Model Curriculum

Beekeeper

SECTOR: AGRICULTURE & ALLIED
SUB-SECTOR: AGRICULTURE ALLIED ACTIVITY
OCCUPATION: BEE KEEPING
REF ID: AGR/Q5301, V1.0
NSQF LEVEL: 4

Skill India
कौशल भारत-कुशल भारत

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Agriculture Skill Council of India

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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: '**Beekeeper**' QP No. '**AGR/ Q5301 NSQF Level 4**'

Date of Issuance: March 15th, 2015

Valid up to: March 31st, 2020

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

Authorised Signatory
(Agriculture Skill Council of India)

TABLE OF CONTENTS

Beekeeper

CURRICULUM / SYLLABUS

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

Program Name	**Beekeeper**		
Qualification Pack Name & Reference ID. ID	AGR/Q5301, v1.0		
Version No.	1.0	**Version Update Date**	
Pre-requisites to Training	No formal education		
Training Outcomes	**After completing this programme, participants will be able to:** • **Manage Colonies of Bees:** Types of Bees, Life cycle, Bee Keeping Systems/Hives, Installation of Hives, Tools, Colony Management etc • **Harvest the Honey:** Method of Harvesting, time of harvesting, tools and equipments required etc • **Marketing of the Product:** Processing, by products, market platform, marketing etc		

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

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	**Introduction** **Theory Duration** (hh:mm) 5:00 **Practical Duration** (hh:mm) **Corresponding NOS Code**	• Understand the General Discipline in the class room (Do's & Don'ts) • Understand the Role of a Beekeeper • Understand the different types of Bee and their nature	White Board, Marker, Laptop, projector
2	**Understand bee biology and behavior** **Theory Duration** (hh:mm) 05:00 **Practical Duration** (hh:mm) 10:00 **Corresponding NOS Code** AGR/N5301	• Identify the different Types of Bees - Different species of bees - Sub-species of bees - Identify different races of bees - Life span of different bees - Different roles played by different types of honey bee • Life cycle of the different types of Bees • Understand the communication method used by bee	White Board, Marker, Laptop, projector,
3	**Handle bee-keeping system and bee-keeping tools** **Theory Duration** (hh:mm) 10:00 **Practical Duration** (hh:mm) 20:00 **Corresponding NOS Code** AGR/ N5302	• Understand the difference between Traditional and Modern bee keeping systems • Understand the Bee-keeping system • Identify the tools/equipments required for the bee keeping	Marker, Laptop, projector,
4	**Beehive management** **Theory Duration** (hh:mm) 15:00 **Practical Duration** (hh:mm) 20:00	• Understand the factors to be considered for site selection • Section of Site for Hive installation • Installation of Hives • Manage the Colonies of Bee • Perform the inspection of Colonies • Maintain record keeping	White Board, Marker, Laptop, projector,

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Corresponding NOS Code AGR/N5303		
5	**Manage insects, diseases and nuisances in beehive** **Theory Duration** (hh:mm) 10:00 **Practical Duration** (hh:mm) 20:00 **Corresponding NOS Code** AGR/N5304	• Identify the different types of insects • Understand the characteristics of different insects • Practice the preventive measures/ insect management • Identify the different types of tools/equipments required for insect management • Indentify common diseases of bee • Practice the disease preventive measures/ disease management • Identify the different types of tools/equipments required for disease management	White Board, Marker, Laptop, projector,
6	**Harvest, process and market the produce** **Theory Duration** (hh:mm) 15:00 **Practical Duration** (hh:mm) 20:00 **Corresponding NOS Code** AGR/N5305	• Well versed with the important factors to be considered during harvesting: - Time of Harvesting - Method of harvesting - Identify and use the tools/equipments required for harvesting • Practice the proper method for extraction of honey • Identify and use the tools required for the process • Grade the raw material • Well versed with the identifying the good quality of the produce • Understand the shelf-life of the produce • Understand the materials required for the packaging and storage of the produce • Practice the proper packaging and storage of the processed honey • Identify the market platform for the products and by products • Understand and practice the good supply chain • Market the produce	White Board, Marker, Laptop, projector, Bee suite and gloves, smoker, Honey extractor, Bee brush, Hive uncapping knife
	Total Duration: **Theory Duration** (hh:mm) **60:00** **Practical Duration** (hh:mm)	**Unique Equipment Required:** A box bee hive with a complete colony of bees, Hive uncapping knife, Hive tool, Bee brush, Honey extractor, All personal protective equipment required while handling bees, smoker, Bee suite and gloves.	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	90:00		

Grand Total Course Duration: **150 Hours, 0 Minutes**

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

Trainer Prerequisites for Job role: "Beekeeper" mapped to Qualification Pack: "AGR/Q5301, v1.0"

Sr. No.	Area	Details
1	**Description**	Trainer is responsible for providing the education and skills development training related to Managing colonies of bees, harvesting honey; selling of raw and finished products in the market.
2	**Personal Attributes**	Trainer should be Subject Matter Specialist. He/ She should have good communication and observation skill, leadership skill, practical oriented skill
3	**Minimum Educational Qualifications**	Diploma (with any Government Certificate Program in Bee Keeping)
4a	**Domain Certification**	Certified for Job Role: "Beekeeper" mapped to QP: "AGR/Q5301, 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**	• Post graduate (Entomology & Apiculture) • B.Sc. (Entomology & Apiculture) with 1 Year relevant experience • Graduate(With any Government Certificate Program in Bee Keeping) with 3 Years relevant experience • Diploma (With any Government Certificate Program in Bee Keeping) with 7 Years relevant experience • 10+2 Science Stream (With any Government Certificate Program in Bee Keeping) with 7 Years relevant experience

Annexure: Assessment Criteria

Assessment Criteria	
Job Role	Beekeeper
Qualification Pack	AGR/Q5301, 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
AGR/N5301 Understand bee biology and behaviour	PC1. identify different species of bees	45	3	1	2
	PC2. identify sub-species of bees		3	1	2
	PC3. identify different races of bees		3	0	3
	PC4. ascertain life span of different bees		3	3	0
	PC5. ascertain different roles played by different types of honey bee		3	3	0
	PC6. ascertain different development stages of life cycle of the different types of bees		3	1	2
	PC7. identify time needed to complete each stage		3	0	3
	PC8. identify raw produce generated by bees during life cycle		3	0	3

	PC9. identify different communication methods such as drumming feet, flapping wings etc.		3	0	3
	PC10. ascertain communication style to locate food source		3	3	0
	PC11. ascertain communication style to locate new home to which bees intend to swarm.		3	3	0
	PC12. ascertain mixing of the male and female parts of flower		3	3	0
	PC13. identify reproduction of flowering plants		3	0	3
	PC14. list down bee forage plants		3	2	1
	PC15. construct a flowering calendar for their local areas		3	3	0
	Total		**45**	**23**	**22**
AGR/N5302 Handle beekeeping systems and beekeeping	PC1. identify different bee-keeping systems ranging from the local/traditional systems to the modern systems	**30**	4	0	4

equipments	PC2. ascertain importance of economic aspects of the different bee-keeping systems		5	3	2
	PC3. select the most appropriate bee-keeping system (best hive type) for their areas based on cost benefit analysis		8	3	5
	PC4. identify and use of modern bee-keeping tools		4	0	4
	PC5. ascertain the working of the different bee-keeping tools		4	4	0
	PC6. ascertain importance of economic aspects of the different bee-keeping tools		5	5	0
AGR/N5303 Beehive Management	**Total**		**30**	**15**	**15**
	PC1. select appropriate location for beehives that consist of diverse vegetation that provides plenty of pollen and nectar	**90**	2	1	1
	PC2. know and fix appropriate radius of apiary location from food sources		2	0	2
	PC3. ensure sourcing of good water in the immediate area since bees need as much water as pollen and nectar		1	0	1

	PC4. ensure hanging of hives using strong greased galvanized wires to protect the bees		1	0	1
	PC5. ensure hanging of hives in or under well shaded trees		1	0	1
	PC6. suspend hives from wires so that predators cannot push them over		2	2	0
	PC7. remember hanging of hives in such a way that allows ease of harvesting		1	0	1
	PC8. use trees and solid poles to hang the hive		1	1	0
	PC9. hives should be hung at waist height above the ground		1	0	1
	PC10. keep the hives clean and pest free		4	0	4
	PC11. ensure placing of hives on sturdy stands		1	0	1
	PC12. place hives in a way so that they can be approached from behind		1	1	0

	PC13. place hives on stands makes them accessible and easy to harvest and manage		1	1	0
	PC14. reduce drifting and disease transmission		2	1	1
	PC15. remove small stones or debris in the apiary		1	1	0
	PC16. attract bees to the hives		3	0	3
	PC17. feeding the colonies during dearth period		4	4	0
	PC18. preservation of comb during dearth period		4	4	0
	PC19. Queen rearing		6	4	2
	PC20. divide the colonies in order to populate a new hive		4	4	0
	PC21. uniting of smaller colonies to enlarge a colony		4	4	0

	PC22. improve their yield of honey or to survive the dearth		4	4	0
	PC23. populate the hive includes swarming and transferring of bees		4	4	0
	PC24. ascertain use of tools used in dividing, uniting and populating the bees		3	0	3
	PC25. identify the climatic conditions before proceeding to the beehive for inspection		1	0	1
	PC26. ascertain use of various equipments used for inspection like smokers, bee suits, gloves		3	0	3
	PC27. perform colony inspection from outside to get idea of the colony status without opening the hive		2	2	0
	PC28. ensure incoming and outgoing bees and pollen carrying foragers at the hive entrance		1	0	1
	PC29. make sure that colony is strong and healthy		1	0	1
	PC30. check colony is diseased, abnormal and poisoned		3	1	2

	PC31. gather necessary tools before starting inside colony inspection		2	0	2
	PC32. use necessary tools to perform inside colony inspection		2	2	0
	PC33. perform colony inspection from inside to confirm the colony status, strengths and any abnormalities		3	2	1
	PC34. make necessary observation regarding condition of the bees, food stores, presence of pests and disease, symptoms of swarming and absconding		3	0	3
	PC35. check need to provide more frames with comb foundation		2	2	0
	PC36. ensure cleanliness and hygiene		3	0	3
	PC37. remove unnecessary, deformed, or additional combs built by the bees		2	0	2
	PC38. records should be kept to know what was done last time and what to do next time		2	0	2
	PC39. Keep records what equipment to use and when to use effectively and efficiently		2	0	2

	Total		**90**	**45**	**45**
	PC1. indentify common insects pests stored in combs like wax moth, Varro mite, ant and termites	**60**	8	6	2
	PC2. take preventive steps/methods to overcome insects		10	4	6
	PC3. use required tools, equipments and other materials		4	4	0
	PC4. indentify common diseases of bee like European foul brood, American foul brood, sac brood		8	2	6
	PC5. take preventive measures and methods to overcome bee diseases		10	5	5
	PC6. use required tools, equipments and other materials		4	4	0
	PC7. indentify nuisances in bee-keeping like disturbance from domestic animals, bush fires, chemical poisoning, honey badger and vandalism		6	0	6
	PC8. preventive practices and methods to overcome bee diseases		6	4	2

	PC9. use required tools, equipments and other materials		4	1	3
	Total		**60**	**30**	**30**
	PC1. ascertain right time to harvest the honey and other raw products	**75**	7	4	3
	PC2. indentify the right equipments used in harvesting like smoker, hive tool, nucleus top bar hive		8	6	2
	PC3. report any accidents, incidents or problems without delay to an appropriate person		2	0	2
	PC4. take necessary actions to reduce further danger		4	4	0
	PC5. perform grading of raw products to ensure good quality and shelf-life of the products		10	5	5
	PC6. follow procedures, practices and methods of grading of raw produce		4	0	4
	PC7. perform extraction of honey adopting suitable methods of extraction		9	5	4

	PC8. follow procedures, practices and methods of extraction of raw produce		4	0	4
	PC9. procure required inputs for extraction of raw product		1	0	1
	PC10. ascertain proper storage and packaging of honey		10	5	5
	PC11. indentify the honey and bee related by-products traders		8	4	4
	PC12. ascertain good supply chain		8	4	4
			75	37	38
TOTAL		**300**	**300**	**150**	**150**
Percentage Weightage:				**50%**	**50%**
Minimum Pass% to qualify (aggregate):				**70%**	