



**NATIONAL COMPETENCY STANDARDS
FOR
POWER TILLER OPERATOR
(NC2)**

**Department of Occupational Standards
Ministry of Labour and Human Resources
Thimphu, Bhutan.
(2016)**



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FOREWORD

The Department of Occupational Standards of the Ministry of Labour and Human Resources in collaboration with Agriculture Machinery Training Center (AMTC) proudly presents the National Competency Standards (NCS) for Power Tiller Operator as part of TVET reform initiative for improving the quality of Vocational Education and Training System in Bhutan. The standards represent the fruits of hard work and invaluable experiences gained by the department since its establishment in the latter half of 2003. The main aim of developing National Competency Standards is to set up a well defined nationally recognized Vocational Qualification and Certification system that will help set a benchmark for the Technical Vocational Education and Training (VET) System in our country aligned to international best practices.

National Competency Standards is one of the base pillars in the Bhutan Vocational Qualification Framework (BVQF) and is the first step in its implementation. The standards are developed to ensure that employees or vocational graduates possess and acquire the desired skills, knowledge and attitude required by industries and employers. In order to ensure this close match in supply and demand of skills, knowledge and attitude, standards have been developed in close consultation and partnership with industry experts and validated by the Technical Advisory Committees for the concerned economic sectors.

A vocational education and training system based on National Competency Standards shall ensure that delivered training is of a high quality and relevant to the needs of the labour market. As a result, future TVET graduates will be better equipped to meet the need and expectations of industries and employers. This positive impact on the employability of TVET graduates will enhance the reputation of vocational education and training and make it attractive to school leavers.

While acknowledging the existing level of cooperation and collaboration, the ministry earnestly requests employers and training providers to extend the fullest support and cooperation in implementing the National Competency Standards. The ultimate objective is to build a competent and productive national workforce that will contribute to the continued socio-economic progress of our country.

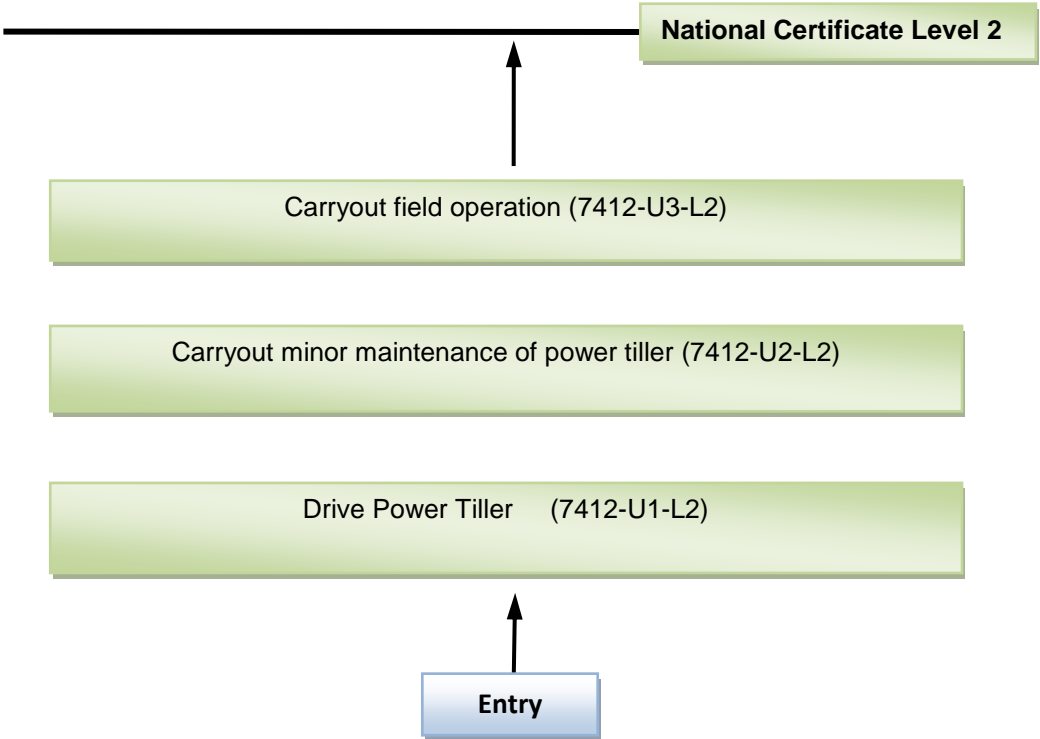
I gratefully acknowledge the valuable contributions made by experts from industries during the consultation, verification and validation processes of the standards. I look forward to improved engagement and active participation of the industry and employers in the development of a quality assured demand driven TVET system in the near future.

Dorji Tshering

Director

Department of Occupational Standards,
Ministry of Labour and Human Resources

PACKAGING OF QUALIFICATION FOR POWER TILLER OPERATOR



NATIONAL COMPETENCY STANDARDS FOR

POWER TILLER OPERATOR

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Endorsement date : 18th August, 2016.

Date of Review : 18th August, 2019 (max. 3 years).

The content of the National Competency Standards has been validated by the management of Agriculture Machinery Training Center (AMTC), Paro.

Subject experts involved during the consultation workshop:

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POWER TILLER OPERATOR
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UNIT TITLE : Drive power tiller

DESCRIPTOR: This unit covers the competencies required to drive power tiller on plain, slope and then with load following safety practices at all times.

CODE : 7412-U1-L2

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Perform plain / slope driving	1.1 Select and use required PPE as per the job requirement following standard procedures 1.2 Conduct pre-check following standard procedures / manufacturer's manuals 1.3 Start and warm up the engine following manufacturer's manuals 1.4 Drive power tiller on plain road following traffic rules and regulations 1.5 Drive power tiller on slope road following traffic rules and regulations
2. Perform driving with load	2.1 Attach and detach trailer as per the job requirement following standard procedures 2.2 Load the trailer securely within its carrying capacity as per the manufacturer's specifications 2.3 Drive the power tiller with load following traffic rules and regulations

RANGE STATEMENT
Driving may take place on farm road and high ways.
Performance of these unit is expected to be performed in accordance with following standards, rules & regulations:

<ul style="list-style-type: none"> • Occupational Health and Safety Regulations • Traffic rules and regulations • Standard operating procedures or manufacturer's specifications
<p>Personal protective equipment (PPE) may include but not limited to conducting:</p> <ul style="list-style-type: none"> • Safety boot • Hand gloves • Mask • Helmet • Goggles
<p>Driving includes but not limited to:</p> <ul style="list-style-type: none"> • Forward • Reverse

<p>Critical aspects applicable to these unit:</p> <ul style="list-style-type: none"> • Demonstrate safe working practices at all times in accordance with Occupational health and safety regulations. • Drive power tiller on slope road following traffic rules and regulations • Drive the power tiller with load following traffic rules and regulations

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Types of power tiller • Power tiller operational safety • Basic first aid • Starting procedures 	<ul style="list-style-type: none"> • Communication • Problem solving • Driving

UNIT TITLE : Carryout minor maintenance of power tiller

DESCRIPTOR: This unit covers the competencies required to conduct periodic maintenance and minor servicing of power tiller following relevant standard procedures / specifications, ensuring safety practices at all times.

CODE : 7412-U2-L2

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Conduct periodic maintenance	1.1 Select and use personal protective equipment (PPE) as per the job requirement following standard procedures 1.2 Select and use hand tool set as per the job requirement following standard procedures 1.3 Change coolants as per the job requirement following manufacturer's specifications 1.4 Change / top-up lubricants as per the job requirement following manufacturer's specifications
2. Conduct minor maintenance	2.1 Diagnose to identify the faulty components as per the job requirement following standard procedures 2.2 Adjust the components as per the job requirement following standard procedures 2.3 Repair / replace the components as per the job requirement following standard procedures 2.4 Bleed the fuel system / lines as per the job requirement following standard procedures

RANGE STATEMENT	
Work may take place at work site or at training center.	
Performance of these unit is expected to be performed in accordance with following standards, rules & regulations:	
<ul style="list-style-type: none"> • Occupational health and safety regulations • Environment rules and regulations • Standard operating procedures or manufacturer's specifications 	
Personal protective equipment (PPE) may include but not limited to conducting:	
<ul style="list-style-type: none"> • Safety boot • Hand gloves • Mask 	<ul style="list-style-type: none"> • Helmet • Goggles
Hand tool set may include but not limited to:	
<ul style="list-style-type: none"> • Plier • Wrench set 	<ul style="list-style-type: none"> • Screw driver • Hammer
Lubricants may include but not limited to:	
<ul style="list-style-type: none"> • Engine oil • Gear oil 	<ul style="list-style-type: none"> • Greasing
Adjusting the components may include but not limited to adjusting the:	
<ul style="list-style-type: none"> • Brake • Clutch 	<ul style="list-style-type: none"> • Belts
Components may include but not limited to:	
<ul style="list-style-type: none"> • Bearings • Filters 	<ul style="list-style-type: none"> • Cables • Tyre

Critical aspects applicable to these unit:
<ul style="list-style-type: none"> • Demonstrate safe working practices at all times in accordance with OHS regulations.

- Change / top-up lubricants as per the job requirement following manufacturer's specifications
- Adjust the components as per the job requirement following standard procedures

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Basic first aid • Types of coolant and lubricants • Bleeding procedure • Basic components 	<ul style="list-style-type: none"> • Safe handling of hand tool set • Communication • Problem solving • Team work

UNIT TITLE : Carryout field operation

DESCRIPTOR: This unit covers the competencies require to perform the productive operation of power tiller such as plowing, rotovating, water pumping and then servicing it after productive operation, ensuring safety at all times of operation.

CODE : 7412-U3-L2

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Perform plowing	1.1 Select and use PPE as per the job requirement following standard procedures 1.2 Conduct pre-check as per the job requirement following standard procedures 1.3 Start and warm-up engine following standard procedures 1.4 Attach plow as per the job requirement following standard procedures 1.5 Adjust plow angle and dept as per the job requirement following standard procedures 1.6 Plow the field as per job requirement following standard procedures
2. Perform rotovating	2.1 Conduct pre-check as per the job requirement following standard procedures 2.2 Start and warm-up engine following standard procedures 2.3 Attach rotovator as per the job requirement following standard procedures 2.4 Attach cage wheel as per the job requirement following standard procedures 2.5 Adjust rotary dept and select speed as per the job requirement following standard procedures 2.6 Rotovate the field as per job requirement

		following standard procedures
3. Perform water pumping	3.1	Conduct pre-check as per the job requirement following standard procedures
	3.2	Attach water pump and its accessories as per the job requirement following standard procedures
	3.3	Align the pump and adjust belt tension as per the job requirement following standard procedures
	3.4	Perform priming of the pump following standard procedures
	3.5	Start and warm-up engine following standard procedures
	3.6	Pump water as per job requirement following standard procedures
4. Perform servicing after operation	4.1	Conduct post operation checks as per the job requirement following standard procedures.
	4.2	Detach the implements as per the job requirement following standard procedures
	4.3	Clean and store the power tiller and implements as per the job requirement following standard procedures
	4.4	Record / update documents as per the job requirements.

RANGE STATEMENT

Field operation may take place in dry and wet field.

Slope of the field should be within the manufacturer's permissible limit.

Performance of these unit is expected to be performed in accordance with following standards, rules & regulations:

- Occupational health and safety regulations
- Environment rules and regulations

<ul style="list-style-type: none"> • Standard operating procedures or manufacturer’s specifications
<p>Personal protective equipment may include but not limited to:</p> <ul style="list-style-type: none"> • Safety boot • Mask • Hand gloves • Helmet • Goggles

<p>Critical aspects applicable to these unit:</p> <ul style="list-style-type: none"> • Demonstrate safe working practices at all times in accordance with OHS regulations. • Attach and adjust implements following standard procedures. • Plow / Rotovate / pump water following standard procedures.
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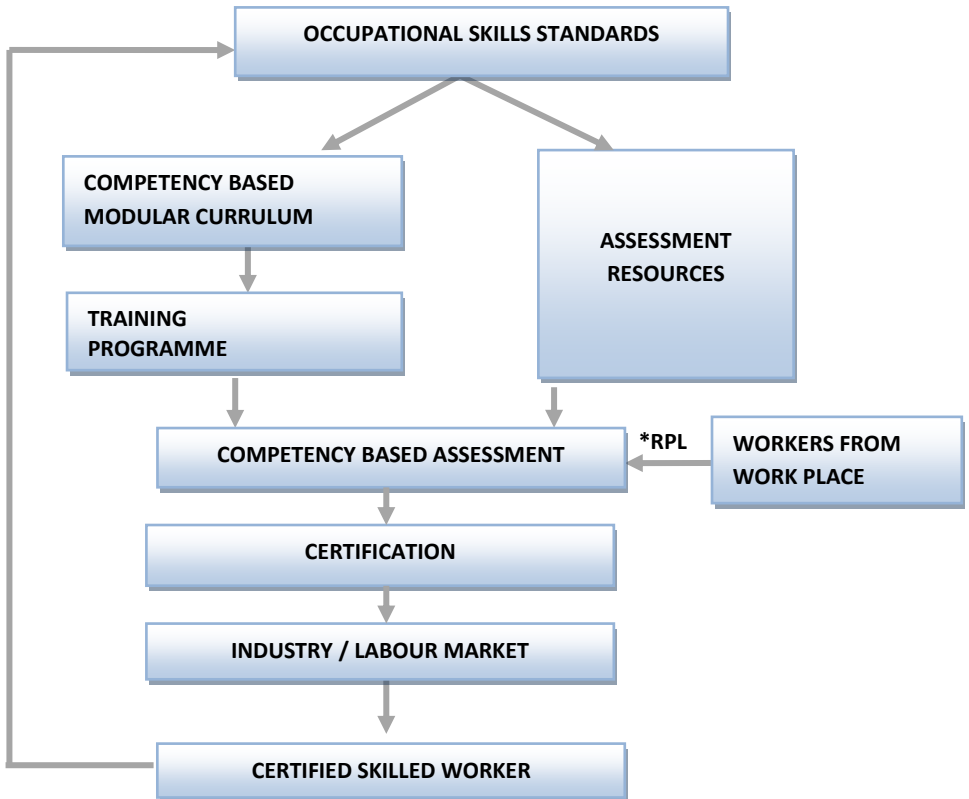
UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Basic first aid • Types and functions of implements • Types of plow pattern • Plowing methods 	<ul style="list-style-type: none"> • Communication • Basic numeracy • Problem solving • Team work

Annexure I

Bhutan Vocational Qualification Framework (BVQF)

Bhutan Vocational Qualifications Framework is an agreed system of Assessing, Certifying and Monitoring nationally recognized qualifications for all learning in the TVET sector against national standards, in training institutions, in the workplace, in schools or anywhere where learning takes place.

Components of the Bhutan Vocational Qualification Framework (BVQF)



* RPL = Recognition of Prior Learning

Annexure II

BVQF Levels and its descriptors

The Bhutan Vocational Qualification Framework has three levels classified based on the competency of the skilled workers. The three levels are:

- National Certificate Level 3 (NC III)
- National Certificate Level 2 (NC II)
- National Certificate Level 1 (NC I)

BVQF Level Descriptors

The qualification levels are decided based on level descriptors. The detail of the qualification level descriptor is as follows:

National Certificate Level 1

Carry out processes that:	Learning demand:	Responsibilities which are applied:
<ul style="list-style-type: none">• Are narrow in range.• Are established and familiar.• Offer a clear choice of routine responses.• Involve some prioritizing of tasks from known solutions.	<ul style="list-style-type: none">• Basic operational knowledge and skill.• Utilization of basic available information.• Known solutions to familiar problems.• Little generation of new ideas.	<ul style="list-style-type: none">• In directed activity.• Under general supervision and quality control.• With some responsibility for quantity and quality.• With no responsibility for guiding others.

National Certificate Level 2

Carry out processes that:	Learning demand:	Responsibilities which are applied:
<ul style="list-style-type: none">• Require a range of well developed skills.• Offer a significant choice of procedures requiring	<ul style="list-style-type: none">• Some relevant theoretical knowledge.• Interpretation of available information.• Discretion and	<ul style="list-style-type: none">• In directed activity with some autonomy.• Under general supervision and quality checking.• With significant

<p>prioritization.</p> <ul style="list-style-type: none"> • Are employed within a range of familiar context. 	<p>judgments.</p> <ul style="list-style-type: none"> • A range of known responses to familiar problems 	<p>responsibility for the quantity and quality of output.</p> <ul style="list-style-type: none"> • With some possible responsibility for the output of others.
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National Certificate Level 3

Carry out processes that:	Learning demand:	Responsibilities which are applied:
<ul style="list-style-type: none"> • Requires a wide range of technical or scholastic skills. • Offer a considerable choice of procedures requiring prioritization to achieve optimum outcomes. • Are employed in a variety of familiar and unfamiliar contexts. 	<ul style="list-style-type: none"> • A broad knowledge base which incorporates some theoretical concepts. • Analytical interpretation of information. • Informed judgment. • A range of sometimes innovative responses to concrete but often unfamiliar problems. 	<ul style="list-style-type: none"> • In self-directed activity. • Under broad guidance and evaluation. • With complete responsibility for quantity and quality of output. • With possible responsibility for the output of others.

Annexure III

Assessment Guide

Form of assessment

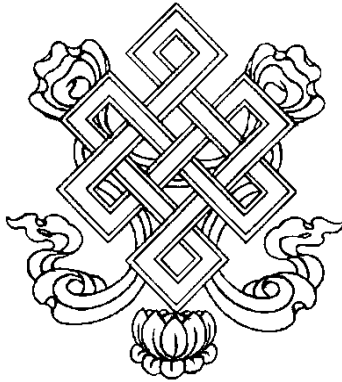
- Continuous assessment together with collected evidence of performance will be used.
- Evidence of the performance shall be based on practical demonstration.
- Knowledge can be accessed through written or viva form of assessment.

Assessment context

- Competency may be assessed in the actual work place or in a simulated workplace setting.

Assessment condition

- The candidate shall have access to all required tools, equipment, materials and documents.
- The candidate must complete the assessment in an accepted time frame.



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