo milk and meat as niche products.

Buffaloes are precious in Nepal, need huge investment for Research and Development (R&D)

Thank you