

QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR AGRICULTURE AND ALLIED INDUSTRY

What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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Introduction

Qualifications Pack- Beekeeper

SECTOR: AGRICULTURE AND ALLIED

SUB-SECTOR: Agriculture Allied Activity

OCCUPATION: Bee Keeping

REFERENCE ID: AGR/Q5301

ALIGNED TO: NCO-2015/6123.0101

Beekeeper: The bee-keeper manages colonies of bees in order to harvest honey and other Bee related by-products (Wax, Pollen, Propolish, Royal Jelly, Bee venom etc). His responsibilities include nurturing the bees to sell the raw and finished products in the market.

Brief Job Description: The individual at work is responsible for carrying out bee-keeping operation right from understanding bee biology and behaviour to harvesting and processing of products.

Personal Attributes: The job requires the individual to have mental and physical ability, good sight, attention to details, capability to follow safety procedures and stamina to work for long hours.

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|-------------|--------------------------|-------------------------------|------------------|----------|
| Job Details | Qualifications Pack Code | AGR/Q5301 | | |
| | Job Role | Beekeeper | | |
| | Credits (NSQF) | TBD | Version number | 1.0 |
| | Sector | Agriculture and Allied | Drafted on | 25/02/14 |
| | Sub Sector | Agriculture Allied Activities | Last reviewed on | 14/06/17 |
| | Occupation | Bee Keeping | Next review date | 14/06/21 |
| | NSQC Clearance on | 18/06/2015 | | |

| Job Role | Beekeeper |
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| Role Description | Managing colonies of bees, harvesting honey; selling of raw and finished products in the market. |
| NSQF level | 4 |
| Minimum Educational Qualifications | No formal education |
| Maximum Educational Qualifications | Not applicable |
| Training (Suggested but not mandatory) | Hands on training. Extension training and Krishi Vigyan Kendra training |
| Minimum Job Entry Age | 17 Years |
| Experience | NA |
| Applicable National Occupational Standards (NOS) | Compulsory <ol style="list-style-type: none"> 1. AGR/N5301 Understand bee biology and behaviour 2. AGR/N5302 Handle beekeeping systems and beekeeping equipments 3. AGR/N5303 Beehive management 4. AGR/N5304 Manage insects, diseases and nuisances in beehive 5. AGR/N5305 Harvest, process and market the produce |
| Performance Criteria | As described in the relevant OS units |

Definitions

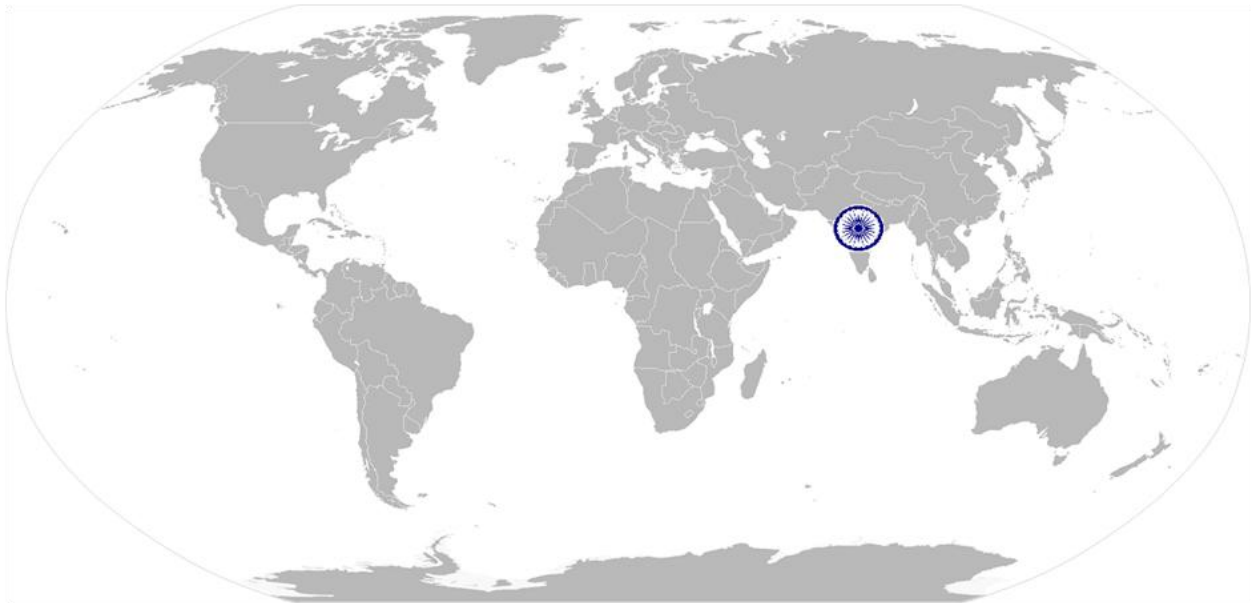
| Keywords /Terms | Description |
|--------------------------------------|---|
| Sector | Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests. |
| Sub-sector | Sub-sector is derived from a further breakdown based on the characteristics and interests of its components. |
| Occupation | Occupation is a set of job roles, which perform similar/ related set of functions in an industry. |
| Function | Function is an activity necessary for achieving the key purpose of the sector, occupation, or an area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS. |
| Sub-function | Sub-functions are sub-activities essential to fulfil the achieving the objectives of the function. |
| Job role | Job role defines a unique set of functions that together form a unique employment opportunity in an organisation. |
| Occupational Standards (OS) | OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts. |
| Performance Criteria | Performance criteria are statements that together specify the standard of performance required when carrying out a task. |
| National Occupational Standards (OS) | NOS are occupational standards which apply uniquely in the Indian context. |
| Qualifications Pack (QP) | QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code. |
| Unit Code | Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N' |
| Unit Title | Unit title gives a clear overall statement about what the incumbent should be able to do. |
| Description | Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for. |
| Scope | Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required. |
| Knowledge and Understanding | Knowledge and understanding are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard. |
| Organisational Context | Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility. |
| Technical Knowledge | Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities. |

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| Acronyms | Core Skills/ Generic Skills | Core skills or generic skills are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles. |
| | Keywords /Terms | Description |
| | NOS | National Occupational Standard(s) |
| | NVQF | National Vocational Qualifications Framework |
| | NSQF | National Skills Qualifications Framework |
| | NVEQF | National Vocational Education Qualifications Framework |
| | QP | Qualifications Pack |

AGR/N5301

Understand bee biology and behaviour

National Occupational Standard



Overview

This unit is about dealing with understanding bee biology and behaviour of different species of bees.

AGR/N5301
Understand bee biology and behaviour

| Unit Code | AGR/N5301 |
|---|---|
| Unit Title (Task) | Understand bee biology and behavior |
| Description | This OS is for bee-keeper who is responsible for understanding bee biology and behavior |
| Scope | This unit/ task covers the following: <ul style="list-style-type: none"> identify the different types of bees understand life cycle of the different types of bees understand different communication methods used by bees understand the pollination process and construct a flowering calendar |
| Performance Criteria(PC) w.r.t. the Scope | |
| Element | Performance Criteria |
| Identify the different species of bees | To be competent, the individual must be able to: <ul style="list-style-type: none"> PC1. identify different species of bees PC2. identify sub-species of bees PC3. identify different races of bees PC4. ascertain life span of different bees PC5. ascertain different roles played by different types of honey bee |
| Life cycle of the different bee castes | To be competent, the individual must be able to: <ul style="list-style-type: none"> PC6. ascertain different development stages of life cycle of the different types of bees PC7. identify time needed to complete each stage PC8. identify raw produce generated by bees during life cycle |
| Communication in bees | To be competent, the individual must be able to: <ul style="list-style-type: none"> PC9. identify different communication methods such as drumming feet, flapping wings etc. PC10. ascertain communication style to locate food source PC11. ascertain communication style to locate new home to which bees intend to swarm. |
| Pollination | To be competent, the individual must be able to: <ul style="list-style-type: none"> PC12. ascertain mixing of the male and female parts of flower PC13. identify reproduction of flowering plants PC14. list down bee forage plants PC15. construct a flowering calendar for their local areas |
| Knowledge and Understanding (K) | |
| A. Organizational Context (Knowledge of the company / organization and its processes) | The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> KA1. relevant legislation, standards, policies, and procedures in work KA2. relevant health and safety requirements applicable in the work environment KA3. own job role and responsibilities and sources for information pertaining to work KA4. who to approach for support in order to obtain work related information, clarifications and support KA5. importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business |

AGR/N5301
Understand bee biology and behaviour

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| | KA6. documentation and related procedures applicable in the context of work |
| B. Technical Knowledge | <p>The individual on the job needs to know and understand:</p> <p>KB1. different species/sub-species of bees</p> <p>KB2. life span and roles of different species of bees</p> <p>KB3. different life stages of species of bees</p> <p>KB4. raw produce generated by them at different life stages</p> <p>KB5. different communication styles of different bees</p> <p>KB6. different communication methods such as drumming feet, flapping wings etc</p> <p>KB7. communication styles for food location and new homes to bees</p> <p>KB8. climatic requirements of the different bees species</p> <p>KB9. different climatic requirements during the different life stages of the different bees species</p> <p>KB10. mixing of male and female parts of flower</p> <p>KB11. reproduction of flowering plants</p> <p>KB12. promotion and conservation techniques for bees</p> <p>KB13. use of different promotion and conservation techniques of bees</p> |
| Skills (S) | |
| A. Core Skills/ Generic Skills | Writing skills |
| | <p>The individual on the job needs to know and understand how to:</p> <p>N.A.</p> |
| | Reading skills |
| | <p>The individual on the job needs to know and understand how to:</p> <p>SA1. get awareness at the bee-keeper's level about the role of honeybees in pollination and biodiversity conservation through reading</p> |
| | Oral Communication (Listening & Speaking Skills) |
| | <p>The individual on the job needs to know and understand how to:</p> <p>SA2. maintain effective working relationships with bee-keeping experts/trainers</p> <p>SA3. communicate clearly and effectively with others like bee-keepers, concerned officer/stakeholders</p> <p>SA4. comprehend information shared by senior people and experts</p> |
| B. Professional Skills | Decision Making |
| | <p>The individual on the job needs to know and understand how to:</p> <p>SB1. observe things accordingly to understand bee biology and behaviour</p> <p>SB2. make decisions pertaining to the concerned area of work</p> <p>SB3. identify problems that may arise in carrying out tasks and take preventative action</p> |

AGR/N5301
Understand bee biology and behaviour

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| | SB4. take decision to achieve monetary gain |
| | Plan and Organize |
| | The individual on the job needs to know and understand: how to |
| | SB5. proper planning for understating bee biology and behaviour |
| | SB6. organize meetings / demonstrations with training providers and concerned departments whenever necessary |
| | Customer Centricity |
| | The individual on the job needs to know and understand how to: |
| | SB7. participate in bee-keeping exhibition/seminar/workshop |
| | SB8. attend and make use of exposure visit |
| | SB9. work with bee-keeping experts and trainers |
| | SB10. maintain and manage good relationships with assisting workforce and other co-bee-keeper's |
| | SB11. build relationships and use human centric approach |
| | Problem Solving |
| | The individual on the job needs to know and understand how to: |
| | SB12. think through the problem, evaluate the possible solution(s) and adopt an optimum /best possible solution(s) |
| | SB13. identify problems immediately and take up solutions quickly to resolve delays |
| | Analytical Thinking |
| | The individual on the job needs to know and understand how to: |
| | SB14. monitor and maintain the material and equipment required for various farm operations |
| | Critical Thinking |
| | The individual on the job needs to know and understand how to: |
| | SB15. apply, analyze, and evaluate the information on crops which provide nectar and pollen for the honey bees when the nectar flow occur |

AGR/N5301

Understand bee biology and behaviour

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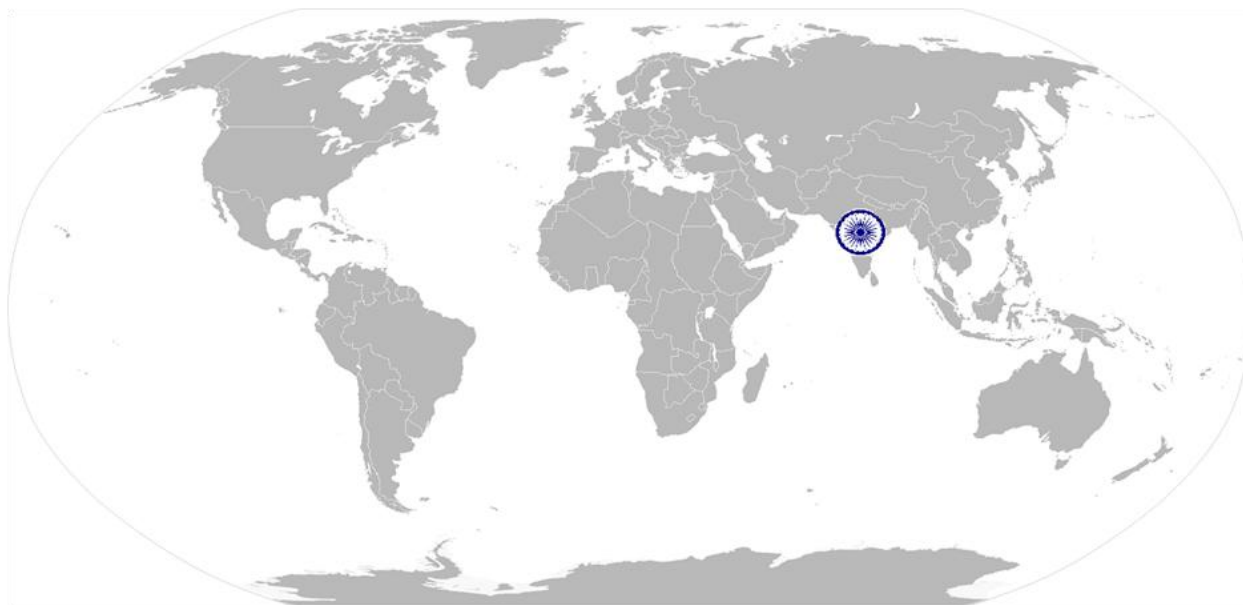
| NOS Code | AGR/N5301 | | |
|----------------|-------------------------------|------------------|----------|
| Credits (NSQF) | TBD | Version number | 1.0 |
| Sector | Agriculture and Allied | Drafted on | 25/02/14 |
| Sub Sector | Agriculture Allied Activities | Last reviewed on | 14/06/17 |
| Occupation | Bee Keeping | Next review date | 14/06/21 |



AGR/N5302

Handle beekeeping systems and beekeeping equipments

National Occupational Standard



Overview

This unit is about dealing with handling different bee-keeping systems and bee-keeping equipments in various beekeeping operations

AGR/N5302
Handle beekeeping systems and beekeeping equipments

National Occupational Standard

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| Unit Code | AGR/N5302 |
| Unit Title (Task) | Handle bee-keeping system and bee-keeping tools |
| Description | This OS is for beekeeper who is responsible for understanding and adopting suitable bee-keeping systems and bee-keeping equipments |
| Scope | This unit/ task covers the following: <ul style="list-style-type: none"> • Handle bee-keeping systems • Handle bee-keeping tools |
| Performance Criteria(PC) w.r.t. the Scope | |
| Element | Performance Criteria |
| Handle beekeeping systems | To be competent, the individual must be able to: <ul style="list-style-type: none"> PC1. identify different bee-keeping systems ranging from the local/traditional systems to the modern systems PC2. ascertain importance of economic aspects of the different bee-keeping systems PC3. select the most appropriate bee-keeping system (best hive type) for their areas based on cost benefit analysis |
| Handle beekeeping tools | To be competent, the individual must be able to: <ul style="list-style-type: none"> PC4. identify and use of modern bee-keeping tools PC5. ascertain the working of the different bee-keeping tools PC6. ascertain importance of economic aspects of the different bee-keeping tools |
| Knowledge and Understanding (K) | |
| A. Organizational Context (Knowledge of the company / organization and its processes) | The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> KA1. relevant legislation, standards, policies, and procedures in work KA2. relevant health and safety requirements applicable in the work environment KA3. own job role and responsibilities and sources for information pertaining to work KA4. who to approach for support in order to obtain work related information, clarifications and support KA5. importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business KA6. documentation and related procedures applicable in the context of work |
| B. Technical Knowledge | The individual on the job needs to know and understand: <ul style="list-style-type: none"> KB1. different traditional and modern bee-keeping systems KB2. investment and expenditure involved KB3. different environment required for different bee-keeping systems KB4. bees and beehive conservation in bee-keeping systems KB5. honey yield in bee-keeping systems KB6. ease of management of bee-keeping systems KB7. cost benefit analysis of bee-keeping systems |

AGR/N5302
Handle beekeeping systems and beekeeping equipments

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| | KB8. identification of different bee-keeping tools KB9. operation and use of bee-keeping tools in different bee-keeping operations KB10. materials used in bee-keeping tools KB11. advantages of using appropriate bee-keeping tools KB12. cost benefit analysis of bee-keeping tools |
| Skills (S) | |
| A. Core Skills/ Generic Skills | Writing skills |
| | The individual on the job needs to know and understand how to: N.A. |
| | Reading skills |
| | The individual on the job needs to know and understand how to: SA1. get awareness at the bee-keeper's level about the role of honeybees in pollination and biodiversity conservation through reading |
| | Oral Communication (Listening & Speaking Skills) |
| | The individual on the job needs to know and understand how to: SA2. maintain effective working relationships with bee-keeping experts/trainers SA3. communicate clearly and effectively with others like bee-keepers, concerned officer/stakeholders SA4. comprehend information shared by senior people and experts |
| B. Professional Skills | Decision Making |
| | The individual on the job needs to know and understand how to: SB1. make decisions to use appropriate bee-keeping methods and bee-keeping systems pertaining to local climatic conditions SB2. identify problems that may arise in carrying out tasks and take preventive action |
| | Plan and Organize |
| | The individual on the job needs to know and understand: how to SB3. proper planning for adopting various bee-keeping systems and tools SB4. organize meetings / demonstrations with training providers and concerned departments whenever necessary |
| | Customer Centricity |
| | The individual on the job needs to know and understand how to: SB5. participate in bee-keeping exhibition/seminar/workshop to understand handling of bee-keeping tools and choosing appropriate bee-keeping systems depending on local conditions SB6. attend and make use of exposure visit SB7. work with bee-keeping experts and trainers SB8. build relationships and use human centric approach |
| | Problem Solving |

AGR/N5302
Handle beekeeping systems and beekeeping equipments

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| | The individual on the job needs to know and understand how to: SB9. think through the problem, evaluate the possible solution(s) and adopt an optimum /best possible solution(s) SB10. identify problems immediately and take up solutions quickly to resolve delays |
| | Analytical Thinking |
| | The individual on the job needs to know and understand how to: SB11. analyse cost, quality and time of different bee-keeping systems before implement appropriate one SB12. analyse of different bee-keeping tools to carry out different bee-keeping activities |
| | Critical Thinking |
| | The individual on the job needs to know and understand how to: SB13. take up his own working & learning to use suitable bee-keeping systems/tools whenever required |

AGR/N5302

Handle beekeeping systems and beekeeping equipments

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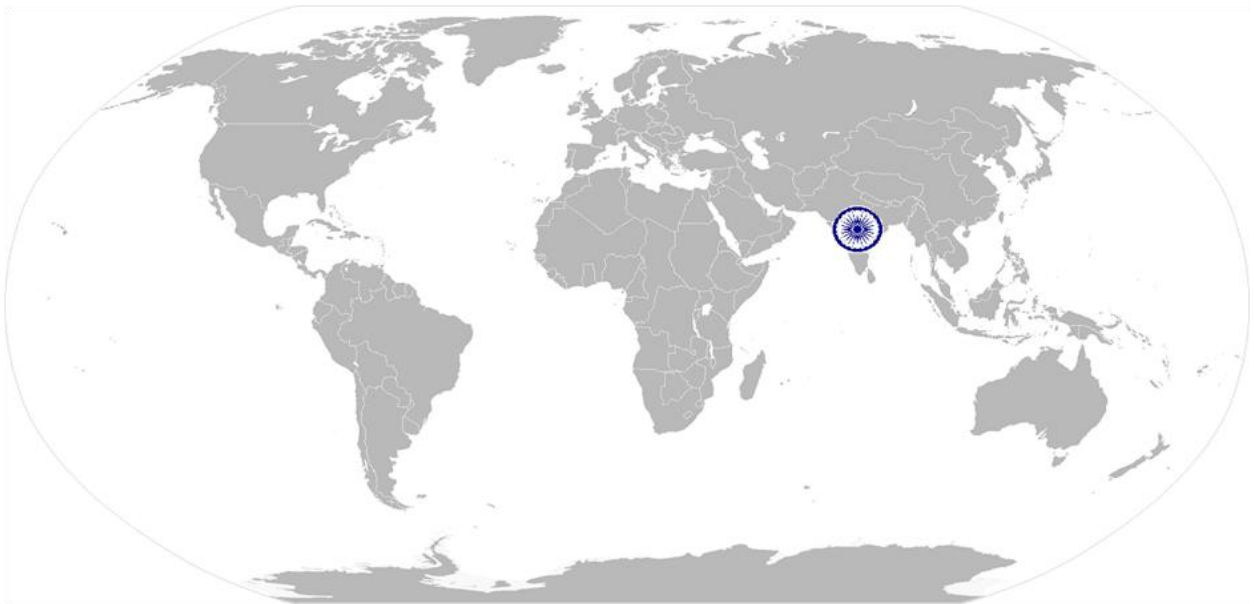
| NOS Code | AGR/N5302 | | |
|----------------|-------------------------------|------------------|----------|
| Credits (NSQF) | TBD | Version number | 1.0 |
| Sector | Agriculture and Allied | Drafted on | 25/02/14 |
| Sub Sector | Agriculture Allied Activities | Last reviewed on | 14/06/17 |
| Occupation | Bee Keeping | Next review date | 14/06/21 |



AGR/N5303

Beehive Management

National Occupational Standard



Overview

This unit is about dealing with overall beehive management which includes site selection, beehive installation, colony management and inspection and record keeping

AGR/N5303
Beehive Management

| Unit Code | AGR/N5303 |
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| Unit Title (Task) | Beehive management |
| Description | This OS is for bee-keeper who is responsible for overall beehive management which includes site selection, installation of beehive, colony management and inspection and record keeping |
| Scope | This unit/task covers the following: <ul style="list-style-type: none"> • Site selection of beehive • Installation of beehive • Colony management (During honey flow and dearth period) • Colony inspection • Record keeping |
| Performance Criteria(PC) w.r.t. the Scope | |
| Element | Performance Criteria |
| Site selection of beehive | To be competent, the individual must be able to: <ul style="list-style-type: none"> PC1. select appropriate location for beehives that consist of diverse vegetation that provides plenty of pollen and nectar PC2. know and fix appropriate radius of apiary location from food sources PC3. ensure sourcing of good water in the immediate area since bees need as much water as pollen and nectar |
| Installation of beehive | To be competent, the individual must be able to: <ul style="list-style-type: none"> PC4. ensure hanging of hives using strong greased galvanized wires to protect the bees PC5. ensure hanging of hives in or under well shaded trees PC6. suspend hives from wires so that predators cannot push them over PC7. remember hanging of hives in such a way that allows ease of harvesting PC8. use trees and solid poles to hang the hive PC9. hives should be hung at waist height above the ground PC10. keep the hives clean and pest free PC11. ensure placing of hives on sturdy stands PC12. place hives in a way so that they can be approached from behind PC13. place hives on stands makes them accessible and easy to harvest and manage PC14. reduce drifting and disease transmission PC15. remove small stones or debris in the apiary |
| Colony management (During Honey Flow Period & Dearth Period) | To be competent, the individual must be able to: <ul style="list-style-type: none"> PC16. attract bees to the hives PC17. feeding the colonies during dearth period PC18. preservation of comb during dearth period PC19. Queen rearing PC20. divide the colonies in order to populate a new hive PC21. uniting of smaller colonies to enlarge a colony PC22. improve their yield of honey or to survive the dearth PC23. populate the hive includes swarming and transferring of bees PC24. ascertain use of tools used in dividing, uniting and populating the bees |

AGR/N5303
Beehive Management

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| Colony inspection | <p>To be competent, the individual must be able to:</p> <p>PC25. identify the climatic conditions before proceeding to the beehive for inspection</p> <p>PC26. ascertain use of various equipments used for inspection like smokers, bee suits, gloves</p> <p>PC27. perform colony inspection from outside to get idea of the colony status without opening the hive</p> <p>PC28. ensure incoming and outgoing bees and pollen carrying foragers at the hive entrance</p> <p>PC29. make sure that colony is strong and healthy</p> <p>PC30. check colony is diseased, abnormal and poisoned</p> <p>PC31. gather necessary tools before starting inside colony inspection</p> <p>PC32. use necessary tools to perform inside colony inspection</p> <p>PC33. perform colony inspection from inside to confirm the colony status, strengths and any abnormalities</p> <p>PC34. make necessary observation regarding condition of the bees, food stores, presence of pests and disease, symptoms of swarming and absconding</p> <p>PC35. check need to provide more frames with comb foundation</p> <p>PC36. ensure cleanliness and hygiene</p> <p>PC37. remove unnecessary, deformed, or additional combs built by the bees</p> |
| Record keeping | <p>To be competent, the individual must be able to:</p> <p>PC38. records should be kept to know what was done last time and what to do next time</p> <p>PC39. Keep records what equipment to use and when to use effectively and efficiently</p> |
| Knowledge and Understanding (K) | |
| A. Organizational Context (Knowledge of the company / organization and its processes) | <p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant legislation, standards, policies, and procedures in work</p> <p>KA2. relevant health and safety requirements applicable in the work environment</p> <p>KA3. own job role and responsibilities and sources for information pertaining to work</p> <p>KA4. who to approach for support in order to obtain work related information, clarifications and support</p> <p>KA5. importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business</p> <p>KA6. documentation and related procedures applicable in the context of work</p> |
| B. Technical Knowledge | <p>The user/individual on the job needs to know and understand:</p> <p>KB1. suitable site selection considering food and water sources for honeybees</p> <p>KB2. suitable climatic conditions for beehive placing location(free from extreme hot or cold weather conditions)</p> <p>KB3. tools, methods and other materials required for installation of beehives</p> <p>KB4. proper installation beehives</p> <p>KB5. division of establish colony</p> |

AGR/N5303
Beehive Management

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| | KB6. unite of bee colony KB7. feeding the bees KB8. swarming, absconding and transferring of honey bees KB9. various tools and equipments used in colony management KB10. suitable climatic condition for colony inspection (inside and outside inspection) KB11. various tools and equipments used in inside and outside colony inspection like smoker, protective clothing, head-veil, overfills, gloves and shoes, hive tool, bee brush KB12. diseases in beehives KB13. precaution measures to be taken on pesticide application KB14. bee-keeping should not be practiced in areas where genetically modified crops are grown to avoid risk of contamination KB15. positioning of beehives KB16. use of different beekeeping equipments used in colony management and inspection KB17. colony status, strength and any abnormalities KB18. cleanliness and hygiene |
| Skills (S) | |
| A. Core Skills/ Generic Skills | Writing Skills |
| | The user/ individual on the job needs to know and understand how to: N.A. |
| | Reading Skills |
| | The user/ individual on the job needs to know and understand how to: SA1. get updated on protecting hives from intense sun, wind and domestic animals etc at the site SA2. get updated on precautions to take in the areas where intensive application of chemical pesticides is done SA3. get updated on latest materials used in beehives for their protection from natural calamities SA4. keep abreast with the knowledge of measurable parameters of beehives |
| | Oral Communication (Listening and Speaking skills) |
| | The user/individual on the job needs to know and understand how to: SA5. maintain effective working relationships SA6. communicate clearly and effectively with others like beekeepers, concerned officer/stakeholders SA7. comprehends information shared by senior people and experts |
| B. Professional Skills | Decision Making |
| | The user/individual on the job needs to know and understand how to: SB1. make decisions pertaining to the site selection and installation of beehives SB2. make decisions pertaining to the colony management, outside and |

AGR/N5303
Beehive Management

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| | inside colony inspection |
| | SB3. identify problems that may arise in carrying out tasks and take preventative action |
| | SB4. take decision to achieve monetary gain |
| | Plan and Organize |
| | The user/individual on the job needs to know and understand: how to |
| | SB5. plan and organize for site selection and beehive installation |
| | SB6. plan and organize for colony management and colony inspection |
| | SB7. plan and organize for making effective use of tools and equipments to carry out various activities |
| | SB8. organize meetings / demonstrations with training providers and concerned departments whenever necessary |
| | Customer Centricity |
| | The user/individual on the job needs to know and understand how to: |
| | SB9. participate in bee-keeping exhibition/seminar/workshop |
| | SB10. attend and make use of exposure visit |
| | SB11. work with bee-keeping experts and trainers |
| | SB12. build relationships and use human centric approach |
| | SB13. maintain and manage good relationships with assisting workforce and other co-bee-keeper's |
| | Problem Solving |
| | The user/individual on the job needs to know and understand how to: |
| | SB14. think through the problem, evaluate the possible solution(s) and adopt an optimum /best possible solution(s) |
| | SB15. identify problems immediately and take up solutions quickly to resolve delays |
| | Analytical Thinking |
| | The user/individual on the job needs to know and understand how to: |
| | SB16. monitor and maintain the knowledge required for beehive management |
| | Critical Thinking |
| | The user/individual on the job needs to know and understand how to: |
| | SB17. take up his own working and learning |
| | SB18. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action |

AGR/N5303
Beehive Management

NOS Version Control

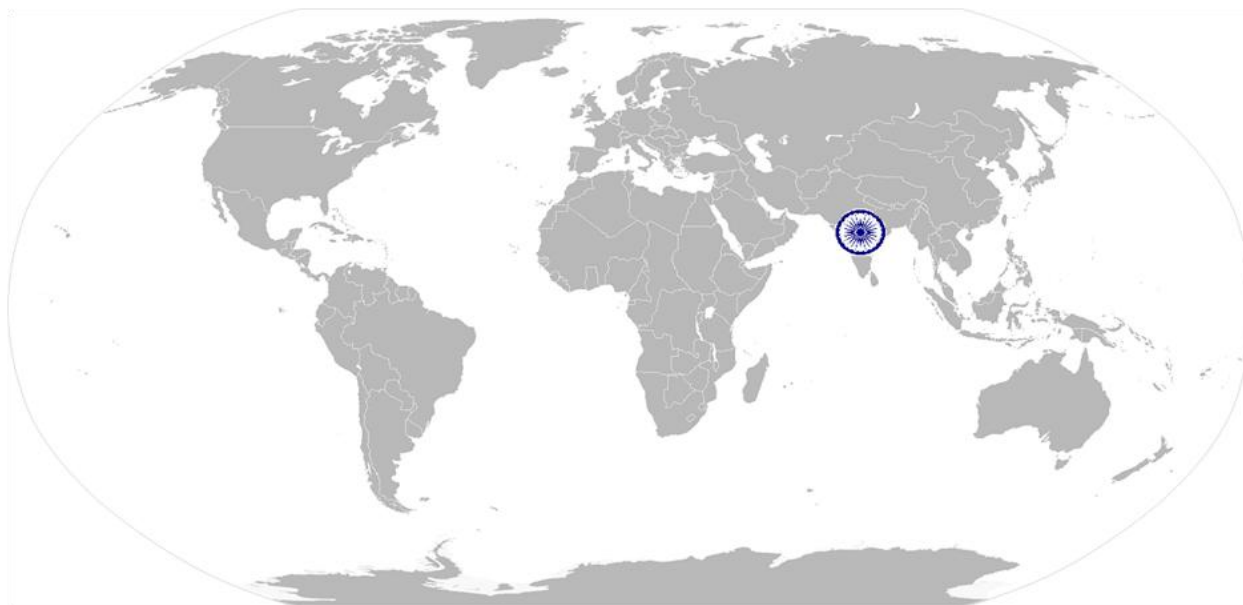
| NOS Code | AGR/N5303 | | |
|----------------|-------------------------------|------------------|----------|
| Credits (NSQF) | TBD | Version number | 1.0 |
| Sector | Agriculture and Allied | Drafted on | 25/02/14 |
| Sub Sector | Agriculture Allied Activities | Last reviewed on | 14/06/17 |
| Occupation | Bee Keeping | Next review date | 14/06/21 |



AGR/N5304

Manage insects, diseases and nuisances in beehive

National Occupational Standard



Overview

This unit is about dealing with managing insect, diseases and other nuisances to protect bees and take necessary action whenever required

AGR/N5304
Manage insects, diseases and nuisances in beehive

National Occupational Standard

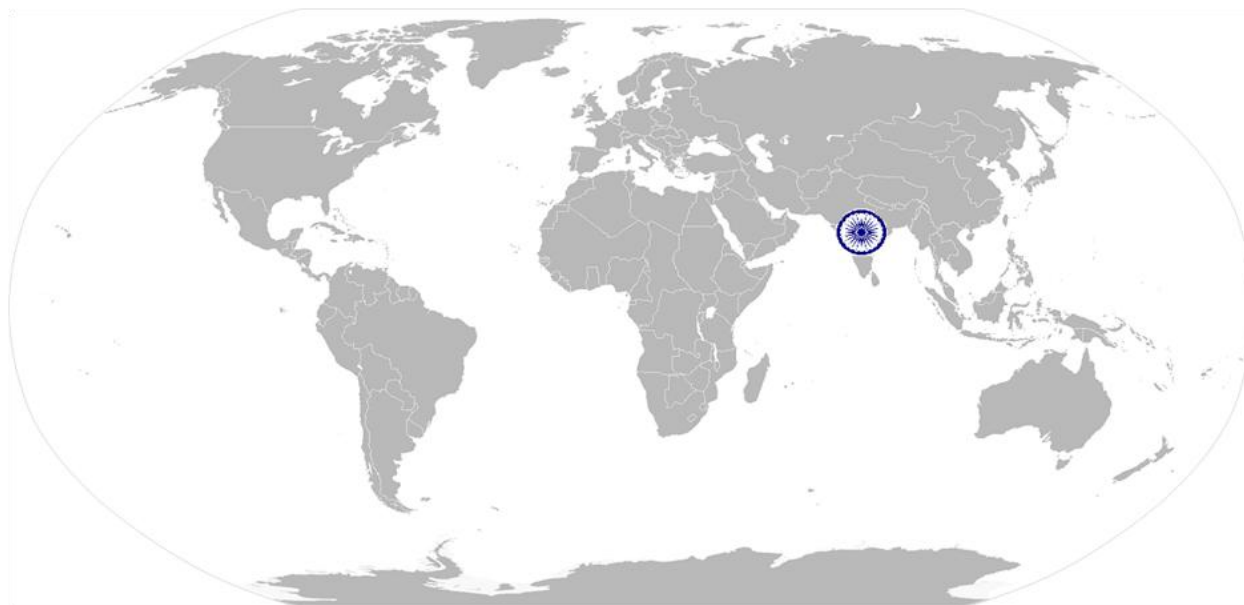
| | |
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| Unit Code | AGR/N5304 |
| Unit Title (Task) | Manage insects, diseases and nuisances in beehive |
| Description | This OS is for bee-keeper who is responsible for management of pests, diseases and other nuisances |
| Scope | This unit/task covers the following: <ul style="list-style-type: none"> • Insect management • Management of diseases • Nuisances management |
| Performance Criteria(PC) w.r.t. the Scope | |
| Element | Performance Criteria |
| Insect management | To be competent, the individual must be able to: <ul style="list-style-type: none"> PC1. identify common insects stored in combs like wax moth, Varro mite, ant and termites PC2. take preventive steps/methods to overcome insects PC3. use required tools, equipments and other materials |
| Management of diseases | To be competent, the individual must be able to: <ul style="list-style-type: none"> PC4. identify common diseases of bee like European foul brood, American foul brood, sac brood PC5. take preventive measures and methods to overcome bee diseases PC6. use required tools, equipments and other materials |
| Nuisances management | To be competent, the individual must be able to: <ul style="list-style-type: none"> PC7. identify nuisances in bee-keeping like disturbance from domestic animals, bush fires, chemical poisoning, honey badger and vandalism PC8. preventive practices and methods to overcome bee diseases PC9. use required tools, equipments and other materials |
| Knowledge and Understanding (K) | |
| A. Organizational Context (Knowledge of the company / organization and its processes) | The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> KA1. relevant legislation, standards, policies, and procedures in work KA2. relevant health and safety requirements applicable in the work environment KA3. own job role and responsibilities and sources for information pertaining to work KA4. who to approach for support in order to obtain work related information, clarifications and support KA5. importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business KA6. documentation and related procedures applicable in the context of work |
| B. Technical Knowledge | The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> KB1. various tools and equipments used in insect management, diseases management and other nuisances management KB2. effective and efficient use of tool, equipments and other materials |

AGR/N5304
Manage insects, diseases and nuisances in beehive

| | |
|---------------------------------------|---|
| | <p>whenever required</p> <p>KB3. common insects like wax moth, Varro mite, ant and termites</p> <p>KB4. common diseases of bees like European foul brood, American foul brood, sac brood</p> <p>KB5. various factors creating disturbances</p> <p>KB6. prevention practices and methods to overcome insects, diseases and nuisances</p> |
| Skills (S) | |
| A. Core Skills/ Generic Skills | Writing Skills |
| | The user/ individual on the job needs to know and understand how to: N.A. |
| | Reading Skills |
| | The user/ individual on the job needs to know and understand how to: SA1. get updated to indentify insects and diseases harming the bee colony SA2. get updated to take and adopt corrective measures to overcome insects and diseases |
| | Oral Communication (Listening and Speaking skills) |
| | The user/individual on the job needs to know and understand how to: SA3. maintain effective working relationships SA4. communicate clearly and effectively with others like beekeepers, concerned officer/stakeholders SA5. comprehends information shared by senior people and experts |
| B. Professional Skills | Decision Making |
| | The user/individual on the job needs to know and understand how to: SB1. make decisions pertaining to the disease, insect and other nuisances management SB2. identify problems that may arise in carrying out tasks and take preventative action SB3. take decision to achieve monetary gain |
| | Plan and Organize |
| | The user/individual on the job needs to know and understand: how to SB4. proper planning of management of insects, diseases and nuisances of bees SB5. organize meetings / demonstrations with training providers and concerned departments whenever necessary |
| | Customer Centricity |
| | The user/individual on the job needs to know and understand how to: SB6. participate in bee-keeping exhibition/seminar/workshop SB7. attend and make use of exposure visit SB8. work with bee-keeping experts and trainers SB9. build relationships and use human centric approach SB10. maintain and manage good relationships with assisting workforce and other co-bee-keeper's |

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Manage insects, diseases and nuisances in beehive

| | |
|--|--|
| | Problem Solving |
| | The user/individual on the job needs to know and understand how to: SB11. think through the problem, evaluate the possible solution(s) to overcome insects, diseases and nuisances in beehives SB12. identify problems immediately and take up solutions quickly to resolve delays |
| | Analytical Thinking |
| | The user/individual on the job needs to know and understand how to: SB13. monitor and maintain the material and equipment required for various farm operations |
| | Critical Thinking |
| | The user/individual on the job needs to know and understand how to: SB14. take up his own working and learning |



AGR/N5304

Manage insects, diseases and nuisances in beehive

NOS Version Control

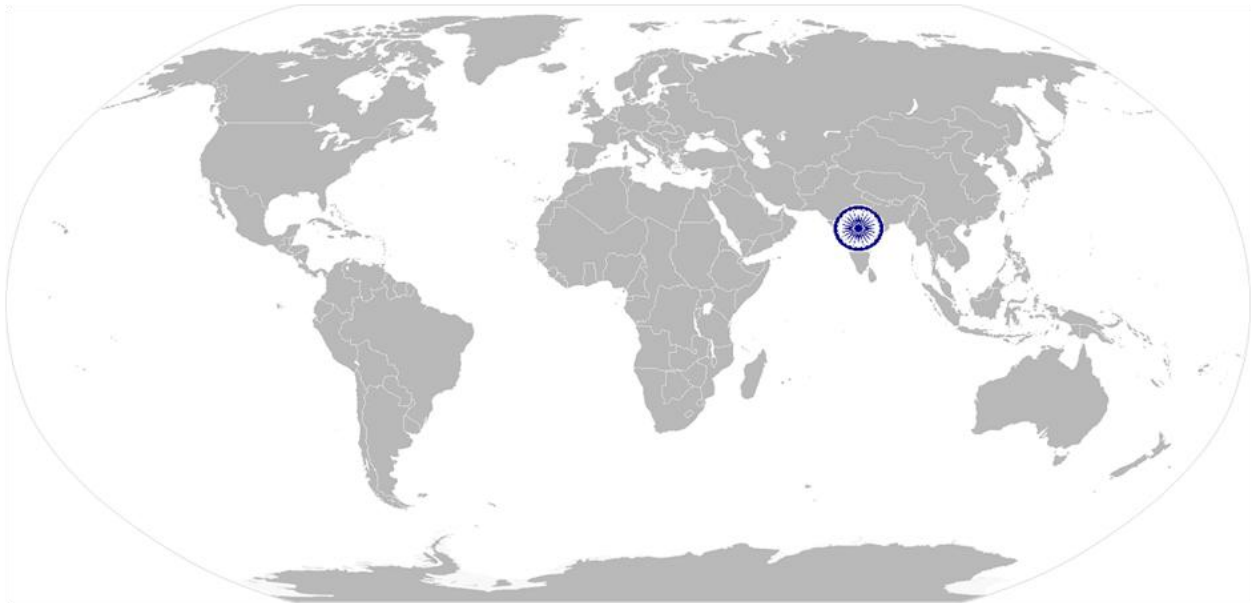
| NOS Code | AGR/N5304 | | |
|----------------|-------------------------------|------------------|----------|
| Credits (NSQF) | TBD | Version number | 1.0 |
| Sector | Agriculture and Allied | Drafted on | 25/02/14 |
| Sub Sector | Agriculture Allied Activities | Last reviewed on | 14/06/17 |
| Occupation | Bee Keeping | Next review date | 14/06/21 |



AGR/N5305

Harvest, process and market the produce

National Occupational Standard



Overview

This unit is about dealing with harvesting, processing and marketing of bee raw products

AGR/N5305
Harvest, process and market the produce

| Unit Code | AGR/N5305 |
|--|--|
| Unit Title (Task) | Harvesting, processing and marketing |
| Description | This OS is for bee-keeper who is responsible harvesting, processing and marketing of products |
| Scope | This unit/task covers the following: <ul style="list-style-type: none"> • Harvesting • Processing • Marketing of produce |
| Performance Criteria(PC) w.r.t. the Scope | |
| Element | Performance Criteria |
| Harvesting | To be competent, the individual must be able to: <ul style="list-style-type: none"> PC1. ascertain right time to harvest the honey and other raw products PC2. identify the right equipments used in harvesting like smoker, hive tool, nucleus top bar hive PC3. report any accidents, incidents or problems without delay to an appropriate person PC4. take necessary actions to reduce further danger |
| Processing | To be competent, the individual must be able to: <ul style="list-style-type: none"> PC5. perform grading of raw products to ensure good quality and shelf-life of the products PC6. follow procedures, practices and methods of grading of raw produce PC7. perform extraction of honey adopting suitable methods of extraction PC8. follow procedures, practices and methods of extraction of raw produce PC9. procure required inputs for extraction of raw product PC10. ascertain proper storage and packaging of honey |
| Marketing | To be competent, the individual must be able to: <ul style="list-style-type: none"> PC11. identify the honey and bee related by-products traders PC12. ascertain good supply chain |
| Knowledge and Understanding (K) | |
| A. Organizational Context (Knowledge of the company / organization and its processes) | The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> KA1. relevant legislation, standards, policies, and procedures in work KA2. relevant health and safety requirements applicable in the work environment KA3. own job role and responsibilities and sources for information pertaining to work KA4. who to approach for support in order to obtain work related information, clarifications and support KA5. importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business KA6. documentation and related procedures applicable in the context of work |
| B. Technical | The user/individual on the job needs to know and understand: |

AGR/N5305
Harvest, process and market the produce

| | |
|---------------------------------------|---|
| Knowledge | KB1. know various tools and equipments used in harvesting and processing KB2. know various methods and practices to be followed for harvesting, processing and marketing of raw produce KB3. correct and safe way to use materials and equipment required KB4. safe disposal methods for waste KB5. maintain personal hygiene and clean working place KB6. different sources of supply of raw produce KB7. best and most cost-effective sources of supply KB8. marketing and sales channels KB9. sale network |
| Skills (S) | |
| A. Core Skills/ Generic Skills | Writing Skills |
| | The user/ individual on the job needs to know and understand how to: N.A. |
| | Reading Skills |
| | The user/ individual on the job needs to know and understand how to: SA1. get updated on suitable practices and methods required for harvesting and processing SA2. get updated on effective and efficient use of tools, equipments and other materials SA3. keep abreast on best marketing practices through seeking consultation to other bee-keeper and experts |
| | Oral Communication (Listening and Speaking skills) |
| | The user/individual on the job needs to know and understand how to: SA4. maintain effective working relationships SA5. communicate clearly and effectively with others like beekeepers, concerned officer/stakeholders SA6. comprehends information shared by senior people and experts |
| B. Professional Skills | Decision Making |
| | The user/individual on the job needs to know and understand how to: SB1. make decisions pertaining to the concerned area of work SB2. identify problems that may arise in carrying out tasks and take preventive action SB3. take decision to achieve monetary gain |
| | Plan and Organize |
| | The user/individual on the job needs to know and understand: how to SB4. proper planning of harvesting, processing and marketing SB5. organize meetings / demonstrations with training providers and concerned departments whenever necessary |
| | Customer Centricity |

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Harvest, process and market the produce

| | |
|--|---|
| | The user/individual on the job needs to know and understand how to: SB6. participate in bee-keeping exhibition/seminar/workshop SB7. attend and make use of exposure visit SB8. work with bee-keeping experts and trainers SB9. build relationships and use human centric approach SB10. maintain and manage good relationships with assisting workforce and other co-bee-keeper's |
| | Problem Solving |
| | The user/individual on the job needs to know and understand how to: SB11. think through the problem, evaluate the possible solution(s) and adopt an optimum /best possible solution(s) SB12. identify problems immediately and take up solutions quickly to resolve delays |
| | Analytical Thinking |
| | The user/individual on the job needs to know and understand how to: SB13. monitor and maintain the knowledge required |
| | Critical Thinking |
| | The user/individual on the job needs to know and understand how to: SB14. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action SB15. take up his own working & learning |

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Harvest, process and market the produce

NOS Version Control

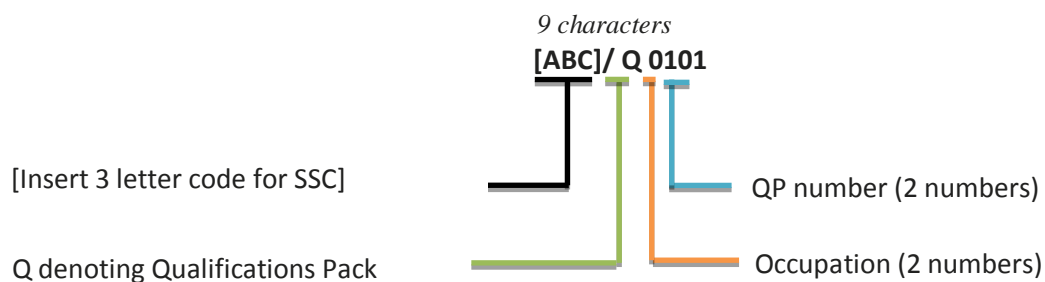
| NOS Code | AGR/N5305 | | |
|----------------|-------------------------------|------------------|----------|
| Credits (NSQF) | TBD | Version number | 1.0 |
| Sector | Agriculture and Allied | Drafted on | 25/02/14 |
| Sub Sector | Agriculture Allied Activities | Last reviewed on | 14/06/17 |
| Occupation | Bee Keeping | Next review date | 14/06/21 |



Annexure

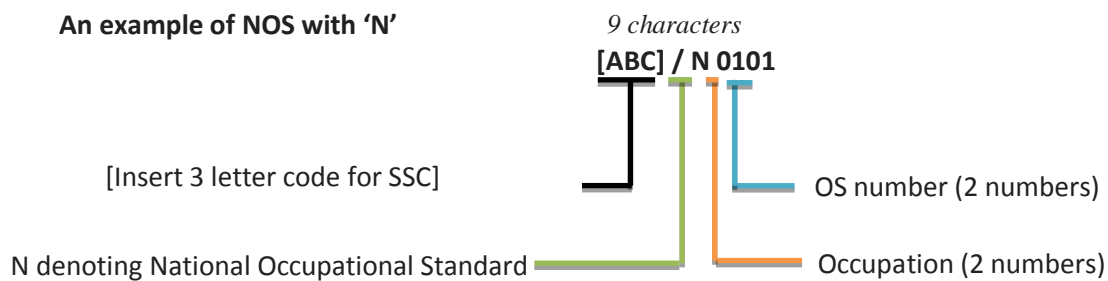
Nomenclature for QP and NOS

Qualifications Pack



Occupational Standard

An example of NOS with 'N'



[Back to top...](#)

| Sub-sector | Range of Occupation numbers |
|--|-----------------------------|
| Agriculture Crop Production | 01 – 40 |
| Dairying | 41 – 42 |
| Poultry | 43 – 44 |
| Animal Husbandry | 45 – 48 |
| Fisheries | 49 – 51 |
| Agriculture Allied Activities | 52 – 60 |
| Forestry, Environment and Renewable Energy Management | 61 - 70 |
| Agriculture Industries | 71 – 90 |
| Generic Occupations | 96 - 99 |

| Sequence | Description | Example |
|-------------------------|-------------------|---------|
| Three letters | Industry name | AGR |
| Slash | / | / |
| Next letter | Whether QP or NOS | Q or N |
| Next two numbers | Occupation code | 01 |
| Next two numbers | OS number | 01 |

Note:

- The range of occupation numbers have been decided based on the number of existing and future occupations in a segment
- Occupation numbers from 91 – 95 have been intentionally left blank to accommodate any emerging segment in future.

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role

Beekeeper

Qualification Pack

AGR/Q5301

Sector Skill Council

Agriculture

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.

| Assessment outcomes | Assessment Criteria for outcomes | Total Marks (300) | Out Of | Marks Allocation | |
|---|--|-------------------|--------|------------------|------------------|
| | | | | Theory | Skills Practical |
| 1.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 |
| | | | 45 | 23 | 22 |
| 2.AGR/N5302 Handle beekeeping systems and beekeeping equipments | PC1. identify different bee-keeping systems ranging from the local/traditional systems to the modern systems | | 4 | 0 | 4 |
| | 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 | 30 | 5 | 5 | 0 |
| | | | 30 | 15 | 15 |

| | | | | | |
|--------------------------------------|---|----|---|---|---|
| 3.AGR/N5303 Beehive Management | PC1.select appropriate location for beehives that consist of diverse vegetation that provides plenty of pollen and nectar | | 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 | 90 | 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 |
| | | | 90 | 45 | 45 |
| 4.AGR/N5304 Manage insects diseases and nuisances in beehive | PC1. identify common insects pests stored in combs like wax moth, Varro mite, ant and termites | | 8 | 6 | 2 |
| | PC2. take preventive steps/methods to overcome insects | 60 | 10 | 4 | 6 |

| | | | | | |
|--|---|----|-----------|-----------|-----------|
| | PC3. use required tools, equipments and other materials | | 4 | 4 | 0 |
| | PC4. identify 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. identify 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 |
| | | | 60 | 30 | 30 |
| 5.AGR/N5305 Harvest, process and market the produce | PC1. ascertain right time to harvest the honey and other raw products | 75 | 7 | 4 | 3 |
| | PC2. identify 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. identify the honey and bee related by-products traders | | 8 | 4 | 4 |
| | PC12. ascertain good supply chain | | 8 | 4 | 4 |

Qualifications Pack For Beekeeper

| | | | | | |
|--|--------------|------------|------------|------------|------------|
| | | | 75 | 37 | 38 |
| | TOTAL | 300 | 300 | 150 | 150 |