Increasing the Yield, Quality and Preservation of Fodder with Location Specific Improved Forages in Ethiopia

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OUTLINE

• Background
• Overview of Project Activities
• Implementation Approaches
• Achievements/Results
• Next step
Why feed intervention necessary in Ethiopia?

Ethiopia

- Largest livestock population in Africa
  - Critical elements of FS and base of livelihood
- Diverse agro-ecologies
- High human population

# The performance of the livestock sub-sector is not impressive
A number of constraints that need technical solutions and policy interventions

Feed shortage both in quantity and quality is the most limiting factor

Unless feed availability and quality is improved, livestock development goals will not be realized
OVERALL PROJECT OBJECTIVES

- To assess and validate the potential of location-appropriate, productive and high quality cultivated forages to reduce the feed gap and examine the extent to which they can improve milk production by dairy cows

- To compare forage preservation and crop residue improvement strategies for bridging the feed gap and increasing milk production
Overview of Project activities

- Identification of farmers for on-farm trials
- Preparation of on-farm research protocol
- Crop residue quality improvement studies
- Implementation, Monitoring, Data collection
- Review of PhD/MSc research proposals
- Monitoring of progress of PhD and MSc studies

- Assessment of feed availability, management and utilization in project areas
- Animal feeding trials (on-station and on-farm)
- Implementation, Monitoring, Data collection
- Monitoring of progress of PhD and MSc studies

- Project awareness to stakeholders
- Identification of project implementation sites
- Preparation of research protocols (seed multiplication, agronomic and forage opportunity cost studies)
- Implementation, Monitoring, Data collection
- Recruitment of PhD and MSc students

- Research protocol preparation for on-farm studies (forage, treated crop residues & their feeding values)
- Implementation, Monitoring, Data collection
- Monitoring of progress of PhD and MSc studies

- Data organization, generating information (articles, communication materials, reports etc)
- Organizing workshops to transfer technology, knowledge and information for stakeholders (researchers, development workers, policy makers, farmers, investors etc)
Approaches

- Focus on major dairy-shed areas

- Attachment of MSc and PhD students

- Involvement of multidisciplinary research team and relevant stakeholders

- Focus on on-farm level interventions

On-station back-up research where appropriate
ACHIEVEMENTS

1. Multiplication of seeds/vegetative planting materials from different forage crops
   [Inputs for next on-farm activities]
<table>
<thead>
<tr>
<th>No.</th>
<th>Crop Type</th>
<th>Variety</th>
<th>Seed Produced (kg)</th>
<th>Planned</th>
<th>Achieved</th>
<th>Achievement (%)</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Oats</td>
<td>CI-2291</td>
<td></td>
<td>1800</td>
<td>1647</td>
<td>92</td>
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<tr>
<td>2</td>
<td>Oats</td>
<td>CI-8251</td>
<td></td>
<td>1400</td>
<td>1530</td>
<td>109</td>
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<tr>
<td>3</td>
<td>Oats</td>
<td>CI-2806</td>
<td></td>
<td>1500</td>
<td>1055</td>
<td>70</td>
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<tr>
<td>4</td>
<td>Vetch</td>
<td>V. dasycarpa cv. lana</td>
<td></td>
<td>600</td>
<td>400</td>
<td>67</td>
</tr>
<tr>
<td>5</td>
<td>Vetch</td>
<td>V. villosa</td>
<td></td>
<td>600</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Tree lucern</td>
<td>MoA</td>
<td></td>
<td>30</td>
<td>42</td>
<td>140</td>
</tr>
<tr>
<td>7</td>
<td>Fodder beet</td>
<td>Kulumsa</td>
<td></td>
<td>75</td>
<td>25</td>
<td>33</td>
</tr>
<tr>
<td>8</td>
<td>Rhodes grass</td>
<td>Massaba</td>
<td></td>
<td>200</td>
<td>150</td>
<td>75</td>
</tr>
<tr>
<td>No.</td>
<td>Grass type</td>
<td>Variety</td>
<td>Number of Root Splits</td>
<td>Remark</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>----------------</td>
<td>--------------------</td>
<td>-----------------------</td>
<td>--------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Planned</td>
<td>Achieved</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Napier grass</td>
<td>16791/Zihone 02</td>
<td>32,000</td>
<td>50,000</td>
<td>Actual number of root splits will be known in June 2019</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Napier grass</td>
<td>16819/ Zihone 03</td>
<td>30,000</td>
<td>50,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Pennisetum hybrid</td>
<td>Maralfalfa</td>
<td>25,000</td>
<td>50,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Desho grass</td>
<td>Areka/DZF 590</td>
<td>25,000</td>
<td>75,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Desho grass</td>
<td>Kulumsa/DZF 592</td>
<td>25,000</td>
<td>100,000</td>
<td></td>
<td></td>
</tr>
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</table>
2. Research Progress

2.1. Effect of Planting Density and Harvesting Height on Morphological Characteristics, Biomass Yield and Quality of *Desho* and Maralfalfa Grasses in the Ethiopian Highlands

2.2. Evaluation of Introduced Forage Genetic Resources for Biomass Yield and Feed Quality in the Central Ethiopian Highlands [*Oats, rye grass & Trifolium*]

2.3. Economic Feasibility of Cultivated Forage Crops and Improved Pasture Hay Production in the Central Ethiopian Highlands
Spacing (R x P)

Maralfalfa (Holetta)

0.5 – 1.8
Desho grass
(Holetta)

Spacing (R x P)

- 1. 30 cm x 10 cm (C)
- 2. 25 cm x 50 cm
- 3. 50 cm x 50 cm
- 4. 75 cm x 25 cm
- 5. 75 cm x 50 cm
- 6. 100 cm x 25 cm

PH (cm)
NTP
LC (%)
Desho grass (Holetta)

Spacing (R x P)
- 1. 30 cm x 10 cm (C)
- 2. 25 cm x 50 cm
- 3. 50 cm x 50 cm
- 4. 75 cm x 25 cm
- 5. 75 cm x 50 cm
- 6. 100 cm x 25 cm

DMY (t/ha)
RESULTS...

- Two Promising Trifolium species
  - *Trifolium incarnatum* cv. Dexie lot#309
  - *Trifolium pratens* Lot#166239NCTDS

- Data collection is underway for the feasibility study of improved forage crops production
NEXT STEP [YEAR 2]

- Identification of farmers for on-farm trials
- Preparation of on-farm research protocols
- Crop residue quality improvement studies
- Implementation, monitoring and data collection
- Monitoring progress of students engaged in this project
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