

# Practicing Agrivoltaic Farming

Unit Code: AGR/N1255

Version: 1.0

NSQF Level: 4

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## Description

This OS unit is about developing climate risk management strategies for any enterprise including agriculture & allied activities.

## Scope

The scope covers the following :

- Plan for the implementation of Agrivoltaics
- Carry out agrivoltaic farming
- Sell and record the output

## Elements and Performance Criteria

### *Plan for the implementation of Agrivoltaics*

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

- PC1.** Identify the activity for implementing under agrivoltaics system- permanent grassland, arable farming, horticulture, aquaculture, etc
- PC2.** Assess the feasibility and viability of implementing agrivoltaics including crop suitability, crop yields and cost competitiveness in the selected piece of land,
- PC3.** identify potential funding sources and the activities they support, eligibility and selection processes
- PC4.** Determine the eligibility for any subsidies or concessional financing available under any Government scheme
- PC5.** Select the sustainable partnership model for agrivoltaics
- PC6.** Choose the right partner for the implementation of agrivoltaics
- PC7.** Arrange for finances for the implementation of agrivoltaics

### *Carry out agrivoltaic farming*

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

- PC8.** Select the open or closed agrivoltaics system
- PC9.** Select the structure of the agrivoltaics- Interspace PV/Overhead PV/ Vertical PV/ PV greenhouse
- PC10.** Select the PV module orientation—Fixed/Single axis/Dual axis
- PC11.** Coordinate with the manufacturer for the installation of the Agrivoltaic structure
- PC12.** Select the most suitable design and configuration as per the specific requirement with reference to panel height, orientation, spacing
- PC13.** Make careful selection of the crop and variety as per the local agroclimatic conditions
- PC14.** Make careful selection of the crop and variety as per the local agroclimatic conditions
- PC15.** Select appropriate crops for each zone for optimum crop output
- PC16.** Carry out crop management activities under shading and interspace conditions
- PC17.** operate the farm equipment and machinery safely considering the proximity to high voltage cabling
- PC18.** Integrate rainwater harvesting structures with agrivoltaics to overcome water availability challenges
- PC19.** Clean and maintain the PV panels in good condition

**PC20.** Monitor and repair structural decay due to humid micro-environment

**PC21.** Co-manage the resources in the Agrivoltaic system

*Sell and record the output*

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

**PC22.** estimate the crop and power output generated through Agrivoltaics system

**PC23.** sell the crop at a profitable price

**PC24.** Sell the power to the Government at the specified tariff or directly to electricity consumers through open-access route at a mutually decided rate through long-term contracts

**PC25.** Calculate the Benefit: Cost ratio for the crop and power output to the installation and maintenance charges

**PC26.** Maintain proper record of the cost and revenue generated through agrivoltaics

**PC27.** ensure a balance between agricultural and power production imperatives

### **Knowledge and Understanding (KU)**

The individual on the job needs to know and understand:

**KU1.** Definition of agrivoltaics

**KU2.** Classification of agrivoltaics system

**KU3.** Potential benefits and risks of agrivoltaics

**KU4.** Challenges in wide-scale adoption of agrivoltaics

**KU5.** Government schemes promoting agrivoltaics or solarisation in agriculture

**KU6.** standards for agrivoltaics installations in India

**KU7.** Agrivoltaics projects in India

**KU8.** Common crops and agricultural activities undertaken in the agrivoltaics system

**KU9.** Factors to be considered for selecting crops in an agrivoltaics project- height of the crop, shading effect, and irrigation requirements

**KU10.** Crop micro-environment requirement

**KU11.** crop growth factors like temperature, light flux, and humidity

**KU12.** Potential business models and conditions for deploying agrivoltaics

**KU13.** Technological innovations in agrivoltaics

**KU14.** Favourable conditions for implementation of agrivoltaics

**KU15.** Scientific design of an agrivoltaics system

**KU16.** Factors to be considered for the structural design of the agrivoltaics system

**KU17.** Crop management under shading conditions

**KU18.** Co-management of resources

**KU19.** Safety concerns in farming owing to proximity to high-voltage cabling

**KU20.** Challenges in power production under agrivoltaic system

**KU21.** Water conservation methods

**KU22.** Rainwater harvesting structures

**KU23.** Maintenance and cleaning requirements of solar panels

**KU24.** Technical and operational challenges in crop management and power production

**KU25.** Book-keeping method

**KU26.** Policy reforms and regulatory requirements from the government

### **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 politely and professionally
- GS5.** plan and prioritize tasks to ensure timely completion
- GS6.** take quick decisions to deal with workplace emergencies/ accidents
- GS7.** identify possible disruptions to work and take appropriate preventive measures

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Plan for the implementation of Agrivoltaics</i>	<b>10</b>	<b>10</b>	-	<b>10</b>
<b>PC1.</b> Identify the activity for implementing under agrivoltaics system- permanent grassland, arable farming, horticulture, aquaculture, etc	-	-	-	-
<b>PC2.</b> Assess the feasibility and viability of implementing agrivoltaics including crop suitability, crop yields and cost competitiveness in the selected piece of land,	-	-	-	-
<b>PC3.</b> identify potential funding sources and the activities they support, eligibility and selection processes	-	-	-	-
<b>PC4.</b> Determine the eligibility for any subsidies or concessional financing available under any Government scheme	-	-	-	-
<b>PC5.</b> Select the sustainable partnership model for agrivoltaics	-	-	-	-
<b>PC6.</b> Choose the right partner for the implementation of agrivoltaics	-	-	-	-
<b>PC7.</b> Arrange for finances for the implementation of agrivoltaics	-	-	-	-
<i>Carry out agrivoltaic farming</i>	<b>15</b>	<b>30</b>	-	<b>10</b>
<b>PC8.</b> Select the open or closed agrivoltaics system	-	-	-	-
<b>PC9.</b> Select the structure of the agrivoltaics- Interspace PV/Overhead PV/ Vertical PV/ PV greenhouse	-	-	-	-
<b>PC10.</b> Select the PV module orientation—Fixed/Single axis/Dual axis	-	-	-	-
<b>PC11.</b> Coordinate with the manufacturer for the installation of the Agrivoltaic structure	-	-	-	-
<b>PC12.</b> Select the most suitable design and configuration as per the specific requirement with reference to panel height, orientation, spacing	-	-	-	-
<b>PC13.</b> Make careful selection of the crop and variety as per the local agroclimatic conditions	-	-	-	-

<b>Assessment Criteria for Outcomes</b>	<b>Theory Marks</b>	<b>Practical Marks</b>	<b>Project Marks</b>	<b>Viva Marks</b>
<b>PC14.</b> Make careful selection of the crop and variety as per the local agroclimatic conditions	-	-	-	-
<b>PC15.</b> Select appropriate crops for each zone for optimum crop output	-	-	-	-
<b>PC16.</b> Carry out crop management activities under shading and interspace conditions	-	-	-	-
<b>PC17.</b> operate the farm equipment and machinery safely considering the proximity to high voltage cabling	-	-	-	-
<b>PC18.</b> Integrate rainwater harvesting structures with agrivoltaics to overcome water availability challenges	-	-	-	-
<b>PC19.</b> Clean and maintain the PV panels in good condition	-	-	-	-
<b>PC20.</b> Monitor and repair structural decay due to humid micro-environment	-	-	-	-
<b>PC21.</b> Co-manage the resources in the Agrivoltaic system	-	-	-	-
<i>Sell and record the output</i>	<b>5</b>	<b>5</b>	-	<b>5</b>
<b>PC22.</b> estimate the crop and power output generated through Agrivoltaics system	-	-	-	-
<b>PC23.</b> sell the crop at a profitable price	-	-	-	-
<b>PC24.</b> Sell the power to the Government at the specified tariff or directly to electricity consumers through open-access route at a mutually decided rate through long-term contracts	-	-	-	-
<b>PC25.</b> Calculate the Benefit: Cost ratio for the crop and power output to the installation and maintenance charges	-	-	-	-
<b>PC26.</b> Maintain proper record of the cost and revenue generated through agrivoltaics	-	-	-	-
<b>PC27.</b> ensure a balance between agricultural and power production imperatives	-	-	-	-
<b>NOS Total</b>	<b>30</b>	<b>45</b>	-	<b>25</b>

**National Occupational Standards (NOS) Parameters**

<b>NOS Code</b>	AGR/N1255
<b>NOS Name</b>	Practicing Agrivoltaic Farming
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	
<b>Occupation</b>	Farm Management
<b>NSQF Level</b>	4
<b>Credits</b>	1.25
<b>Version</b>	1.0
<b>Next Review Date</b>	NA