Human Resource Development in Farm Mechanization
Sri Lanka

3rd Regional Forum on Sustainable Agricultural Mechanization in Asia and the Pacific
3rd ASEAN Conference on Agricultural and Biosystems Engineering
Co-located with the 12th Engineering Research and Development for Technology in Agriculture
9-11 December 2015, Manila, the Philippines
Promotion of Agricultural mechanization in the country is a collective effort of all categories
- Farm machinery operators,
- Craftsmen,
- Sales and service providers,
- Machinery manufacturers,
- Extension personnel and
- Design Engineers etc..

Skill development, technology transfer and knowledge improvement depend on the basic education level of the different category.
National Vocation Qualification (NVQ) is the recognized standards now applied in all sectors. Almost all theoretical and practical educational qualifications leading up to basic degree are assigned with NVQ level.
## Structure of NVQ

<table>
<thead>
<tr>
<th>Level</th>
<th>Qualification</th>
<th>Generalised Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>National Certificate</td>
<td>Level 1 recognizes the acquisition of entry level competencies</td>
</tr>
<tr>
<td>Level 2</td>
<td>National Certificate</td>
<td>Levels 2, 3 and 4 recognize increasing levels of competencies. Level 4 qualification provides for full craftsmanship/workmanship.</td>
</tr>
<tr>
<td>Level 3</td>
<td>National Diploma</td>
<td></td>
</tr>
<tr>
<td>Level 4</td>
<td>National Diploma</td>
<td></td>
</tr>
<tr>
<td>Level 5</td>
<td>National Diploma</td>
<td>Levels 5 and 6 recognize the increasing levels of competencies of technicians including supervision and process management.</td>
</tr>
<tr>
<td>Level 6</td>
<td>Bachelors Degree</td>
<td>Level 7 recognizes the vocational/technological competencies at Bachelors Degree level</td>
</tr>
</tbody>
</table>
Structure of NVQ

- Core entry/basic skills
  - Work under Supervision
    - Work under some supervision
      - Supervise others
        - Manage others
          - Involve with Design and innovation
            - Degree
              - Diplomas
                - Certificates
Institutions involved Human Resource Development

- Secondary school level
  Recently Technology stream has been introduced in the secondary level school curriculum including Agricultural Engineering Technology.

- National Vocational Courses
  Tertiary and Vocational Training Authority of Sri Lanka conducts practical oriented technical courses relevant to the prevailing job market. This institute recently introduced craftsman level (up to NVQ 4) in the field of Farm machinery technology.
Institutions involved Human Resource Development

- **Technical Colleges**
  Apart from the general Engineering courses offered in most of the technical Colleges, there are some technical colleges offer specialized courses for farm machinery technicians.

- **Advanced College of Technology Institutions**
  There are several Advanced Technical Education Centres offer National Diplomas in general Engineering Technology. Some offer National Diploma in Agriculture.

- ** Universities**
  State universities offer General Agri. Degree with Agri. Engineering as a specialized subject.
## Advanced College of Technology Institutions

<table>
<thead>
<tr>
<th>Institute</th>
<th>Province</th>
<th>Courses offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardi Technical College, Ampara</td>
<td>Eastern</td>
<td>General Agriculture</td>
</tr>
<tr>
<td>Technical College, Kulitapitiya</td>
<td>North Western</td>
<td>General Agriculture</td>
</tr>
<tr>
<td>Technical College, Dambulla</td>
<td>Central</td>
<td>General Agriculture</td>
</tr>
<tr>
<td>Aquvainas College, Colombo</td>
<td>Western</td>
<td>General Agriculture</td>
</tr>
<tr>
<td>Technical College, Anuradhapura</td>
<td>North Central</td>
<td>Farm Mechanization Technology</td>
</tr>
</tbody>
</table>
Technical Colleges

HARDI Advanced Technological Institute
Recently established three University Colleges offer Farm Mechanization Diploma level and Certificate level courses along with the other technical courses.

<table>
<thead>
<tr>
<th>Institute</th>
<th>Province</th>
</tr>
</thead>
<tbody>
<tr>
<td>University College, Kuliyapitiya</td>
<td>North Western</td>
</tr>
<tr>
<td>University College, Jaffna</td>
<td>Northern</td>
</tr>
<tr>
<td>University College, Mathara</td>
<td>Southern</td>
</tr>
</tbody>
</table>
University of Vocational Technology (UNIVOTEC)

- The general objective of the UNIVOTEC is to provide progressive upward movement to the students in the technical education and vocational training system, based on their aptitudes and abilities, to acquire university education.
- Provide pedagogical training up to degree level for trainers serving in the technical and vocational education sector and industry.
- Provide courses of study for middle level technical personnel, with qualifications acceptable for admission to UNIVOTEC, up to degree level, and
- Provide courses of study for those with National Vocational Qualifications to upgrade their competencies and acquire a degree level qualifications.
- Provide extension courses on continuous professional development.
Department of Agriculture manages five Schools of Agriculture to produce Diploma holders (NVQ 6 level) to serve Agriculture sector in the country.

<table>
<thead>
<tr>
<th>Institute</th>
<th>Province</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools of Agriculture, Kundasale</td>
<td>Central</td>
</tr>
<tr>
<td>Schools of Agriculture, Pelwehera</td>
<td>Central</td>
</tr>
<tr>
<td>Schools of Agriculture, Angunakolapelessa</td>
<td>Southern</td>
</tr>
<tr>
<td>Schools of Agriculture, Karapincha</td>
<td>Sabaragamuwa</td>
</tr>
<tr>
<td>Schools of Agriculture, Vauniya</td>
<td>Northern</td>
</tr>
</tbody>
</table>

Annual Intake - 350
Department of Agriculture also manages another six Schools of Agriculture to produce Certificate level qualified (NVQ 5 level) to serve Agriculture sector in the country.

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<th>Institute</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Schools of Agriculture, Labuduwa</td>
<td>Southern</td>
</tr>
<tr>
<td>Schools of Agriculture, Anuradhapura</td>
<td>North Central</td>
</tr>
<tr>
<td>Schools of Agriculture, Bibila</td>
<td>Uva</td>
</tr>
<tr>
<td>Schools of Agriculture, Palamunai</td>
<td>Eastern</td>
</tr>
<tr>
<td>Schools of Agriculture, Kilinochchi</td>
<td>Northern</td>
</tr>
<tr>
<td>Schools of Agriculture, Wariyapola</td>
<td>North Western</td>
</tr>
</tbody>
</table>

Annual Intake - 250
Sri Lanka Schools of Agriculture, Kundasale
There are many state universities offer general Agriculture Bachelors Degree programmes including Agricultural Engineering as a subject in all semesters. Students can select Agricultural Engineering subject as specialized subject in the final semester.

Open University of Sri Lanka also offer Diploma and Degree courses related to general agriculture as well as Agri Engineering.

Post Graduate Institute of Agriculture, University of Peradeniya offers post graduate Degree courses on Agricultural Engineering leading up to PhD.
University of Peradeniya

Wayamba University of Sri Lanka
Farm Mechanization Training Centre (FMTC)

- Farm Mechanization Training Centre (FMTC) of the Department of Agriculture is the only national level training institute for providing farm machinery trainings.

- FMTC offers training on tractors, water pumps, plant protection equipment, paddy reapers, paddy threshers, paddy combine harvesters, manually operated and micro irrigation technology.

- FMTC provide training to farmers, officers in the agricultural sector, university students, students of the schools of agriculture, technical colleges and general schools and private personnel.
Farm Mechanization Research Centre (FMRC)

- Farm Mechanization Research Centre (FMRC) of the Department of Agriculture train farm machinery manufacturers on manufacturing technology on new designs.

- At the introduction stage of a new technology in agriculture, FMRC provide training on operation and maintenance on the new technology to trainers, operators and farmers.
Distribution of Institutions
In the country
Private sector involvement in human resource development activities is not significant. However they provide practical training opportunities in collaborative training programmes on specific areas.
Recently, the need of human resource development in the field of agricultural mechanization has been identified as a priority area and has given the equal opportunity same as with the other sector. Therefore gates are open to acquire knowledge and skills. However more systematic approach is needed by analyzing the problems in the present scenario.
Need Assessment

- Development in Farm Machinery sector and introduction of new technology is a continuing process.
- Human resource development in the sector has to be updated in parallel with the technology improvement.
- A systematic need assessment has not been conducted same as with the other sectors.
- The need assessment in parallel with the technology development is an urgent need.
Challenges and constraints

- Compared to the progress in development of other sectors this sector has only received marginal attention. Because of limited chances of finding employment in agriculture, student enrollment is Limited.

- Fragmented and scattered technical and vocational training delivery that does not meet the needs of the fast growing agricultural mechanization sector.

- Low capacity, inadequate and outdated training materials & equipment and also lack of skilled and qualified trainers in training institutions.

- Teachers and trainers lack practical, pedagogical and didactic skills, and lack technology knowledge and competences to develop curricula.

- Weak linkages between private and public efforts National Apprenticeship Training Authority (NAITA) Industrial and agricultural universities and research.

- Efforts in rehabilitating training Centres and programmes in agricultural mechanization tend to rebuild on old systems instead of promoting modernized systems.
Employed population by major industry group - 1992 - 2012
Solutions and suggestions (country and regional perspectives)

- Bringing private sector or NGO training providers and the public sector providers together in public-private partnerships that lead to more efficient use of existing public sector facilities.

- Develop new and innovative models to incorporate capacity building programmes of farm machinery into existing NVQ systems or to generate new institutions for specialized only for Agricultural Engineering.

- Develop legislative frameworks ensuring and supporting National Vocational Qualification (NVQ) in operation and maintenance of farm machinery.
Solutions and suggestions (country and regional perspectives)…..

- Develop appropriate monitoring evaluation systems to trace the impact of human resource development programmes with regards to employability of graduates

- Install incentives that encourage private sector participation in skills development activities

- Modernize existing facilities to cope with emerging innovations in training delivery.
Solutions and suggestions (country and regional perspectives)....

- Support linkages between public and private initiatives among research Institutes, universities and the training authorities.

- Support the role of farmer organizations in assessing training needs and compiling overviews of available training institutions as well as to lobby for improved or changed curricula and for demand-driven training courses in the country or region.

- Adopt models that have proved to be effective in generating vocational and professional capacity in other regions.
Integration of non-formal and formal training

Education and capacity-building programmes for youth must be defined in a more participatory way and focus on best operational practices and knowledge sharing with other countries in the region.

Youth platforms (rural youth and young farmer’s platforms and councils) must be created to determine training and capacity building needs.

Thank You!