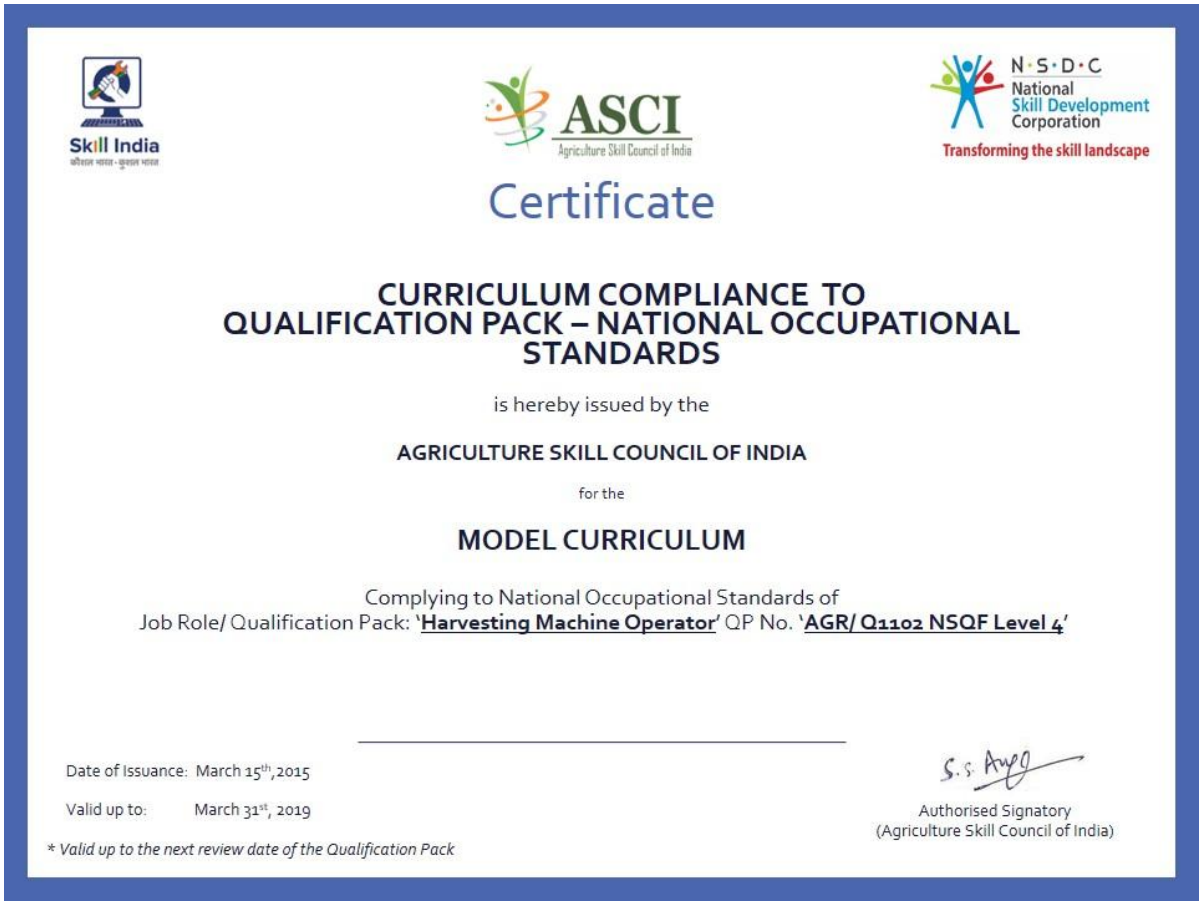
Model Curriculum

Harvesting Machine Operator

SECTOR: AGRICULTURE & ALLIED
SUB-SECTOR: AGRICULTURE CROP PRODUCTION
OCCUPATION: FARM MACHINERY AND EQUIPMENT OPERATION AND MAINTENANCE
REF ID: AGR/Q1102, v1.0
NSQF LEVEL: 4



Skill India

ASCI
Agriculture Skill Council of India

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National Skill Development Corporation
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Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

AGRICULTURE SKILL COUNCIL OF INDIA

for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: '**Harvesting Machine Operator**' QP No. '**AGR/ Q1102 NSQF Level 4**'

Date of Issuance: March 15th, 2015

Valid up to: March 31st, 2019

** Valid up to the next review date of the Qualification Pack*

S.S. Ayg

Authorised Signatory
(Agriculture Skill Council of India)

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Harvesting Machine Operator

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a "Harvesting Machine Operator", in the "Agriculture & Allied" Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Harvesting Machine Operator		
Qualification Pack Name & Reference ID. ID	AGR/Q1102, v1.0		
Version No.	1.0	Version Update Date	
Pre-requisites to Training	10th Standard Pass, Preferably		
Training Outcomes	**After completing this programme, participants will be able to:** • **Perform pre operation practices:** Regular checks of the machine, engine, radiator, filters, tyres, attachments • **Operate the Harvester machine:** check the agriculture land- soil and hardness, identify the crop and using the suitable machine, operation of Harvester Machine • **Maintain the Harvester Machine:** Regular checks and maintenance of machine, check the machine and other implements **Become well versed with Environment Health & Safety:** Well versed with health and safety measures in terms of personal safety and others as well.		

This course encompasses 5 out of 5 National Occupational Standards (NOS) of "Harvesting Machine Operator" Qualification Pack issued by "Agriculture Skill Council of India".

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	**Introduction** **Theory Duration** (hh:mm) 05:00 **Practical Duration** (hh:mm) 00:00 **Corresponding NOS Code** Bridge Module	• General Instructions to the Trainee • Understand the Role of a Harvesting Machine Operator • Understand the other farm implements to be used in the harvesting process • Study the Farm Mechanization in India	Laptop, white board, marker, projector
2	**Prepare Harvester Machine for Operation** **Theory Duration** (hh:mm) 15:00 **Practical Duration** (hh:mm) 20:00 **Corresponding NOS Code** AGR/N1103	• Perform daily checks • Perform regular checks on the harvester machine • Check engine, radiator and filters • Check guards, attachments and tyres • Conduct the pre-operational checks accurately at the start of the day • Harvester machine's operational settings • Minimization of machine break downs	Laptop, white board, marker, projector, Harvesting Machine
3	**Operate Harvester Machine** **Theory Duration** (hh:mm) 15:00 **Practical Duration** (hh:mm) 35:00 **Corresponding NOS Code** AGR/N1104	• Pre Operation activities - inspection of agriculture land - inspection of soil and hardness of the field - identify the crop and use the suitable harvesting implement - Safe operation of machine - Maintain the Quality of the produce - Maximize the machine efficiency	Laptop, white board, Marker, Laptop, projector,
4	**Perform daily maintenance of Harvester machine** **Theory Duration** (hh:mm) 15:00	• Carry out machine shut down procedure • Check cutting components • Check crop lifter components • Check feeder house components • Check engine and related components • Check straw walker and sieve area • Check grain elevator • Check straw chopper components	White Board, Marker, Laptop, projector

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Practical Duration (hh:mm) 30:00 **Corresponding NOS Code** AGR/N1105	• Check chains and belts	
5	**Undertake safety measure on harvester operation** **Theory Duration** (hh:mm) 15:00 **Practical Duration** (hh:mm) 20:00 **Corresponding NOS Code** AGR/N1106	• Precaution procedures during machine working hours - Machine capacity - Operation of machine with the guards raised or removed - Mounting or dismounting of machine • Safety procedures - follow the 'safe stop' procedure before carrying out any maintenance; adjustments; dealing with a blockage or problem during working hours - put handbrake on; control on neutral; stop the engine and remove key before manually handling the machine during working hours - allow adequate rundown time before approaching the rear of the combine - sound the horn before starting the engine or reversing to alert others - take care on slopes and avoid sudden changes of direction - park on flat ground preferably. In case of parking on a slope, park across it; apply brakes and turn with care on downhill and side slopes - use the personal protective gears while working with the machine - use the suitable access ladder, steps or standing platform for cleaning, maintenance and refuelling the machine to avoid accidental fall - use correct tools and knife guard to aid safe removal, handling and storage of the cutting knives - regularly clean straw and chaff deposits from the engine compartment and around belts and pulleys to reduce risk of fire - strictly follow the written safety and risk assessment rules in the operational manual of the harvester machine - strictly follow the procedures set out in the operator's manual for safe operation, maintenance, dealing with blockages and other problems.	White Board, Marker, Laptop, projector

Sr. No.	Module	Key Learning Outcomes	Equipment Required
6	**Coordinate with Co-workers** **Theory Duration** (hh:mm) 15:00 **Practical Duration** (hh:mm) 15:00 **Corresponding NOS Code** AGR/N9907	• Interaction with Supervisor - Reporting problems in the field - Targets achievement - Identify the hazards at the work place and report to supervisor • Coordinate with colleagues - interact with colleagues and understand the work conditions - purchase spares from market / receive it from supervisor - pass on farmer complaints to colleagues - assist colleagues with resolving field problems - resolve conflicts and achieve smooth workflow	White Board, Marker, Laptop, projector
	Total Duration: **Theory Duration** (hh:mm) **80:00** **Practical Duration** (hh:mm) **120:00**	**Unique Equipment Required:** White Board, Marker, Laptop, projector, Record Keeping Book, Harvester machine and implements, insecticides, Nose masks, first aid kit	

Grand Total Course Duration: **200 Hours, 0 Minutes**

*(This syllabus/ curriculum has been approved by **Agriculture Skill Council of India**)*

Trainer Prerequisites for Job role: "Harvesting Machine Operator" mapped to Qualification Pack: "AGR/Q1102, v1.0"

Sr. No.	Area	Details
1	Description	Trainer is responsible for educating the trainees - on safe operation and day-to-day maintenance of harvesting machine
2	Personal Attributes	Trainer should be Subject Matter Expert. He/ she should have leadership skills, good communication skills, observation skills
3	Minimum Educational Qualifications	Diploma
4a	Domain Certification	Certified for Job Role: "Harvesting Machine Operator" mapped to QP: "AGR/Q1102, v1.0". Minimum accepted score is 80%.
4b	Platform Certification	Certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q0102". Minimum accepted score is 80%
5	Experience	• M Tech (Mechanical / Agriculture engineering) • B Tech (Mechanical / Agriculture engineering) • B Sc Agriculture with 1 year of relevant work experience and 2 years of total work experience • Diploma with 3 years of relevant work experience • Any Certificate course in Driver & Harvesting Machine Operator Training with 5 years of relevant work experience • Graduate with 3 years of relevant work experience

Annexure: Assessment Criteria

Assessment Criteria	
Job Role	Harvesting Machine Operator
Qualification Pack	AGR/Q1102, v1.0
Sector Skill Council	Agriculture

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2	The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3	Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS
4	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.
5	To pass the Qualification Pack , every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
6	In case of *unsuccessful completion*, the trainee may seek reassessment on the Qualification Pack.

Assessable Outcome	Assessment Criteria	Total Marks	Out Of	Marks Allocation	
				Theory	Skills Practical
1. AGR / N 1103 – Prepare Harvester machine for Operation	PC1. have a clear look at the harvester machine and visually analyze its parts	100	5	2	3
	PC2. check all the moving parts of the harvester machine		4	2	2
	PC3. look out for signs of possible problems such as bearings that are completely out, cracks in critical parts like shoes, shaker pans etc		4	2	2
	PC4. check walkers, rock traps, sprockets, sickle sections and injector lines		4	2	2
	PC5. check the bearings, chains and belts		5	2	3
	PC6. check chain tensions, including the feeder house chains		5	3	2
	PC7. grease all the bearings of the machine		5	3	2
	PC8. check effective functioning of head lights and indicators		5	3	2
	PC9. check for oil level in the engine		5	3	2
	PC10. check hydraulic oil levels		5	2	3
	PC11. check the radiators to see if they are full of water / coolant		4	2	2
	PC12. check the air filters for cleanliness and adjust it properly if required		4	2	2

	PC13. fill the machines with fuel		5	2	3
	PC14. ensure sufficient diesel for day's operation		5	3	2
	PC15. check all guards are in position and correctly fitted			0	0
	PC16. attach / detach extra kits / machine parts as per the type of crop to be harvested		4	2	2
	PC17. check nuts and bolts of attachments		4	2	2
	PC18. adjust the setting of cutter bar, thrushes drum and other movable parts according to the crop to be harvested		4	2	2
	PC19. check air pressure in the tyres		4	2	2
	PC20. keep reversing mirrors clean and properly adjusted		3	1	2
	PC21. conduct the pre-operational checks accurately at the start of the day		4	2	2
	PC22. set harvester machine's operational settings to avoid or minimize grain loss		4	2	2
	PC23. minimize machine break downs		4	2	2
	PC24. maintain records of daily pre-start up checks of harvester machine as per company's SOP		4	2	2
	Total		**100**	**50**	**50**
2. AGR / N 1104 - Operate Harvester	PC1. visually inspect the agriculture farm land to check its surface levelling	**100**	4	2	2

machine	PC2. check the condition of the farm land such as dry field, wet field		4	2	2
	PC3. check type of soil and hardness of field surface		4	2	2
	PC4. visually inspect the grain crop and its variety		4	2	2
	PC5. check the condition of the crop e.g. fully or half ripe crop		4	2	2
	PC6. check the condition of the straw e.g. dry or wet straw		4	2	2
	PC7. turn on the machine and check for all the displays, gauges, indicators and meters on the dash board		10	5	5
	PC8. check that all warning alarms are quite		4	2	2
	PC9. check that there is no warning display signal on the dashboard		10	5	5
	PC10. set the speed of thrusher drum and harvesting machine at optimum level to get maximum efficiency and performance of the machine		10	5	5
	PC11. drive the harvesting machine at a speed suitable as per the farm and crop conditions		10	5	5
	PC12. operate the harvesting machine in safe, controlled and correct manner as per the SOP / manufacturer's manual		10	5	5
	PC13. harvest crops in specific pattern to achieve machine efficiency		4	2	2
	PC14. correctly assess the field, environmental and crop conditions		4	2	2
	PC15. correctly set the machine settings to avoid or minimize grain loss		5	2	3

	PC16. achieve maximum machine efficiency at optimum fuel consumption		5	3	2
	PC17. maintain operational records		4	2	2
	Total		**100**	**50**	**50**
3. AGR / N 1105- Perform daily maintenance of Harvester machine	PC1. station the harvester machine at safe place and switch off the engine	120	2	1	1
	PC2. carry out shut down procedures as per manufacturer's manual and enterprise requirements		2	1	1
	PC3. remove dust, waste straw, crop stems and leaves from the machine		3	2	1
	PC4. clean the combine harvester with an air compressor to rid it of unwanted dry material. Clean all areas including corners and difficult to reach places.		3	1	2
	PC5. detach extra kits / machine parts and clean them as per manufacturer's operational manual		3	2	1
	PC6. identify external damage to the machine if any		2	1	1
	PC7. remove the header and clean all straw and debris from the cutting platform		3	1	2
	PC8. check all the knives, guards, wear plates and hold-down clips		2	1	1
	PC9. ensure that knife section rest on the guard; in position to make a shear cut		2	1	1
	PC10. ensure that the knife guard, wear plates and hold-down clips are in good condition and set correctly		3	2	1
	PC11. check stalk rolls and gatherer chains		3	2	1

	PC12. identify broken; bent or malfunctioning knives or knife guards		3	1	2
	PC13. replace damaged or malfunctioning knives or knife guards and adjust them as per the operational manual		3	2	1
	PC14. check crop lifters to see if any are bent or damaged		3	1	2
	PC15. check reel tines to ensure that none are bent or damaged		2	1	1
	PC16. check to see that no auger fingers are broken or bent		3	1	2
	PC17. check tension of the cutting belt drive and the auger chain drive to ensure optimal header performance		4	2	2
	PC18. check crop dividers to see if they are damaged or bent		2	1	1
	PC19. check hinges to see if the crop dividers move properly		2	1	1
	PC20. check that row unit parts are properly maintained		4	2	2
	PC21. identify worn outs, malfunctions, minor faults, irregular performance and damage to these parts, if any and repair / replace / adjust them accordingly as per operational manual		4	2	2
	PC22. check feeder house and clean all straw and debris from it		2	1	1
	PC23. check hydraulic hoses for possible oil leaks		3	2	1
	PC24. check the slats and make sure that they are not bent or damaged		4	2	2
	PC25. check the tension of the conveyor chain using a lever.		3	1	2

	PC26. check the stone trap and empty it out		3	1	2
	PC27. check rasp bar cylinder, threshing cylinder and concave to see if there is any visible damage on them		3	2	1
	PC28. identify worn outs, malfunctions, minor faults, irregular performance and damage to these parts, if any and repair / replace / adjust them accordingly as per operational manual		3	2	1
	PC29. clean the radiator by blowing air from the inside out		3	1	2
	PC30. check all areas for chaff build-up and clean if necessary		2	1	1
	PC31. remove and clean exterior air filter. Clean with compressed air from the inside out. Replace both air filters, if required, as per operational manual		3	1	2
	PC32. check engine oil level which should never be below the mark on the dipstick		2	1	1
	PC33. inspect the hydraulic hoses, fittings and pumps for possible leaks. Tighten its fittings if necessary		4	2	2
	PC34. check the hydraulic oil level. Add oil, if required, as per operational manual		3	2	1
	PC35. check the oil level in gear boxes and oil reservoirs		1	1	0
	PC36. check the coolant level in the coolant reservoir. Add coolant, if required, as per operational manual		2	1	1
	PC37. open the top of harvester machine's rear hood and check straw walker grids		1	0	1
	PC38. check precleaner upper and lower sieve and clean dirt or straw from them		1	0	1
	PC39. check elevator chain tension and adjust as per requirement, if necessary		2	1	1

	PC40. check elevator chain for worn or missing paddles.		2	1	1
	PC41. repair / replace / adjust the chains as per operational manual		2	1	1
	PC42. check straw chopper knives to see if any are broken or damaged		1	1	0
	PC43. check the stationary knives of the straw chopper compartment		1	1	0
	PC44. check the tension of all belts and adjust if necessary		1	0	1
	PC45. check the belts if they are damaged or worn out		1	1	0
	PC46. replace and adjust them accordingly as per operational manual		1	1	0
	PC47. oil chains as per the operational manual		1	0	1
	PC48. lessen grain damage, reduce grain loss and provide cleaner gains		1	0	1
	PC49. achieve maximum machine efficiency at minimal fuel consumption		2	1	1
	PC50. minimize machine break downs		2	1	1
	PC51. maintain daily maintenance record of harvester machine		2	1	1
	Total		**120**	**60**	**60**
4. AGR/ N 1106- Undertake safety measures on	PC1. avoid operating the machine beyond its capacity	**60**	2	1	1

Harvester operation	PC2. avoid running the harvester machine with the guards raised or removed		4	2	2
	PC3. avoid going close to harvester machine's moving parts when it is operational		2	1	1
	PC4. avoid adjusting the harvester machine's parts when it is operational		2	1	1
	PC5. avoid contacting overhead electricity power lines		4	2	2
	PC6. avoid mounting or dismounting the harvester machine when it is moving		4	2	2
	PC7. avoid carrying passengers on the harvester machine unless seated in a proprietary passenger seat		3	1	2
	PC8. ensure that other farm workers / co-workers do not come near to the operational harvester machine		2	1	1
	PC9. follow the 'safe stop' procedure before carrying out any maintenance; adjustments; dealing with a blockage or problem during working hours		4	2	2
	PC10. put handbrake on; control on neutral; stop the engine and remove key before manually handling the machine during working hours		4	2	2
	PC11. allow adequate rundown time before approaching the rear of the combine		3	2	1
	PC12. sound the horn before starting the engine or reversing to alert others		2	1	1
	PC13. take care on slopes and avoid sudden changes of direction		2	1	1
	PC14. park on flat ground preferably. In case of parking on a slope, park across it; apply brakes and turn with care on downhill and side slopes		2	1	1
	PC15. use the personal protective gears while working with the machine		4	2	2

	PC16. use the suitable access ladder, steps or standing platform for cleaning, maintenance and refuelling the machine to avoid accidental fall		2	1	1
	PC17. use correct tools and knife guard to aid safe removal, handling and storage of the cutting knives		3	1	2
	PC18. regularly clean straw and chaff deposits from the engine compartment and around belts and pulleys to reduce risk of fire		3	2	1
	PC19. strictly follow the written safety and risk assessment rules in the operational manual of the harvester machine		4	2	2
	PC20. strictly follow the procedures set out in the operator's manual for safe operation, maintenance, dealing with blockages and other problems.		4	2	2
	Total		**60**	**30**	**30**
5. AGR/ N 9907 - Coordinate with colleagues	PC1. understand the targets and incentives	**20**	2	1	1
	PC2. report problems in the field		2	1	1
	PC3. resolve personnel issues		1	0	1
	PC4. receive feedback on work standards and customer satisfaction		2	1	1
	PC5. communicate any potential hazards at a particular location		2	1	1
	PC6. meet given targets		2	1	1
	PC7. deliver work of expected quality despite constraints		1	0	1
	PC8. interact with colleagues and understand the work conditions		1	1	0

	PC9. purchase spares from market / receive it from supervisor		2	1	1
	PC10. pass on farmer complaints to colleagues		1	1	0
	PC11. assist colleagues with resolving field problems		2	1	1
	PC12. resolve conflicts and achieve smooth workflow		2	1	1
			20	10	10
	Total	**400**	**400**	**200**	**200**
	Percentage Weightage:			50%	50%
	Minimum Pass% to qualify (aggregate):			70%	