Qualification Pack

Banana Farmer cum Primary Processor

QP Code: AGR/Q0301

Version: 3.0

NSQF Level: 3

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Contents

AGR/Q0301: Banana Farmer cum Primary Processor

Brief Job Description

The job of a Banana Farmer cum Primary Processor involves cultivation of banana as per the package of practices recommended for a particular agronomic climate zone, type of soil, rainfall pattern and climatic conditions to achieve the banana yields as per the genetic potential of a given variety and sell the produce as per the competitive market prices without distress sale. Indiviual is also involved in carrying out banana fiber extraction from banana pseudo stem

Personal Attributes

The Banana Farmer cum Primary Processor should work independently, risk bearing, very laborious and must have the ability to make decisions pertaining to his/her area of work. Requires clarity, skill for basic arithematic and algebraic principles. The individual should be result orientedand is responsible for his own working and learning. The individual should also be able to demonstrate skills of various opportunities, threats in the climatic and market environments, and should be able tomake decision for instant problem solving.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. AGR/N0301: Planting material preparation in banana cultivation
2. AGR/N0302: Land preparation and plantation in banana cultivation
3. AGR/N0303: Integrated nutrient management in banana cultivation
4. AGR/N0304: Perform integrated pest and disease management in banana cultivation
5. AGR/N0305: Irrigation management and other operations in banana cultivation
6. AGR/N0306: Carry out harvesting, post-harvest management and marketing of Banana
7. AGR/N0357: Carry out banana fiber extraction from banana pseudo stem
8. AGR/N9908: Undertake basic entrepreneurial activities for small enterprise
9. AGR/N9903: Maintain health and safety at the workplace
10. DGT/VSQ/N0101: Employability Skills (30 Hours)

Qualification Pack (QP) Parameters

Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Fruit Crops Cultivation
Country	India
NSQF Level	3
Credits	8
Aligned to NCO/ISCO/ISIC Code	NCO-2015/6112.0901
Minimum Educational Qualification & Experience	10th Class OR 8th Class (with two years of (NTC/ NAC) after 8th) OR 8th grade pass and pursuing continuous schooling in regular school with vocational subject OR 8th grade pass with 2 Years of experience relevant experience OR 5th grade pass with 5 Years of experience relevant experience OR Previous relevant Qualification of NSQF Level (Level 2) with 1 Year of experience relevant experience OR Previous relevant Qualification of NSQF Level (Level 2.5) with 6 Months of experience relevant experience
Minimum Level of Education for Training in School	8th Class
Pre-Requisite License or Training	NA
Minimum Job Entry Age	16 Years
Last Reviewed On	NA
Next Review Date	NA
NSQC Approval Date	
Version	3.0

AGR/N0301: Planting material preparation in banana cultivation

Description

This OS is for a Banana grower who is responsible for identifying the appropriate planting material for banana cultivation and its treatment.

Scope

The scope covers the following :

- Preparation of the site
- Identification of appropriate planting material
- Procurement of Planting material
- Treatment of planting material
- Health and Safety Precautions

Elements and Performance Criteria

Preparation of the site

To be competent, the user/individual on the job must be able to:

PC1. select the site with suitable agro-climatic conditions for banana cultivation

PC2. coordinate with an authorised lab to determine if the soil is suitable for banana cultivation at the site

PC3. identify the risks associated with banana growing and possible precautions that need to be taken

PC4. select the banana variety to be cultivated based on the local biotic and abiotic situations, available resources and constraints, market need and prices, production costs and time of harvest

PC5. implement measures to make the site suitable for banana growing

PC6. create drainage channels in the field for the effective drainage of water

PC7. monitor and maintain the condition of tools and equipment required for seedling and planting material preparation

Identification of appropriate planting material

To be competent, the user/individual on the job must be able to:

PC8. identify appropriate varieties based on the agro-climatic zone in which cultivation is taken up

PC9. • select the disease-resistant and high-yielding varieties of banana that can be grown
• profitably in the agro-climatic conditions of the selected area

Procurement of Planting material

To be competent, the user/individual on the job must be able to:

PC10. identify various vendors / suppliers (including government nurseries / department) of the planting material

PC11. ascertain the quality of seedling and material from each source in terms of free from pests and diseases, survival rate etc.

PC12. ascertain the prevailing market rates for the planting material

PC13. procure the planting material from the authorized vendors

PC14. identify an appropriate storage space (free of infestation and having congenial climatic conditions for the planting material)

PC15. store the planting material (if there is time lag between procurement and planting)

Treatment of planting material

To be competent, the user/individual on the job must be able to:

PC16. ascertain the prevalent pests and diseases of banana in a given agro-climatic zone

PC17. ascertain the appropriate pesticides available for planting treatment

PC18. treat the planting as per the dosage recommended by the state agriculture university / department or as prescribed by the pesticide manufacturer

Health and Safety Precautions

To be competent, the user/individual on the job must be able to:

PC19. follow the safety precautions in the reading material provided with the pesticide

PC20. keep ready with all the necessary first aids as suggested in the safety measures

PC21. use all the necessary safety material and follow all the preventive measures to avoid any injury during use / application of pesticide

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant legislation, standards, policies, and procedures in work

KU2. relevant health and safety requirements applicable in the work environment

KU3. own job role and responsibilities and sources for information pertaining to work

KU4. who to approach for support in order to obtain work related information, clarifications and support

KU5. importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business

KU6. documentation and related procedures applicable in the context of work

KU7. climate, soil type, soil fertility, nature of subsoil and soil depth suited for growing banana

KU8. various climatic parameters such as maximum and minimum temperatures, intensity and distribution of precipitation (rainfall), relative humidity etc.,

KU9. the criteria for selecting a site for banana cultivation

KU10. various agro-climatic zones in India suitable for banana cultivation

KU11. the cultivation duration of different banana varieties and their yield

KU12. pest and diseases specific to a given agro climatic region, the life cycles of these pests and diseases and the sources of infection

KU13. duration and yield of the variety

KU14. resistance and susceptibility to various pests and diseases

KU15. biotic and abiotic stress resistance (in terms of temperature fluctuations, dry spells, heavy downpour during critical stages etc.,)

KU16. suitability of the variety to the given soil type

KU17. uses and harmful effects of various pesticides

KU18. safe methods of handling the pesticides

KU19. first aid to the exposure of humans to harmful effects of pesticides

KU20. how to create irrigation channels in the field

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. maintain work-related notes and records
GS2. read the relevant literature to get the latest updates about the field of work
GS3. read the hazards of use and contamination written on the labels of pesticides
GS4. perform basic calculations
GS5. listen attentively to understand the information/ instructions being shared
GS6. communicate clearly and effectively with various stakeholders
GS7. plan and prioritise tasks to ensure timely completion
GS8. evaluate all possible solutions to a problem to select the best one
GS9. update oneself about the latest technologies used in banana plantation by reading the newspaper and magazines
GS10. co-ordinate with the co-workers to achieve the work objectives
GS11. identify possible disruptions to work and take appropriate preventive measures
GS12. take quick decisions to deal with workplace emergencies/ accidents
GS13. maintain effective relationships with neighbouring farmers & extension workers etc
GS14. make decisions pertaining to the concerned area of work
GS15. organize meeting of co-farmers if necessary
GS16. learn by participating in banana exhibition/seminar/workshop/exposure visits

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Preparation of the site	**6**	**7**	**-**	**3**
PC1. select the site with suitable agro-climatic conditions for banana cultivation	-	-	-	-
PC2. coordinate with an authorised lab to determine if the soil is suitable for banana cultivation at the site	-	-	-	-
PC3. identify the risks associated with banana growing and possible precautions that need to be taken	-	-	-	-
PC4. select the banana variety to be cultivated based on the local biotic and abiotic situations, available resources and constraints, market need and prices, production costs and time of harvest	-	-	-	-
PC5. implement measures to make the site suitable for banana growing	-	-	-	-
PC6. create drainage channels in the field for the effective drainage of water	-	-	-	-
PC7. monitor and maintain the condition of tools and equipment required for seedling and planting material preparation	-	-	-	-
Identification of appropriate planting material	**6**	**7**	**-**	**4**
PC8. identify appropriate varieties based on the agro-climatic zone in which cultivation is taken up	-	-	-	-
PC9. • select the disease-resistant and high-yielding varieties of banana that can be grown • profitably in the agro-climatic conditions of the selected area	-	-	-	-
Procurement of Planting material	**10**	**15**	**-**	**8**
PC10. identify various vendors / suppliers (including government nurseries / department) of the planting material	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. ascertain the quality of seedling and material from each source in terms of free from pests and diseases, survival rate etc.	-	-	-	-
PC12. ascertain the prevailing market rates for the planting material	-	-	-	-
PC13. procure the planting material from the authorized vendors	-	-	-	-
PC14. identify an appropriate storage space (free of infestation and having congenial climatic conditions for the planting material)	-	-	-	-
PC15. store the planting material (if there is time lag between procurement and planting)	-	-	-	-
Treatment of planting material	**6**	**7**	**-**	**4**
PC16. ascertain the prevalent pests and diseases of banana in a given agro-climatic zone	-	-	-	-
PC17. ascertain the appropriate pesticides available for planting treatment	-	-	-	-
PC18. treat the planting as per the dosage recommended by the state agriculture university / department or as prescribed by the pesticide manufacturer	-	-	-	-
Health and Safety Precautions	**6**	**7**	**-**	**4**
PC19. follow the safety precautions in the reading material provided with the pesticide	-	-	-	-
PC20. keep ready with all the necessary first aids as suggested in the safety measures	-	-	-	-
PC21. use all the necessary safety material and follow all the preventive measures to avoid any injury during use / application of pesticide	-	-	-	-
NOS Total	**34**	**43**	**-**	**23**

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N0301
NOS Name	Planting material preparation in banana cultivation
Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Fruit Crops Cultivation
NSQF Level	4
Credits	TBD
Version	3.0
Last Reviewed Date	27/01/2022
Next Review Date	27/01/2025
NSQC Clearance Date	27/01/2022

AGR/N0302: Land preparation and plantation in banana cultivation

Description

This OS is for a Banana grower who is responsible for preparing the field and planting through appropriate methods.

Scope

The scope covers the following :

- Land preparation and ploughing
- Application of nematicides and fumigants
- Planting banana suckers

Elements and Performance Criteria

Land preparation and ploughing

To be competent, the user/individual on the job must be able to:

PC1. clear the ground, cut up the existing planting material, stack them and burn them in a ecofriendly way

PC2. dig a ditch for wet soil that will carry away all the water as per the recommendation

PC3. plough the soil deep, use rotavator to make soil fine as per the recommendation

PC4. demarcate with white powder or by small sticks over the recommended spacing for plantation as per the soil type

PC5. perform mulching by putting down of dry grass and leaves at the end of the rainy season plough the land for 4 -6 times

PC6. use wheat straw and banana straw as a mulch material for increasing the bunch weight and conservation of soil moisture

PC7. use of plastic mulch instead of trash mulch as per feasibility, requirement & recommendation

PC8. allow the soil to weather for 2 weeks

PC9. get the land levelled using blade harrows

PC10. make furrows in the soil length wise and breadth wise

PC11. dig pits at the intersection of rows and furrows

PC12. • optimise the usage of water, electricity and other resources in the relevant tasks and
• processes

Application of nematicides and fumigants

To be competent, the user/individual on the job must be able to:

PC13. select generic / specific nematicides to a given agro-climatic zone

PC14. choose appropriate methods for applying nematicides and fumigants

PC15. apply nematicides and fumigants

Planting banana suckers

To be competent, the user/individual on the job must be able to:

PC16. plant the banana suckers/tissue culture seedlings as per the pit or furrow method

PC17. use the tissue culture seedlings for plantation which have been procured from authorized vendor and are the healthy and disease free

PC18. plant the suckers simultaneously with basal dose of fertilisers.

PC19. dip suckers in water in which potassium permanganate is mixed with recommended dosage

PC20. place the suckers in hole

PC21. put compost round the young plant

PC22. apply the recommended spacing to ensure all the plants get good exposure to sunlight

PC23. install props to support the uniform development of the plants

PC24. segregate waste into appropriate categories

PC25. • recycle the recyclable waste appropriately and dispose the non-recyclable waste in an
• environment-friendly manner

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant legislation, standards, policies, and procedures in work

KU2. relevant health and safety requirements applicable in the work environment

KU3. own job role and responsibilities and sources for information pertaining to work

KU4. who to approach for support in order to obtain work related information, clarifications and support

KU5. importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business

KU6. documentation and related procedures applicable in the context of work

KU7. soil types, their advantages and disadvantages in the light of banana cultivation

KU8. based on the soil type, various methods of land preparation to maintain soil tilth

KU9. various farm machinery available and their utility to maintain soil tilth and health

KU10. duration and yield of the variety

KU11. resistance and susceptibility to various pests and diseases

KU12. biotic and abiotic stress resistance (in terms of temperature fluctuations, dry spells, heavy downpour during critical stages etc.,)

KU13. suitability of the variety to the given soil type

KU14. uses and harmful effects of various pesticides

KU15. safe methods of handling the pesticides

KU16. first aid to the exposure of humans to harmful affects of pesticides

KU17. the benefits and different ways of resource optimisation

KU18. the criteria for segregating waste into appropriate categories

KU19. how to recycle and dispose different types of waste

KU20. The growth cycle of Banana -Vegetative phase and Reproductive phase

KU21. various tools and equipment required for land preparation and planting

KU22. ratoon Management in banana

KU23. methods of pre-treatment of suckers

KU24. appropriate time , system and methods of planting

KU25. High Density Planting (HDP) in banana
KU26. Plant canopy and light intersection
KU27. Sucker production and root growth
KU28. Various cropping system and Intercultural Operations

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. maintain work-related notes and records
GS2. read the relevant literature to get the latest updates about the field of work
GS3. perform basic calculations
GS4. maintain effective relationships with neighbouring farmers, extension workers and experts
GS5. communicate clearly and effectively with various stakeholders
GS6. understand information and grasp its meaning
GS7. seek advice from seniors and experts
GS8. make decisions pertaining to the concerned area of work
GS9. identify problems that may arise in carrying out tasks and take preventative action following various procedures
GS10. manage relationships with labourers
GS11. evaluate all possible solutions to a problem to select the best one
GS12. identify possible disruptions to work and take appropriate preventive measures
GS13. take quick decisions to deal with workplace emergencies/ accidents

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Land preparation and ploughing	**10**	**12**	**-**	**10**
PC1. clear the ground, cut up the existing planting material, stack them and burn them in a ecofriendly way	-	-	-	-
PC2. dig a ditch for wet soil that will carry away all the water as per the recommendation	-	-	-	-
PC3. plough the soil deep, use rotavator to make soil fine as per the recommendation	-	-	-	-
PC4. demarcate with white powder or by small sticks over the recommended spacing for plantation as per the soil type	-	-	-	-
PC5. perform mulching by putting down of dry grass and leaves at the end of the rainy season plough the land for 4 -6 times	-	-	-	-
PC6. use wheat straw and banana straw as a mulch material for increasing the bunch weight and conservation of soil moisture	-	-	-	-
PC7. use of plastic mulch instead of trash mulch as per feasibility, requirement & recommendation	-	-	-	-
PC8. allow the soil to weather for 2 weeks	-	-	-	-
PC9. get the land levelled using blade harrows	-	-	-	-
PC10. make furrows in the soil length wise and breadth wise	-	-	-	-
PC11. dig pits at the intersection of rows and furrows	-	-	-	-
PC12. • optimise the usage of water, electricity and other resources in the relevant tasks and • processes	-	-	-	-
Application of nematicides and fumigants	**2**	**3**	**-**	**3**
PC13. select generic / specific nematicides to a given agro-climatic zone	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. choose appropriate methods for applying nematicides and fumigants	-	-	-	-
PC15. apply nematicides and fumigants	-	-	-	-
Planting banana suckers	**6**	**8**	**-**	**6**
PC16. plant the banana suckers/tissue culture seedlings as per the pit or furrow method	-	-	-	-
PC17. use the tissue culture seedlings for plantation which have been procured from authorized vendor and are the healthy and disease free	-	-	-	-
PC18. plant the suckers simultaneously with basal dose of fertilisers.	-	-	-	-
PC19. dip suckers in water in which potassium permanganate is mixed with recommended dosage	-	-	-	-
PC20. place the suckers in hole	-	-	-	-
PC21. put compost round the young plant	-	-	-	-
PC22. apply the recommended spacing to ensure all the plants get good exposure to sunlight	-	-	-	-
PC23. install props to support the uniform development of the plants	-	-	-	-
PC24. segregate waste into appropriate categories	-	-	-	-
PC25. • recycle the recyclable waste appropriately and dispose the non-recyclable waste in an • environment-friendly manner	-	-	-	-
NOS Total	**18**	**23**	**-**	**19**

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N0302
NOS Name	Land preparation and plantation in banana cultivation
Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Fruit Crops Cultivation
NSQF Level	4
Credits	TBD
Version	3.0
Last Reviewed Date	27/01/2022
Next Review Date	27/01/2025
NSQC Clearance Date	27/01/2022

AGR/N0303: Integrated nutrient management in banana cultivation

Description

This OS is for a Banana grower who is responsible for Integrated Nutrient Management in Banana cultivation.

Scope

The scope covers the following :

- Determine the macro and micronutrients requirements
- Apply fertilisers to the soil
- Perform soil conservation
- Perform weed management

Elements and Performance Criteria

Determine the macro and micronutrients requirements

To be competent, the user/individual on the job must be able to:

PC1. coordinate with an authorised lab to get the soil sample tested, ensuring the sample is collected from the field, packed and labelled as per the applicable procedure

PC2. interpret the soil analysis report to determine the micro and macronutrients requirements of the soil based on the planned crop variety or coordinate with an expert for the purpose

PC3. select the appropriate organic and inorganic fertilisers, ensuring they contain the required nutrients in the recommended quantity

PC4. prepare organic fertilisers such as farmyard manure, vermicompost and inorganic fertilizer solutions, ensuring personal safety

Apply fertilisers to the soil

To be competent, the user/individual on the job must be able to:

PC5. apply the FYM to the soil as per recommended dosage and procedure before planting and during crop cultivation (if required)

PC6. prepare the mixture of liquid fertilisers for application in the field, using them in the recommended quantity

PC7. select appropriately decomposed farm yard manure for soil application

PC8. prepare the field for the application of fertilisers

PC9. adopt various cultural practices that enhances the soil nutrient status for the benefit of banana crop stand

PC10. apply organic and inorganic fertilisers containing the required macro and micronutrients to the soil in the recommended dose, timing, placement locations and method of application

PC11. regulate the dose of fertiliser according to the crop cycle

PC12. maintain the record of fertilisers used in the field

Perform soil conservation

To be competent, the user/individual on the job must be able to:

PC13. prepare a soil nutrition supplementation calendar based on the stages of the crop’s growth

PC14. follow the recommended practices for soil conservation, such as mulching to conserve soil moisture and application of organic fertilisers

Perform weed management

To be competent, the user/individual on the job must be able to:

PC15. inspect the field, bunds, composting area, and irrigation and drainage channels periodically to identify weed growth

PC16. maintain the record of observations with respect to weed identification and their growth

PC17. select an appropriate combination of different types of intercultural and mechanical methods for effective weed control such as trash mulching, solarisation and pasteurisation

PC18. select and prepare the recommended herbicide/ bio-herbicide solution suitable to the crop

PC19. spray the herbicide/ bio-herbicide safely in the recommended dose

PC20. remove weeds manually using the appropriate hand tools and implements, as required

PC21. retain the weeds of importance during the weeding process

PC22. maintain the herbicides and herbicide application equipment separately to prevent cross contamination with other chemicals

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant legislation, standards, policies, and procedures in work

KU2. relevant health and safety requirements applicable in the work environment

KU3. own job role and responsibilities and sources for information pertaining to work

KU4. who to approach for support in order to obtain work related information, clarifications and support

KU5. importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business

KU6. documentation and related procedures applicable in the context of work

KU7. the basic concepts of plant nutrition and soil fertility

KU8. different soil types, their advantages and disadvantages with reference to the presence of various nutrients

KU9. different types of macro and micronutrients, their properties and functions

KU10. common symptoms of nutrient deficiency in plants

KU11. the process of soil sampling and testing

KU12. the importance of getting the soil tested through a government-approved soil-testing laboratory to determine the macro and micronutrients present in it, and the requirement of adding the nutrients manually

KU13. how to interpret the soil analysis report to determine the macro and micronutrient requirements of the soil

KU14. recommendations based on the availability of various micro and macro nutrients in a given soil or crop sample

KU15. based on the soil type, various methods of land preparation to maintain soil tilth

KU16. various farm machinery available and their utility to maintain soil tilth and health

KU17. how to prepare the mixture of liquid fertilisers, using them in the recommended quantity

KU18. varieties of organic and inorganic fertilisers to be applied to the soil to improve its fertility, and the nutrient content in them

KU19. the process of preparing organic fertilisers such as farmyard manure, vermicompost and inorganic fertiliser solutions

KU20. how to prepare the field for the application of fertilisers

KU21. appropriate methods of application of various fertilizers and micro nutrients

KU22. timing in a day and location of the application

KU23. time of application of fertilizers / nutrient in the crop life cycle

KU24. interaction affects of the soil type, level of the land and water availability on the crop growth and its yield

KU25. the importance of regulating the dose of fertiliser according to the crop cycle

KU26. the appropriate time, methods and dose for the application of different types of fertilisers for a variety of crops

KU27. timing and method of irrigation and drainage appropriate for a given soil type and climatic condition

KU28. the harmful effects of over-dosage of fertilisers

KU29. the process of preparing a soil nutrition supplementation calendar based on the stages of the crop's growth

KU30. importance of soil conservation and various soil conservation practices

KU31. the critical period for organic weed control, reducing the dependence on herbicides and weedicides

KU32. the adverse effect of different types of weed on crop growth such as grass, broad leaves, sedges

KU33. different weed control methods such as preventative, intercultural, mechanical, biological and chemicals

KU34. advantages and disadvantages of different weeding methods

KU35. the critical period of crop-weed competition

KU36. different manual weeding techniques

KU37. the use of relevant weeding equipment such as hoe and spade Qualification Pack

KU38. use of pre-emergent and post-emergent herbicides

KU39. environmental norms to be adhered to during herbicide application

KU40. the effect of herbicide residue on different types of crop

KU41. ways to minimise pollution caused by overuse of herbicides

KU42. the importance of inspecting the field regularly to identify weed growth

KU43. the appropriate combination of different types of intercultural and mechanical methods for effective weed control

KU44. the process of selecting and preparing the recommended herbicide/ bio-herbicide solution suitable to the crop

KU45. how to spray herbicide/ bio-herbicide safely on the crop

KU46. the importance of retaining the weeds of importance during the weeding process

KU47. the importance of maintaining the herbicides and herbicide application equipment separately to prevent cross-contamination with other chemicals

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. update oneself about the latest technologies used in banana plantation by reading the newspaper and magazines
GS2. keep abreast with the latest knowledge by reading brochures and pamphlets
GS3. maintain effective relationships with neighbouring farmers, extension workers and experts
GS4. communicate clearly and effectively with various stakeholders
GS5. co-operate with others in accordance with required procedures
GS6. understand information and grasp its meaning
GS7. seek advice from senior people and experts
GS8. make decisions pertaining to the concerned area of work
GS9. identify problems that may arise in carrying out tasks and take preventative action following various procedures
GS10. follow basic arithmetic and algebraic principles
GS11. plan and organize nutrient management all through the crop production cycle as per recommendations
GS12. participate in banana exhibition/seminar/workshop
GS13. make use of exposure visit
GS14. work with banana experts
GS15. manage relationships with labourers
GS16. build relationships and use human centric approach
GS17. think through the problem, evaluate the possible solution(s) and take up an optimum /best possible solution(s)
GS18. identify creative & innovative solutions to resolve delays
GS19. monitor the growing banana plant and in terms of decencies so far to take appropriate remedial reason
GS20. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action
GS21. take up his own working and learning

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Determine the macro and micronutrients requirements	**8**	**10**	**-**	**10**
PC1. coordinate with an authorised lab to get the soil sample tested, ensuring the sample is collected from the field, packed and labelled as per the applicable procedure	-	-	-	-
PC2. interpret the soil analysis report to determine the micro and macronutrients requirements of the soil based on the planned crop variety or coordinate with an expert for the purpose	-	-	-	-
PC3. select the appropriate organic and inorganic fertilisers, ensuring they contain the required nutrients in the recommended quantity	-	-	-	-
PC4. prepare organic fertilisers such as farmyard manure, vermicompost and inorganic fertilizer solutions, ensuring personal safety	-	-	-	-
Apply fertilisers to the soil	**7**	**15**	**-**	**10**
PC5. apply the FYM to the soil as per recommended dosage and procedure before planting and during crop cultivation (if required)	-	-	-	-
PC6. prepare the mixture of liquid fertilisers for application in the field, using them in the recommended quantity	-	-	-	-
PC7. select appropriately decomposed farm yard manure for soil application	-	-	-	-
PC8. prepare the field for the application of fertilisers	-	-	-	-
PC9. adopt various cultural practices that enhances the soil nutrient status for the benefit of banana crop stand	-	-	-	-
PC10. apply organic and inorganic fertilisers containing the required macro and micronutrients to the soil in the recommended dose, timing, placement locations and method of application	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. regulate the dose of fertiliser according to the crop cycle	-	-	-	-
PC12. maintain the record of fertilisers used in the field	-	-	-	-
Perform soil conservation	**8**	**14**	**-**	**12**
PC13. prepare a soil nutrition supplementation calendar based on the stages of the crop's growth	-	-	-	-
PC14. follow the recommended practices for soil conservation, such as mulching to conserve soil moisture and application of organic fertilisers	-	-	-	-
Perform weed management	**15**	**25**	**-**	**16**
PC15. inspect the field, bunds, composting area, and irrigation and drainage channels periodically to identify weed growth	-	-	-	-
PC16. maintain the record of observations with respect to weed identification and their growth	-	-	-	-
PC17. select an appropriate combination of different types of intercultural and mechanical methods for effective weed control such as trash mulching, solarisation and pasteurisation	-	-	-	-
PC18. select and prepare the recommended herbicide/ bio-herbicide solution suitable to the crop	-	-	-	-
PC19. spray the herbicide/ bio-herbicide safely in the recommended dose	-	-	-	-
PC20. remove weeds manually using the appropriate hand tools and implements, as required	-	-	-	-
PC21. retain the weeds of importance during the weeding process	-	-	-	-
PC22. maintain the herbicides and herbicide application equipment separately to prevent cross contamination with other chemicals	-	-	-	-
NOS Total	**38**	**64**	**-**	**48**

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N0303
NOS Name	Integrated nutrient management in banana cultivation
Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Fruit Crops Cultivation
NSQF Level	4
Credits	1
Version	2.0
Last Reviewed Date	27/01/2022
Next Review Date	27/01/2025
NSQC Clearance Date	27/01/2022

AGR/N0304: Perform integrated pest and disease management in banana cultivation

Description

This OS is for a Banana grower who is responsible for carrying out pest and disease management

Scope

The scope covers the following :

- Identification of pests and understanding behaviour
- Identification of diseases
- Preventive and curative methods

Elements and Performance Criteria

Identification of pests and understanding behavior

To be competent, the user/individual on the job must be able to:

PC1. identify the types of pests associated (banana weevil, thrips, nematodes, etc)

PC2. identify the stage of crop and pest incidence pest calendar

PC3. identify the signs and symptoms of damage

PC4. identify the pest life cycle estimate the duration

PC5. identify the natural enemies of the pests(naids/dragon flies, trichogramma, mirid bug, lady bird beetles, spiders, preying mantidsetc)

PC6. determine the stage of pest incidence along with the extent of damage and economic threshold levels (ETL) of the pests

PC7. maintain the record of the use of any pesticides, insecticides and any other treatment

Identification of diseases

To be competent, the user/individual on the job must be able to:

PC8. identify the types of diseases associated (sigathoka, bunchy top, panama wilt, bacterial blight, cercospora leaf sport etc.,)

PC9. identify the crop stage and disease incidence disease calendar

PC10. identify the signs and symptoms of different diseases (leaf spots, discoloured areas, leaf margins drying, stunted growth)

PC11. identify the mode of transmission (implements, vectors, water, rain, wind)

PC12. co-ordinate with the agricultural extension workers and diagnostic clinics to determine the causal organism for the disease and its treatment

Preventive and curative methods

To be competent, the user/individual on the job must be able to:

PC13. clear stubbles to drive away the diapausing larvae

PC14. use pest and disease-resistant varieties

PC15. take up seedling / planting material treatment

PC16. use the recommended combination of biological, mechanical and chemical control methods for effective pest and disease prevention, such as pheromone traps, light traps, bird perches,sticky traps, as suitable to the cultivar

PC17. • follow the recommended practices to restrict the entry of pathogens into the field through
• planting material, irrigation water, workers, tools and equipment, and vectors

PC18. • identify and remove the diseased crop to prevent the spread of pests and diseases to the
• healthy crop

PC19. follow the appropriate integrated pest management techniques

PC20. segregate waste into appropriate categories and recycle the recyclable waste appropriately and dispose the non-recyclable waste in an environment-friendly manner

PC21. Optimize the various used resources

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. various types of pests and diseases found in banana crop and their symptoms

KU2. different modes of transmissions of crop diseases such as setts, implements,vectors, water, rain, wind etc

KU3. different biotic and abiotic factors causing diseases and disorders in banana crop

KU4. the importance of adopting safe production methods for a safe produce

KU5. the benefits of using pest and disease-resistant varieties of banana

KU6. applicable national and international standards on pesticide residues

KU7. the use of pesticide spraying tools and equipment

KU8. the recommended minimum residue levels and Protected Health Information (PHI) for different types of pesticides

KU9. the advantages of adopting biological methods for controlling insects, pest and diseases,such as bio-pesticides and pheromones used in IPM (Integrated Pest Management)

KU10. behavior of the pest (like diurnal or nocturnal, egg laying behavior, attraction to colors etc)

KU11. the recommended practices to be followed to restrict the entry of pathogens into the field through planting material, irrigation water, workers, tools and equipment, and vectors

KU12. integrated pest & disease management

KU13. the importance of identifying and removing the diseased crop to prevent the spread of pests and diseases to the healthy crop

KU14. the use of recommended combination of biological, mechanical and chemical control methods for effective pest and disease prevention such as traps, sticky plates etc.

KU15. the practice of crop rotation with suitable crops

KU16. types of chemicals & fertilizers available causes and effects

KU17. natural pesticides causes & effects

KU18. the process of determining the stage of pest incidence along with the extent of damage and economic threshold levels (ETL) of the pests

KU19. the use of IPM methods such as light and pheromone traps for identifying the presence and population of insects and vectors

KU20. the process of determining the causal organism for the disease and its treatment

KU21. the importance of applying the recommended treatment as per the prescription and maintaining the record of their use
KU22. the importance of using the recommended PPE while applying harmful chemicals
KU23. different ways to minimise the pollution caused due to overuse of pesticides
KU24. the benefits and ways of resource optimisation
KU25. the criteria for segregating waste into appropriate categories
KU26. how to recycle and dispose different types of waste

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. maintain work-related notes and records
GS2. read the relevant literature to get the latest updates about the field of work
GS3. perform basic calculations
GS4. listen attentively to understand the information/ instructions being shared
GS5. communicate clearly and politely
GS6. plan and prioritise tasks to ensure timely completion
GS7. evaluate all possible solutions to a problem to select the best one
GS8. co-ordinate with the co-workers to achieve the work objectives
GS9. identify possible disruptions to work and take appropriate preventive measures
GS10. take quick decisions to deal with workplace emergencies/ accidents

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Identification of pests and understanding behavior	**8**	**10**	**-**	**6**
PC1. identify the types of pests associated (banana weevil, thrips, nematodes, etc)	-	-	-	-
PC2. identify the stage of crop and pest incidence pest calendar	-	-	-	-
PC3. identify the signs and symptoms of damage	-	-	-	-
PC4. identify the pest life cycle estimate the duration	-	-	-	-
PC5. identify the natural enemies of the pests(naids/dragon flies, trichogramma, mirid bug, lady bird beetles, spiders, preying mantidsetc)	-	-	-	-
PC6. determine the stage of pest incidence along with the extent of damage and economic threshold levels (ETL) of the pests	-	-	-	-
PC7. maintain the record of the use of any pesticides, insecticides and any other treatment	-	-	-	-
Identification of diseases	**8**	**10**	**-**	**6**
PC8. identify the types of diseases associated (sigathoka, bunchy top, panama wilt, bacterial blight, cercospora leaf sport etc.,)	-	-	-	-
PC9. identify the crop stage and disease incidence disease calendar	-	-	-	-
PC10. identify the signs and symptoms of different diseases (leaf spots, discoloured areas, leaf margins drying, stunted growth)	-	-	-	-
PC11. identify the mode of transmission (implements, vectors, water, rain, wind)	-	-	-	-
PC12. co-ordinate with the agricultural extension workers and diagnostic clinics to determine the causal organism for the disease and its treatment	-	-	-	-
Preventive and curative methods	**6**	**10**	**-**	**6**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. clear stubbles to drive away the diapausing larvae	-	-	-	-
PC14. use pest and disease-resistant varieties	-	-	-	-
PC15. take up seedling / planting material treatment	-	-	-	-
PC16. use the recommended combination of biological, mechanical and chemical control methods for effective pest and disease prevention, such as pheromone traps, light traps, bird perches,sticky traps, as suitable to the cultivar	-	-	-	-
PC17. • follow the recommended practices to restrict the entry of pathogens into the field through • planting material, irrigation water, workers, tools and equipment, and vectors	-	-	-	-
PC18. • identify and remove the diseased crop to prevent the spread of pests and diseases to the • healthy crop	-	-	-	-
PC19. follow the appropriate integrated pest management techniques	-	-	-	-
PC20. segregate waste into appropriate categories and recycle the recyclable waste appropriately and dispose the non-recyclable waste in an environment-friendly manner	-	-	-	-
PC21. Optimize the various used resources	-	-	-	-
NOS Total	**22**	**30**	**-**	**18**

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N0304
NOS Name	Perform integrated pest and disease management in banana cultivation
Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Fruit Crops Cultivation
NSQF Level	4
Credits	1
Version	2.0
Last Reviewed Date	27/01/2022
Next Review Date	27/01/2025
NSQC Clearance Date	27/01/2022

AGR/N0305: Irrigation management and other operations in banana cultivation

Description

This OS is for a Banana grower who is responsible for Irrigation and other Operations in Banana Cultivation.

Scope

The scope covers the following :

- Irrigation management
- Other farm operations

Elements and Performance Criteria

Irrigation management

To be competent, the user/individual on the job must be able to:

PC1. • collect a water sample from the source of irrigation and coordinate with an authorised lab to • get it tested

PC2. follow the measures recommended by the lab to improve the water quality

PC3. set up an appropriate irrigation system such as surface irrigation, drip irrigation, sub-surface irrigation system based on the requirement of the specific crop and availability of the resource and soil type

PC4. • irrigate the field according to the recommended irrigation schedule for the crop, ensuring • there is adequate water supply at various stages of crop's growth

PC5. maintain the record of field irrigation to ensure irrigation as per the schedule

PC6. • follow the recommended practices to prevent over and under-irrigation, ensuring there is no • waterlogging at any stage of the crop's growth

PC7. adopt methods of precision farming (drip irrigation)

PC8. use of existing resource efficiently say use fertigation

PC9. maintain the micro irrigation system

PC10. follow the recommended practices for effective drainage of excess water from the field

PC11. plug water spills and leakages to prevent its wastage

Other farm operations

To be competent, the user/individual on the job must be able to:

PC12. prune / remove of dry leave, water shoots as per requirement and procedures

PC13. protect the plantation from strong winds by growing tall plants along the farm border or stacking of plants by wooden stick tide or bamboo poles, based on the availability of such material and resource use efficiency

PC14. earthing up as per the recommended procedures and timing

PC15. remove of female hands

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant legislation, standards, policies, and procedures in work

KU2. relevant health and safety requirements applicable in the work environment

KU3. own job role and responsibilities and sources for information pertaining to work

KU4. who to approach for support in order to obtain work related information, clarifications and support

KU5. importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business

KU6. documentation and related procedures applicable in the context of work

KU7. the timing and method of irrigation appropriate for a given soil type and climatic conditions

KU8. methods of precision farming and their application in crop cultivation

KU9. timing and method of irrigation appropriate for a given soil type

KU10. various operations that have the potential increase the yield and decrease the incidence of pests and diseases

KU11. latest technological developments that has the potential to increase the crop yield and resource use efficiency.

KU12. the quantity of water required for different types of crops and its effect on the yield

KU13. the importance of sampling and testing irrigation water through an authorised lab to determine its quality

KU14. various measures to be followed to improve the water quality

KU15. • the process of setting up different types of irrigation systems such as surface irrigation, drip • irrigation, sub-surface irrigation system, etc

KU16. the advantages and disadvantages of using different types of irrigation systems

KU17. the importance of irrigating the field according to the recommended irrigation schedule for the crop and the factors to be considered in scheduling irrigation

KU18. the recommended practices to be followed to prevent over and under-irrigation

KU19. the recommended practices to be followed for effective drainage of excess water from the field

KU20. the importance of maintaining the recommended level of water in the soil to prevent the harmful effects caused by inappropriate levels of moisture

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. write work-related notes

GS2. read the relevant guides, manuals and literature to get the latest information about the field of work

GS3. communicate politely and professionally

GS4. listen attentively to understand the instructions being given

GS5. identify solutions to work-related issues

GS6. plan and prioritise tasks to ensure timely completion

GS7. take quick decisions to deal with any emergencies or accidents

GS8. plan effective use of time and resources

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Irrigation management	**20**	**28**	**-**	**22**
PC1. • collect a water sample from the source of irrigation and coordinate with an authorised lab to • get it tested	-	-	-	-
PC2. follow the measures recommended by the lab to improve the water quality	-	-	-	-
PC3. set up an appropriate irrigation system such as surface irrigation, drip irrigation, sub-surface irrigation system based on the requirement of the specific crop and availability of the resource and soil type	-	-	-	-
PC4. • irrigate the field according to the recommended irrigation schedule for the crop, ensuring • there is adequate water supply at various stages of crop's growth	-	-	-	-
PC5. maintain the record of field irrigation to ensure irrigation as per the schedule	-	-	-	-
PC6. • follow the recommended practices to prevent over and under-irrigation, ensuring there is no • waterlogging at any stage of the crop's growth	-	-	-	-
PC7. adopt methods of precision farming (drip irrigation)	-	-	-	-
PC8. use of existing resource efficiently say use fertigation	-	-	-	-
PC9. maintain the micro irrigation system	-	-	-	-
PC10. follow the recommended practices for effective drainage of excess water from the field	-	-	-	-
PC11. plug water spills and leakages to prevent its wastage	-	-	-	-
Other farm operations	**10**	**12**	**-**	**8**
PC12. prune / remove of dry leave, water shoots as per requirement and procedures	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. protect the plantation from strong winds by growing tall plants along the farm border or stacking of plants by wooden stick tide or bamboo poles, based on the availability of such material and resource use efficiency	-	-	-	-
PC14. earthing up as per the recommended procedures and timing	-	-	-	-
PC15. remove of female hands	-	-	-	-
NOS Total	**30**	**40**	**-**	**30**

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N0305
NOS Name	Irrigation management and other operations in banana cultivation
Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Fruit Crops Cultivation
NSQF Level	4
Credits	1
Version	2.0
Last Reviewed Date	27/01/2022
Next Review Date	27/01/2025
NSQC Clearance Date	27/01/2022

AGR/N0306: Carry out harvesting, post-harvest management and marketing of Banana

Description

This OS is for a Banana farmer who is responsible for Harvesting and Post Harvest Management.

Scope

The scope covers the following :

- Carry out harvesting activities
- Carry out post-harvest activities
- Manage the inventory and market the produce
- Optimise resource utilisation
- Perform waste management

Elements and Performance Criteria

Carry out harvesting activities

To be competent, the user/individual on the job must be able to:

PC1. check the adequate maturity index of banana to ensure its readiness for being harvested

PC2. select the manual or mechanical harvesting method according to the quantity of the crop to be harvested

PC3. arrange the necessary tools, equipment and machinery for harvesting the crop and prepare them for use

PC4. follow the personal safety and hygiene procedures as per the recommendations

PC5. harvest the crop at the appropriate time by recommended methods when optimal maturity index for harvesting have been obtained

PC6. harvest the crop, ensuring minimum loss

PC7. harvest the produce in an efficient manner as per organisational standards

PC8. keep the bunch out of light, in cool and shady place

PC9. place harvested bunch in well padded basket before transporting to the collection site

Carry out post-harvest activities

To be competent, the user/individual on the job must be able to:

PC10. check the harvested crop for biological infestation and physical damage, and segregate the infested and damaged crop

PC11. sort the harvested crop on the applicable parameters such as quality, colour, size and appearance

PC12. carry out dehandling appropriately by suitable tools and equipment's as per recommended methods and place the fruits correctly for latex drainage

PC13. follow appropriate methods to restrict disease development

PC14. carry out stowing appropriately

PC15. select appropriate and cost effective packing material (viz. wooden or cardboard boxes / plastic crates / bamboo baskets / gunny bags or any other material) for packing the crop as per market requirement

PC16. pack the crops by following the relevant packaging standards for handling in efficient and effective manner and label the packs with the necessary information as per the applicable regulatory requirements

PC17. precool the fruit destined for the distant and export market correctly at appropriate time for extending the storage life

PC18. • follow the recommended practices to prevent damage and contamination of the crop
• select appropriate storage area with the recommended temperature and humidity for storing the banana

PC19. arrange for controlled atmosphere storage conditions (if required)

PC20. apply the recommended treatment in the storage area to restrict pests and disease infestation and store the packed crop safely

PC21. choose correct means for transportation viz. trucks/lorries / rail wagons for distant markets based on the requirement and cost dynamics involved.

PC22. identify various organization involved in value added products productions where the produce can be supplied

PC23. identify various opportunities for production of values added products for better profitability

Manage the inventory and market the produce

To be competent, the user/individual on the job must be able to:

PC24. track and manage the inventory

PC25. decide on storage or sale based on the prevailing market rates across the markets and the cost of storage for attainment of better profitability

PC26. identify the appropriate market and buyers for banana and its fiber, such as eMandi, procurement agencies, local traders, co-operatives, exporters, etc.

PC27. coordinate and negotiate with the buyer to secure a profitable price for the produce

PC28. arrange an appropriate mode of transport to deliver produce to the buyer in a hygienic and safe condition

PC29. perform the loading and unloading, and stacking of bags/crates in and out of the transport vehicle as per organisational standards, in a safe manner

PC30. confirm the loading capacity of transport vehicle in accordance with standards and load accordingly

PC31. record the materials loaded and unloaded on or from the transport, respectively

PC32. process the payment using the buyer-preferred e-payment method

PC33. calculate the benefit-cost (B:C) ratio

PC34. • maintain the record of sales and payments manually and/ or electronically using the physical
• registers and/ or the relevant computer application

Optimise resource utilisation

To be competent, the user/individual on the job must be able to:

PC35. optimise the usage of water, electricity and other resources in relevant tasks and processes

PC36. connect electrical tools and equipment safely and turn them off when not in use

PC37. plug water leakages to prevent its wastage

Perform waste management

To be competent, the user/individual on the job must be able to:

PC38. segregate waste into appropriate categories

PC39. recycle the recyclable waste appropriately and dispose the non-recyclable waste in an environment-friendly manner

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant legislation, standards, policies, and procedures in work

KU2. relevant health and safety requirements applicable in the work environment

KU3. own job role and responsibilities and sources for information pertaining to work

KU4. who to approach for support in order to obtain work related information, clarifications and support

KU5. importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business

KU6. documentation and related procedures applicable in the context of work

KU7. various methods of harvesting

KU8. precautions to be taken while handling the fruits during harvest

KU9. advantages of grading (at the time of harvesting) in the price determination

KU10. influence of crop stage of harvesting and method of harvesting, on the keeping quality of the fruits and the affect on storage losses

KU11. use various methods of storage and their influence on the fruit quality and on the health on the consumer

KU12. take up various methods of storage and their cost dynamics

KU13. advantages and challenges of various latest developments (both institutional and technical) on the keeping quality and revenue.

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. keep records

GS2. report problems to the appropriate personnel like extension worker, agriculture officer etc in a timely manner

GS3. update about the latest technologies used in banana plantation by reading the newspaper and magazines

GS4. read the hazards of use and contamination written on the labels of chemicals

GS5. maintain effective relationships with neighbour farmers, extension workers and experts

GS6. communicate clearly and effectively with various stakeholders

GS7. understand information and grasp its meaning

GS8. seek advice from seniors and experts

GS9. make decisions pertaining to the concerned area of work

GS10. identify problems that may arise in carrying out tasks and take preventative action following workplace procedures

GS11. follow basic arithmetic and algebraic principles
GS12. plan and organize banana harvesting procedure in a timely and effective manner
GS13. participate in banana exhibition/seminar/workshop
GS14. make use of exposure visit
GS15. work with banana experts
GS16. manage relationships with labourers
GS17. build relationships and use human centric approach
GS18. think through the problem, evaluate the possible solution(s) and take up an optimum /best possible solution(s)
GS19. identify creative & innovative solutions to resolve delays
GS20. monitor and maintain the condition of tools and equipment required for banana growing
GS21. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action
GS22. take up his own working and learning

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Carry out harvesting activities	**12**	**16**	**-**	**12**
PC1. check the adequate maturity index of banana to ensure its readiness for being harvested	-	-	-	-
PC2. select the manual or mechanical harvesting method according to the quantity of the crop to be harvested	-	-	-	-
PC3. arrange the necessary tools, equipment and machinery for harvesting the crop and prepare them for use	-	-	-	-
PC4. follow the personal safety and hygiene procedures as per the recommendations	-	-	-	-
PC5. harvest the crop at the appropriate time by recommended methods when optimal maturity index for harvesting have been obtained	-	-	-	-
PC6. harvest the crop, ensuring minimum loss	-	-	-	-
PC7. harvest the produce in an efficient manner as per organisational standards	-	-	-	-
PC8. keep the bunch out of light, in cool and shady place	-	-	-	-
PC9. place harvested bunch in well padded basket before transporting to the collection site	-	-	-	-
Carry out post-harvest activities	**12**	**16**	**-**	**12**
PC10. check the harvested crop for biological infestation and physical damage, and segregate the infested and damaged crop	-	-	-	-
PC11. sort the harvested crop on the applicable parameters such as quality, colour, size and appearance	-	-	-	-
PC12. carry out dehandling appropriately by suitable tools and equipment's as per recommended methods and place the fruits correctly for latex drainage	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. follow appropriate methods to restrict disease development	-	-	-	-
PC14. carry out stowing appropriately	-	-	-	-
PC15. select appropriate and cost effective packing material (viz. wooden or cardboard boxes / plastic crates / bamboo baskets / gunny bags or any other material) for packing the crop as per market requirement	-	-	-	-
PC16. pack the crops by following the relevant packaging standards for handling in efficient and effective manner and label the packs with the necessary information as per the applicable regulatory requirements	-	-	-	-
PC17. precool the fruit destined for the distant and export market correctly at appropriate time for extending the storage life	-	-	-	-
PC18. • follow the recommended practices to prevent damage and contamination of the crop • select appropriate storage area with the recommended temperature and humidity for storing the banana	-	-	-	-
PC19. arrange for controlled atmosphere storage conditions (if required)	-	-	-	-
PC20. apply the recommended treatment in the storage area to restrict pests and disease infestation and store the packed crop safely	-	-	-	-
PC21. choose correct means for transportation viz. trucks/lorries / rail wagons for distant markets based on the requirement and cost dynamics involved.	-	-	-	-
PC22. identify various organization involved in value added products productions where the produce can be supplied	-	-	-	-
PC23. identify various opportunities for production of values added products for better profitability	-	-	-	-
Manage the inventory and market the produce	**12**	**16**	**-**	**12**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. track and manage the inventory	-	-	-	-
PC25. decide on storage or sale based on the prevailing market rates across the markets and the cost of storage for attainment of better profitability	-	-	-	-
PC26. identify the appropriate market and buyers for banana and its fiber, such as eMandi, procurement agencies, local traders, co-operatives, exporters, etc.	-	-	-	-
PC27. coordinate and negotiate with the buyer to secure a profitable price for the produce	-	-	-	-
PC28. arrange an appropriate mode of transport to deliver produce to the buyer in a hygienic and safe condition	-	-	-	-
PC29. perform the loading and unloading, and stacking of bags/crates in and out of the transport vehicle as per organisational standards, in a safe manner	-	-	-	-
PC30. confirm the loading capacity of transport vehicle in accordance with standards and load accordingly	-	-	-	-
PC31. record the materials loaded and unloaded on or from the transport, respectively	-	-	-	-
PC32. process the payment using the buyer-preferred e-payment method	-	-	-	-
PC33. calculate the benefit-cost (B:C) ratio	-	-	-	-
PC34. • maintain the record of sales and payments manually and/ or electronically using the physical • registers and/ or the relevant computer application	-	-	-	-
Optimise resource utilisation	**2**	**3**	**-**	**4**
PC35. optimise the usage of water, electricity and other resources in relevant tasks and processes	-	-	-	-
PC36. connect electrical tools and equipment safely and turn them off when not in use	-	-	-	-
PC37. plug water leakages to prevent its wastage	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Perform waste management	**2**	**4**	**-**	**5**
PC38. segregate waste into appropriate categories	-	-	-	-
PC39. recycle the recyclable waste appropriately and dispose the non-recyclable waste in an environment-friendly manner	-	-	-	-
NOS Total	**40**	**55**	**-**	**45**

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N0306
NOS Name	Carry out harvesting, post-harvest management and marketing of Banana
Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Fruit Crops Cultivation
NSQF Level	4
Credits	1
Version	2.0
Last Reviewed Date	27/01/2022
Next Review Date	27/01/2025
NSQC Clearance Date	27/01/2022

AGR/N0357: Carry out banana fiber extraction from banana pseudo stem

Description

This OS is for a community involve in the Banana Cultivation who can convert the Pseudo Stem of Banana into Banana Fiber and helps create the livelihood opportunities.

Scope

The scope covers the following :

- Identification of appropriate Pseudo Stem for extracting fiber
- Extraction of Fiber by use of Decorticator
- Retting of Banana Pseudo Stem Fiber
- Degumming of Banana Pseudo Stem Fiber
- Health and Safety Precautions

Elements and Performance Criteria

Planning for Banana fiber extraction process

To be competent, the user/individual on the job must be able to:

PC1. plan and arrange for banana fiber extraction process

PC2. organize meeting of co-farmers or individuals if necessary

PC3. maintain effective relationships with neighboring farmers & extension workers etc

PC4. communicate clearly and effectively with various stakeholders

PC5. coordinate with extension workers and technical experts in time for seeking required advice

PC6. identify problems that may arise in carrying out tasks and take preventative action following workplace procedures

PC7. monitor and maintain the condition of tools and equipment required for extraction of banana fiber from pseudo stem

Identification of appropriate Pseudo Stem for extracting fiber

To be competent, the user/individual on the job must be able to:

PC8. Identify the appropriate verities suitable for fiber extraction

PC9. Identify appropriate pseudo-stems which are mature and ready to be harvested for the purpose of extraction of fiber

PC10. carry out harvesting of pseudo stem using the relevant tools and implements, ensuring minimum damage during harvesting

PC11. discard any damaged or disfigured plants

PC12. strip/extract the fibers in situ or by using a decorticating machine from pseudo-stems appropriately based on the selected suitable extraction methods

Extraction of fiber by use of decorticator machine

To be competent, the user/individual on the job must be able to:

PC13. Use the decorticator machine for extraction of banana fiber from pseudo stem appropriately

PC14. Ascertain the process of proper feeding of the pseudo stems in the Decorticator machine for proper extraction

PC15. remove the gum or non-fibrous and any residual components contained in the fibers after the tuxing process

PC16. Ascertain the segregation of other materials from the actual fiber pulp

PC17. use of Decorticator machine properly for quality output and proper use of machine

PC18. collect of pulp fiber from the Decorticator machine safely and appropriable

Retting of Banana Pseudo Stem Fiber

To be competent, the user/individual on the job must be able to:

PC19. ascertain physical retting of banana pseudo stem fiber by use of water

PC20. ascertain microorganism retting of banana pseudo stem fiber by use of either aerobic or anaerobic by the action of fungi or bacteria

PC21. ensure proper retting treatment for quality fiber pulp production

Degumming of Banana Pseudo Stem Fiber

To be competent, the user/individual on the job must be able to:

PC22. ascertain proper boiling the fibers couple of times in aqueous alkaline solution with/without agitation and pressure

PC23. ascertain washing the fibers with water for neutralizing

PC24. proper fiber bleaching with dilute hydrogen peroxide or hypochlorite

PC25. proper fiber washing with water for neutralizing and oiling with a sulfonated hydrocarbon

Manage the inventory and market the fiber

To be competent, the user/individual on the job must be able to:

PC26. Ensure proper storage of produced fiber pulp in recommended storage area

PC27. Identify the various organizations or entrepreneur involved in making of value-added products from banana pseudo-stem fiber for collaboration opportunities

PC28. identify the market and buyers of the pseudo-stem fiber such as e-trading platforms, cooperatives, local traders, exporters, etc.

PC29. track and analyse the information related to the wholesale and retail price of the pseudo-stem fiber

PC30. coordinate and negotiate with the potential buyers to secure a profitable price for the produce

PC31. pack the produce in the appropriate packing material and label it with the relevant information

PC32. arrange an appropriate mode of transport for safe and timely delivery of produce, ensuring proper quality parameter required by buyer

Health and Safety Precautions

To be competent, the user/individual on the job must be able to:

PC33. follow safety precautions in the reading material provided with the decorticator machine

PC34. keep ready with all the necessary first aids as suggested in the safety measures

PC35. • use all the necessary safety material and follow all the preventive measures to
• avoid any injury during use / functioning of decorticator machine

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant legislation, standards, policies, and procedures in work

KU2. relevant health and safety requirements applicable in the work environment

KU3. • own job role and responsibilities and sources for information pertaining to
• work

KU4. who to approach for support in order to obtain work related information, clarifications and support

KU5. importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business

KU6. documentation and related procedures applicable in the context of work

KU7. characteristics of the banana pseudo-stem fiber, such as morphological, physical and mechanical,durability, degradability, thermal, chemical, and antibacterial properties

KU8. Process of production and extraction of banana pseudo-stem fiber

KU9. Process of retting and degumming of the fiber

KU10. various climatic parameters such as maximum and minimum temperatures, intensity and distribution of precipitation (rainfall), relative humidity etc., before harvesting of pseudo stem for fiber extraction

KU11. pest and diseases specific to a given agro climatic region, that may affect the quality of pseudo stem and there after the fiber quality

KU12. proper use of decorticator machine

KU13. use of chemicals for retting, scraping and gumming process for quality outcome

KU14. process of proper quality pulp extraction

KU15. proper storage of fiber pulp produced

KU16. safe methods of handling the pesticides

KU17. first aid to the exposure of humans to harmful effects of pesticides

KU18. latest technologies used in Banana fiber extraction

KU19. utilization of biomass obtained post-harvest of banana

KU20. potential use and applications of banana pseudo-stem fiber viz. to fabricate rope, place mats, paper cardboard, string thread, tea bags, high-quality textile materials, absorbent, polymer/fiber composites, baby pampers, textiles, and papers such as banknotes etc.

KU21. proper disposal and management of biomass wastes obtained after harvest of banana

KU22. the basic inventory management practices

KU23. the process of identifying and negotiating with potential buyers

KU24. the appropriate mode of transport for transporting banana pseudo-stem fiber

KU25. how to use various e-payment methods

KU26. how to calculate the benefit-cost (B:C) ratio

KU27. • how to maintain manual and electronic records using the physical registers and relevant
• computer application

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. maintain work-related notes and records

GS2. read the relevant literature to get the latest updates about the field of work

GS3. listen attentively to understand the information being shared

GS4. communicate clearly and politely

GS5. plan and prioritise tasks for effective time management

GS6. take quick decisions to deal with any emergencies/ accidents or disruptions to work

GS7. co-ordinate with co-workers to achieve work objectives

GS8. evaluate all possible solutions to a problem to select the best one

GS9. follow basic arithmetic and algebraic principles

GS10. apply, analyze, and evaluate the information gathered from observation, experience, reasoning, or communication, as a guide to thought and action

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Planning for Banana fiber extraction process	**5**	**10**	**-**	**8**
PC1. plan and arrange for banana fiber extraction process	-	-	-	-
PC2. organize meeting of co-farmers or individuals if necessary	-	-	-	-
PC3. maintain effective relationships with neighboring farmers & extension workers etc	-	-	-	-
PC4. communicate clearly and effectively with various stakeholders	-	-	-	-
PC5. coordinate with extension workers and technical experts in time for seeking required advice	-	-	-	-
PC6. identify problems that may arise in carrying out tasks and take preventative action following workplace procedures	-	-	-	-
PC7. monitor and maintain the condition of tools and equipment required for extraction of banana fiber from pseudo stem	-	-	-	-
Identification of appropriate Pseudo Stem for extracting fiber	**8**	**10**	**-**	**6**
PC8. Identify the appropriate verities suitable for fiber extraction	-	-	-	-
PC9. Identify appropriate pseudo-stems which are mature and ready to be harvested for the purpose of extraction of fiber	-	-	-	-
PC10. carry out harvesting of pseudo stem using the relevant tools and implements, ensuring minimum damage during harvesting	-	-	-	-
PC11. discard any damaged or disfigured plants	-	-	-	-
PC12. strip/extract the fibers in situ or by using a decorticating machine from pseudo-stems appropriately based on the selected suitable extraction methods	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Extraction of fiber by use of decorticator machine	**8**	**10**	**-**	**6**
PC13. Use the decorticator machine for extraction of banana fiber from pseudo stem appropriately	-	-	-	-
PC14. Ascertain the process of proper feeding of the pseudo stems in the Decorticator machine for proper extraction	-	-	-	-
PC15. remove the gum or non-fibrous and any residual components contained in the fibers after the tuxing process	-	-	-	-
PC16. Ascertain the segregation of other materials from the actual fiber pulp	-	-	-	-
PC17. use of Decorticator machine properly for quality output and proper use of machine	-	-	-	-
PC18. collect of pulp fiber from the Decorticator machine safely and appropriable	-	-	-	-
Retting of Banana Pseudo Stem Fiber	**8**	**10**	**-**	**6**
PC19. ascertain physical retting of banana pseudo stem fiber by use of water	-	-	-	-
PC20. ascertain microorganism retting of banana pseudo stem fiber by use of either aerobic or anaerobic by the action of fungi or bacteria	-	-	-	-
PC21. ensure proper retting treatment for quality fiber pulp production	-	-	-	-
Degumming of Banana Pseudo Stem Fiber	**8**	**10**	**-**	**6**
PC22. ascertain proper boiling the fibers couple of times in aqueous alkaline solution with/without agitation and pressure	-	-	-	-
PC23. ascertain washing the fibers with water for neutralizing	-	-	-	-
PC24. proper fiber bleaching with dilute hydrogen peroxide or hypochlorite	-	-	-	-
PC25. proper fiber washing with water for neutralizing and oiling with a sulfonated hydrocarbon	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Manage the inventory and market the fiber	**8**	**10**	**-**	**6**
PC26. Ensure proper storage of produced fiber pulp in recommended storage area	-	-	-	-
PC27. Identify the various organizations or entrepreneur involved in making of value-added products from banana pseudo-stem fiber for collaboration opportunities	-	-	-	-
PC28. identify the market and buyers of the pseudo-stem fiber such as e-trading platforms, cooperatives, local traders, exporters, etc.	-	-	-	-
PC29. track and analyse the information related to the wholesale and retail price of the pseudo-stem fiber	-	-	-	-
PC30. coordinate and negotiate with the potential buyers to secure a profitable price for the produce	-	-	-	-
PC31. pack the produce in the appropriate packing material and label it with the relevant information	-	-	-	-
PC32. arrange an appropriate mode of transport for safe and timely delivery of produce, ensuring proper quality parameter required by buyer	-	-	-	-
Health and Safety Precautions	**2**	**3**	**-**	**2**
PC33. follow safety precautions in the reading material provided with the decorticator machine	-	-	-	-
PC34. keep ready with all the necessary first aids as suggested in the safety measures	-	-	-	-
PC35. • use all the necessary safety material and follow all the preventive measures to • avoid any injury during use / functioning of decorticator machine	-	-	-	-
NOS Total	**47**	**63**	**-**	**40**

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N0357
NOS Name	Carry out banana fiber extraction from banana pseudo stem
Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Fruit Crops Cultivation
NSQF Level	4
Credits	1
Version	1.0
Last Reviewed Date	27/01/2022
Next Review Date	27/01/2025
NSQC Clearance Date	27/01/2022

AGR/N9908: Undertake basic entrepreneurial activities for small enterprise

Description

This OS unit is about undertaking basic entrepreneurial or business activities in the agriculture sector.

Scope

The scope covers the following :

- Plan the agricultural enterprise/ business
- Manage the agricultural production process
- Manage the post-production and marketing processes

Elements and Performance Criteria

Plan the agricultural enterprise/ business

To be competent, the user/individual on the job must be able to:

PC1. analyse the demand and supply of the relevant agricultural produce in the market

PC2. identify the target customers and assess their needs and expectations with respect to the quality and price of the produce

PC3. identify various types of agricultural entrepreneurship/ business opportunities

PC4. plan agricultural production with the use of relevant and efficient technologies for availing funds

PC5. identify appropriate and authentic advisory services/Government authority for skill upgradation to successfully plan and implement business activities

PC6. prepare a basic business plan for the agricultural entrepreneurship/business activities

PC7. identify appropriate sources of funding for the agricultural entrepreneurship/ business

PC8. coordinate with the relevant government authorities to subscribe to the relevant government schemes and programs to benefit from them

PC9. ensure compliance with the government structural reforms and framework along with the applicable rules and regulations while setting up the agricultural enterprise/ business

Manage the agricultural production process

To be competent, the user/individual on the job must be able to:

PC10. select and arrange the necessary resources for the business operations

PC11. ensure the use of relevant and efficient production technologies as per planning and availability of funds

PC12. follow the recommended practices for efficient input resource management

PC13. optimise the production processes and output through the amalgamation of existing practices with smart technologies

PC14. follow the recommended sustainability practices during agricultural production to prevent adverse impacts on the environment and produce viz. deforestation, loss of biodiversity, soil degradation, etc.

Manage the post-production and marketing processes

To be competent, the user/individual on the job must be able to:

PC15. ensure the availability of proper storage infrastructures and facilities post-production of the produce as per the industry quality standards

PC16. collect information related to the wholesale and retail price of produce

PC17. calculate the costs incurred and determine the price of the produce for profitability

PC18. ensure that the cost of production, transportation, and marketing are considered while calculating the cost and setting the price for the produce

PC19. collect information related to various subsidies/funds offered by the government, authorised state units and other financial institutions involved with the promotion of the produce

PC20. select appropriate marketing channels for the produce, considering the relevant requirements and constraints

PC21. identify various risks to production and post-production processes and manage them appropriately

PC22. undertake outreach programs to promote agricultural products and services, and expand agri-business

PC23. prepare and execute a marketing plan considering the 4Ps i.e. product, price, promotion, and place and 4As i.e. acceptability, affordability, accessibility, and awareness

PC24. use the relevant digital services such as e-commerce, e-payments, electronic record-keeping, etc.

PC25. use efficient post-production logistics means to improve the supply quantity, reduce the cost to the consumer, and increase demand consequently

PC26. ensure all the relevant information such as quality and quantity of produce, date of manufacture, batch number, and sale is recorded electronically and/ or manually

PC27. coordinate with the various stakeholders for efficient and sustainable agri-business growth and development

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. how to analyse the demand and supply of the relevant agricultural produce in the market

KU2. the process of identifying the target customers and assess their needs and expectations with respect to the quality and price of the produce

KU3. how to identify various types of agricultural entrepreneurship/ business opportunities

KU4. how to prepare a basic business plan for the agricultural entrepreneurship/business activities

KU5. appropriate sources of funding for the agricultural entrepreneurship/ businesses

KU6. the relevant government schemes and programs

KU7. the importance of ensuring compliance with the government structural reforms and framework, along with the applicable rules and regulations

KU8. various resources required for agricultural production

KU9. the process of planning agricultural production and the use of relevant technologies to enhance production

KU10. the importance of ensuring no cause adverse impact on the environment and produce during production

KU11. the recommended practices to be followed for efficient input resource management

KU12. the process of optimising the production processes and output through the amalgamation of existing practices with smart technologies

KU13. the recommended sustainability practices to be followed during agricultural production to prevent and deal with deforestation, loss of biodiversity, soil degradation, etc.

KU14. how to collect information related to the wholesale and retail price of agricultural produce

KU15. how to calculate the economics of the produce viz. production cost, price of the produce, B:C Ratio etc.

KU16. relevant government schemes with the provision of subsidies/funds for the promotion of agricultural produce

KU17. the process of selecting appropriate marketing channels for marketing agricultural produce, and the applicable requirements and constraints

KU18. the relevant buyers of different types of agricultural produce such as co-operatives, retailers, local vendors, wholesalers, e-trading portals, marketing companies, exporters, etc.

KU19. how to identify and manage various risks to production and post-production processes

KU20. how to undertake outreach programs to promote agricultural products and services, and expand agri-business

KU21. the 4Ps i.e. product, price, promotion, and place and 4As i.e. acceptability, affordability, accessibility, and awareness considered while preparing and executing a marketing plan

KU22. use of the relevant digital services such as e-commerce, e-payments, electronic record-keeping, etc.

KU23. the importance of using efficient post-production logistics

KU24. the importance of maintaining various records accurately

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. maintain work-related notes and records

GS2. read the relevant literature to get the latest updates about the field work

GS3. communicate politely and professionally

GS4. listen attentively to understand the information being shared

GS5. plan and schedule tasks for efficient time management

GS6. identify possible disruptions to work and take appropriate preventive measures

GS7. take quick decisions to deal with workplace emergencies/ accident

GS8. evaluate all possible solutions to a problem to select the best one

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Plan the agricultural enterprise/ business	**10**	**14**	**-**	**10**
PC1. analyse the demand and supply of the relevant agricultural produce in the market	-	-	-	-
PC2. identify the target customers and assess their needs and expectations with respect to the quality and price of the produce	-	-	-	-
PC3. identify various types of agricultural entrepreneurship/ business opportunities	-	-	-	-
PC4. plan agricultural production with the use of relevant and efficient technologies for availing funds	-	-	-	-
PC5. identify appropriate and authentic advisory services/Government authority for skill upgradation to successfully plan and implement business activities	-	-	-	-
PC6. prepare a basic business plan for the agricultural entrepreneurship/business activities	-	-	-	-
PC7. identify appropriate sources of funding for the agricultural entrepreneurship/ business	-	-	-	-
PC8. coordinate with the relevant government authorities to subscribe to the relevant government schemes and programs to benefit from them	-	-	-	-
PC9. ensure compliance with the government structural reforms and framework along with the applicable rules and regulations while setting up the agricultural enterprise/ business	-	-	-	-
Manage the agricultural production process	**8**	**10**	**-**	**8**
PC10. select and arrange the necessary resources for the business operations	-	-	-	-
PC11. ensure the use of relevant and efficient production technologies as per planning and availability of funds	-	-	-	-
PC12. follow the recommended practices for efficient input resource management	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. optimise the production processes and output through the amalgamation of existing practices with smart technologies	-	-	-	-
PC14. follow the recommended sustainability practices during agricultural production to prevent adverse impacts on the environment and produce viz. deforestation, loss of biodiversity, soil degradation, etc.	-	-	-	-
Manage the post-production and marketing processes	**12**	**16**	**-**	**12**
PC15. ensure the availability of proper storage infrastructures and facilities post-production of the produce as per the industry quality standards	-	-	-	-
PC16. collect information related to the wholesale and retail price of produce	-	-	-	-
PC17. calculate the costs incurred and determine the price of the produce for profitability	-	-	-	-
PC18. ensure that the cost of production, transportation, and marketing are considered while calculating the cost and setting the price for the produce	-	-	-	-
PC19. collect information related to various subsidies/funds offered by the government, authorised state units and other financial institutions involved with the promotion of the produce	-	-	-	-
PC20. select appropriate marketing channels for the produce, considering the relevant requirements and constraints	-	-	-	-
PC21. identify various risks to production and post-production processes and manage them appropriately	-	-	-	-
PC22. undertake outreach programs to promote agricultural products and services, and expand agri-business	-	-	-	-
PC23. prepare and execute a marketing plan considering the 4Ps i.e. product, price, promotion, and place and 4As i.e. acceptability, affordability, accessibility, and awareness	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. use the relevant digital services such as e-commerce, e-payments, electronic record-keeping, etc.	-	-	-	-
PC25. use efficient post-production logistics means to improve the supply quantity, reduce the cost to the consumer, and increase demand consequently	-	-	-	-
PC26. ensure all the relevant information such as quality and quantity of produce, date of manufacture, batch number, and sale is recorded electronically and/ or manually	-	-	-	-
PC27. coordinate with the various stakeholders for efficient and sustainable agri-business growth and development	-	-	-	-
NOS Total	**30**	**40**	**-**	**30**

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N9908
NOS Name	Undertake basic entrepreneurial activities for small enterprise
Sector	Agriculture
Sub-Sector	Generic
Occupation	Generic
NSQF Level	4
Credits	1
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	30/12/2024
NSQC Clearance Date	30/12/2021

AGR/N9903: Maintain health and safety at the workplace

Description

This OS is about maintaining health and safety of self and other co-workers at the workplace

Scope

The scope covers the following :

- Maintain personal hygiene
- Maintain clean and safe workplace
- Administer appropriate emergency procedures

Elements and Performance Criteria

Maintain personal hygiene

To be competent, the user/individual on the job must be able to:

PC1. wash hands, legs and face with soap/alcohol based sanitizer at reasonable intervals

PC2. wash the worn clothes with soap and sun dry before use next time

PC3. ensure the face is covered with mask or three layers of cloth-piece

PC4. follow the workplace sanitization norms including distancing from sick people

Maintain clean and safe workplace

To be competent, the user/individual on the job must be able to:

PC5. carry out basic safety checks before operation of all tools, implements, and machinery and report identified hazards to the supervisor

PC6. wear appropriate Personal Protective Equipment (PPE) while performing work in accordance with the workplace policy

PC7. follow the instructions mentioned on the labels of chemicals/pesticides/fumigants etc to avoid hazards

PC8. assess risks prior to performing manual handling jobs, and work according to currently recommended safe practices

PC9. sanitize equipment, tools and machinery before and after use

PC10. use equipment and materials safely and correctly and return the same to designated storage after use

PC11. dispose waste safely and correctly in the designated area

PC12. recognize risks to bystanders and take required action to reduce the risks

PC13. work in a manner which minimizes environmental damage, ensuring all procedures and instructions for controlling risks are followed

PC14. report any accidents, incidents or problems without delay to an appropriate person and take necessary immediate action to reduce further danger

PC15. follow government / workplace advisories incase of outbreak of any disease/disaster

Administer appropriate emergency procedures

To be competent, the user/individual on the job must be able to:

PC16. follow procedures for dealing with accidents, fires and emergencies, including communicating location and directions to the location of emergency, as per the workplace requirements

PC17. use emergency equipment in accordance with manufacturer's specifications and workplace requirements

PC18. provide treatment appropriate to the patient's injuries in accordance with recognized first aid techniques

PC19. recover (if practical), clean, inspect/test, refurbish, replace and store the first aid equipment as appropriate

PC20. report details of first aid administered in accordance with workplace procedures

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant legislation, standards, policies, and procedures at work

KU2. relevant health and safety requirements applicable to the work environment

KU3. own job role and responsibilities and sources of information pertaining to work

KU4. who to approach for support in order to obtain work related information, clarifications and support

KU5. importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business

KU6. personal hygiene and fitness requirement

KU7. importance of sanitization of the workplace

KU8. types of Personal Protective Equipment (PPE) required at the workplace and their importance

KU9. the correct and safe way to use materials and equipment required for the work

KU10. the importance of good housekeeping at the workplace

KU11. safe waste disposal methods

KU12. methods for minimizing environmental damage during work

KU13. the risks to health and safety including contagious diseases and the measures to be taken to control those risks in the area of work

KU14. workplace procedures and requirements for the prevention and treatment of workplace injuries/illnesses.

KU15. basic emergency first aid procedure

KU16. local emergency services

KU17. why accidents, incidents and problems should be reported and the appropriate actions to be taken

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. record the data as per the requirement

GS2. report problems to the appropriate personnel in a timely manner

GS3. read instruction manual for hand tool and equipments

GS4. communicate clearly and effectively with co-workers, and other stakeholders
GS5. comprehend information shared by senior people and experts
GS6. make decisions pertaining to personal hygiene and safety
GS7. schedule daily activities and draw up priorities
GS8. manage relationships with co-workers, manager and other stakeholders
GS9. assess situation and identify appropriate control measures

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Maintain personal hygiene	**10**	**5**	**-**	**10**
PC1. wash hands, legs and face with soap/alcohol based sanitizer at reasonable intervals	-	-	-	-
PC2. wash the worn clothes with soap and sun dry before use next time	-	-	-	-
PC3. ensure the face is covered with mask or three layers of cloth-piece	-	-	-	-
PC4. follow the workplace sanitization norms including distancing from sick people	-	-	-	-
Maintain clean and safe workplace	**15**	**15**	**-**	**15**
PC5. carry out basic safety checks before operation of all tools, implements, and machinery and report identified hazards to the supervisor	-	-	-	-
PC6. wear appropriate Personal Protective Equipment (PPE) while performing work in accordance with the workplace policy	-	-	-	-
PC7. follow the instructions mentioned on the labels of chemicals/pesticides/fumigants etc to avoid hazards	-	-	-	-
PC8. assess risks prior to performing manual handling jobs, and work according to currently recommended safe practices	-	-	-	-
PC9. sanitize equipment, tools and machinery before and after use	-	-	-	-
PC10. use equipment and materials safely and correctly and return the same to designated storage after use	-	-	-	-
PC11. dispose waste safely and correctly in the designated area	-	-	-	-
PC12. recognize risks to bystanders and take required action to reduce the risks	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. work in a manner which minimizes environmental damage, ensuring all procedures and instructions for controlling risks are followed	-	-	-	-
PC14. report any accidents, incidents or problems without delay to an appropriate person and take necessary immediate action to reduce further danger	-	-	-	-
PC15. follow government / workplace advisories incase of outbreak of any disease/disaster	-	-	-	-
Administer appropriate emergency procedures	**15**	**5**	**-**	**10**
PC16. follow procedures for dealing with accidents, fires and emergencies, including communicating location and directions to the location of emergency, as per the workplace requirements	-	-	-	-
PC17. use emergency equipment in accordance with manufacturer's specifications and workplace requirements	-	-	-	-
PC18. provide treatment appropriate to the patient's injuries in accordance with recognized first aid techniques	-	-	-	-
PC19. recover (if practical), clean, inspect/test, refurbish, replace and store the first aid equipment as appropriate	-	-	-	-
PC20. report details of first aid administered in accordance with workplace procedures	-	-	-	-
NOS Total	**40**	**25**	**-**	**35**

National Occupational Standards (NOS) Parameters

NOS Code	AGR/N9903
NOS Name	Maintain health and safety at the workplace
Sector	Agriculture
Sub-Sector	Generic
Occupation	Generic
NSQF Level	4
Credits	1
Version	3.0
Last Reviewed Date	26/05/2022
Next Review Date	27/05/2024
NSQC Clearance Date	27/05/2021

DGT/VSQ/N0101: Employability Skills (30 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

To be competent, the user/individual on the job must be able to:

PC1. understand the significance of employability skills in meeting the job requirements

Constitutional values – Citizenship

To be competent, the user/individual on the job must be able to:

PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices

Becoming a Professional in the 21st Century

To be competent, the user/individual on the job must be able to:

PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.

Basic English Skills

To be competent, the user/individual on the job must be able to:

PC4. speak with others using some basic English phrases or sentences

Communication Skills

To be competent, the user/individual on the job must be able to:

PC5. follow good manners while communicating with others

PC6. work with others in a team

Diversity & Inclusion

To be competent, the user/individual on the job must be able to:

PC7. communicate and behave appropriately with all genders and PwD

PC8. report any issues related to sexual harassment

Financial and Legal Literacy

To be competent, the user/individual on the job must be able to:

PC9. use various financial products and services safely and securely

PC10. calculate income, expenses, savings etc.

PC11. approach the concerned authorities for any exploitation as per legal rights and laws

Essential Digital Skills

To be competent, the user/individual on the job must be able to:

PC12. operate digital devices and use its features and applications securely and safely

PC13. use internet and social media platforms securely and safely

Entrepreneurship

To be competent, the user/individual on the job must be able to:

PC14. identify and assess opportunities for potential business

PC15. identify sources for arranging money and associated financial and legal challenges

Customer Service

To be competent, the user/individual on the job must be able to:

PC16. identify different types of customers

PC17. identify customer needs and address them appropriately

PC18. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

To be competent, the user/individual on the job must be able to:

PC19. create a basic biodata

PC20. search for suitable jobs and apply

PC21. identify and register apprenticeship opportunities as per requirement

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

KU4. Twenty first (21st) century skills and their importance

KU5. how to use basic spoken English language

KU6. Do and dont of effective communication

KU7. inclusivity and its importance

KU8. different types of disabilities and appropriate communication and behaviour towards PwD

KU9. different types of financial products and services

KU10. how to compute income and expenses

KU11. importance of maintaining safety and security in financial transactions

KU12. different legal rights and laws
KU13. how to operate digital devices and applications safely and securely
KU14. ways to identify business opportunities
KU15. types of customers and their needs
KU16. how to apply for a job and prepare for an interview
KU17. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. communicate effectively using appropriate language
GS2. behave politely and appropriately with all
GS3. perform basic calculations
GS4. solve problems effectively
GS5. be careful and attentive at work
GS6. use time effectively
GS7. maintain hygiene and sanitisation to avoid infection

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	**1**	**1**	**-**	**-**
PC1. understand the significance of employability skills in meeting the job requirements	-	-	-	-
Constitutional values – Citizenship	**1**	**1**	**-**	**-**
PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices	-	-	-	-
Becoming a Professional in the 21st Century	**1**	**3**	**-**	**-**
PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.	-	-	-	-
Basic English Skills	**2**	**3**	**-**	**-**
PC4. speak with others using some basic English phrases or sentences	-	-	-	-
Communication Skills	**1**	**1**	**-**	**-**
PC5. follow good manners while communicating with others	-	-	-	-
PC6. work with others in a team	-	-	-	-
Diversity & Inclusion	**1**	**1**	**-**	**-**
PC7. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC8. report any issues related to sexual harassment	-	-	-	-
Financial and Legal Literacy	**3**	**4**	**-**	**-**
PC9. use various financial products and services safely and securely	-	-	-	-
PC10. calculate income, expenses, savings etc.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. approach the concerned authorities for any exploitation as per legal rights and laws	-	-	-	-
Essential Digital Skills	**4**	**6**	**-**	**-**
PC12. operate digital devices and use its features and applications securely and safely	-	-	-	-
PC13. use internet and social media platforms securely and safely	-	-	-	-
Entrepreneurship	**3**	**5**	**-**	**-**
PC14. identify and assess opportunities for potential business	-	-	-	-
PC15. identify sources for arranging money and associated financial and legal challenges	-	-	-	-
Customer Service	**2**	**2**	**-**	**-**
PC16. identify different types of customers	-	-	-	-
PC17. identify customer needs and address them appropriately	-	-	-	-
PC18. follow appropriate hygiene and grooming standards	-	-	-	-
Getting ready for apprenticeship & Jobs	**1**	**3**	**-**	**-**
PC19. create a basic biodata	-	-	-	-
PC20. search for suitable jobs and apply	-	-	-	-
PC21. identify and register apprenticeship opportunities as per requirement	-	-	-	-
NOS Total	**20**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0101
NOS Name	Employability Skills (30 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	2
Credits	1
Version	1.0
Last Reviewed Date	NA
Next Review Date	03/05/2026
NSQC Clearance Date	03/05/2023

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1.Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) (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.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 these criteria.

5.In case of successfully passing only certain number of NOSs, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

6.In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack

Minimum Aggregate Passing % at QP Level : 50

(**Please note**: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
AGR/N0301.Planting material preparation in banana cultivation	34	43	-	23	100	10
AGR/N0302.Land preparation and plantation in banana cultivation	18	23	-	19	60	10
AGR/N0303.Integrated nutrient management in banana cultivation	38	64	-	48	150	15
AGR/N0304.Perform integrated pest and disease management in banana cultivation	22	30	-	18	70	15
AGR/N0305.Irrigation management and other operations in banana cultivation	30	40	-	30	100	10
AGR/N0306.Carry out harvesting, post-harvest management and marketing of Banana	40	55	-	45	140	15
AGR/N0357.Carry out banana fiber extraction from banana pseudo stem	47	63	-	40	150	10
AGR/N9908.Undertake basic entrepreneurial activities for small enterprise	30	40	-	30	100	5
AGR/N9903.Maintain health and safety at the workplace	40	25	-	35	100	5
DGT/VSQ/N0101.Employability Skills (30 Hours)	20	30	-	-	50	5

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
Total	**319**	**413**	**-**	**288**	**1020**	**100**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
PwD	Persons with Disabilities
PPE	Personal Protective Equipment
PPE	Personal Protective Equipment

Glossary

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.
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 (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	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 (KU)	Knowledge and Understanding (KU) 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.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) 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.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.