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| Title | **Selection, treatment and storage of suitable seed** |
| Level | **2** | **Credits** | **20** |

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| Purpose | These competency standards will ensure that the trainee will be able to select, treat and store suitable seed for crop production |

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| Classification ISCED | 0811 Crop and livestock production |

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| Available grade | Competent / Not yet competent |

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| Modification history | N/A |

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| **Competency Unit** | **Performance Criteria** | **Knowledge & Understanding** |
| **A-1:** Select appropriate lots for producing seeds / or procure registered seeds | **Trainee will be able to:****P1.**Identify different varieties of chillies.**P2.**Recognize the sub types of chilli variety ‘Dandi cut’**P3.**Recognize hybrid varieties of chillies**P4.**Calculate the proportion of different sub types of Dandi cut chillies within a chilli lot- Rogging of off type**P5.**Distinguish between normal and damaged pods**P6.**Identify shrivelled chilli pods**P7.**Recognize the chillies that are likely to be fungal infested, discoloured, black spotted etc**P8.**Calculate the proportion of normal pods in a lot **P9.**Calculate the proportion of damaged pods in a lot **P10.**Decide suitable chilli lots for seed production**P11.**Procure good chilli seeds that are disease free, pure variety etc from authorized / reliable dealers. | **Trainee will be able to describe and explain: K1.**Chilli varieties and its sub types**K2.**Hybrid varieties**K3.**Healthy pods/seeds **K4.**Damaged pods/seeds/ off-type **K5.**Shrivelled pods**K6.** Effect of good seed quality on productivity and occurrence of diseases**K7.** Procedure to determine the proportion of healthy seeds in the offered consignment**K8.** Selection of appropriate chilli field for seed production**K9.**Picnicking of healthy and diseased free pods for seed production.**K10.**Knowledge about germination test to ascertain the seed quality |

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|  | **P12.**Ascertain the quality of seed offered for procurement by undertaking physical observation/germination test**P13.**Perform germination test on seeds offered for procurement**P14.**Perform moisture test or get the sample tested from laboratory**P15.**Perform aflatoxin test or get the chilli sample analyzed for aflatoxin from laboratory | **K11.**Role of moisture in chilli quality**K12.**Role of aflatoxin in chilli supply chain**K13.**Permissible limits of aflatoxin in various countries and prevailing situation in Pakistan**K14.**Impact of mixing of damaged pods with healthier pods |
| **A2.** Segregate the appropriate pods on the basis of their physical appearance | **Trainee will be able to:****P1.**Separate the healthier and damaged pods from selected chilli lots**P2.**Separate the various types of damages including discoloration, shrivelling, immaturities etc.**P3.**Recognize the extent of damage in the chilli podse.g. minor, moderate and severe.**P4.**Test the damaged pods using appropriate tests like visual analysis**P5.**Handle severely damaged chilli pods properly**P6.**Identify the suitable pods from selected lots for seed production**P16.**Segregate the sub types within Dandi cut on the basis of physical characteristics | **Trainee will be able to describe and explain:****K1.**Damaged pods including discoloured, immature, cracked, shrivelled, viscera bored, viscera opened, black spotted and fungal damaged.**K2.**Impact of appropriate/healthier/damaged pods on crop productivity**K3.**Extent of damage in chilli pods**K4.**Procedures to safely handle the damaged pods**K5.**Procedure to determine the proportion of various damaged pods in chilli lot**K6.**Procedure of segregating sub types of Dandi cut variety**K7.**Physically damaged and Infested chillies |

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|  | **P7.**Separate shrivelled chilli pods**P8.**Separate infested chillies from the chilli lot |  |
| **A3.** Extract the seeds from selected chilli pods and separate the undersized seeds using appropriate procedure | **Trainee will be able to:****P1.**Select the site for extraction of seeds from chilli lots **P2.**Optimize the conditions of extraction site **P3.**Transfer the chilli lots to the extraction site**P4.**Perform cleaning and other necessary arrangements at extraction site**P5.**Select suitable means of crushing of chilli pods**P6.**Perform mechanical crushing of chilli pods to obtain the seeds**P7.**Operate extraction equipments**P8.**Perform crushing of chillies manually- Skilfully handling such material**P9.**Recognize the undesirable materials in crushed chillies**P10.**Select suitable means of separating undesirable materials**P11.**Separate the undesirable materials from seeds such as inorganic materials, debris etc. | **Trainee will be able to describe and explain:****K1.**Knowledge about the appropriate procedures for seed extraction**K2.**The merits and demerits of various procedures for crushing the chilli pods for separation of seeds**K3.**Impact of under sized/damaged seeds on crop productivity**K4.**Knowledge about the optimum conditions for selecting the site of seed extraction**K5.**Impact of proper selection of extraction site**K6.**Maintenance of extraction equipments**K7.**Knowledge about the importance of good seed in chilli production**K8.**Importance of separation of undesirable materials from crushed chillies- Handling measure carefully**K9.**Proper use of measure balance |

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|  | **P12.**Recognize the under sized seeds**P13.**Select suitable means of separating undersized seeds from normal seeds**P14.**Screen the extracted seeds to remove the under size seeds**P15.**Calculate the seed yield from the given chilli lot |  |
| **A4.** Undertake seed treatment | **Trainee will be able to:****P1.** Select suitable means of treating the seeds**P2.**Select suitable fungicide and /or insecticides for treating the screened seeds**P3.**Obtain fungicide or insecticide from reliable source**P4.**Calculate the dosage of fungicide or insecticides for larger and smaller batches**P5.**Treat seeds of larger and smaller batches at recommended doses using appropriate application procedures**P6.**Handle the equipment used for seed treatment**P7.**Select the suitable means after seed dressing**P8.**Proper post-treatment handling of seeds such as drying of seeds | **Trainee will be able to describe and explain: K1.**Importance of seed treatment**K2.**Components of seed treatments and dressing**K3.**Impact of treated seeds on plant germination**K4.**Information about suitable fungicide/insecticide application for chilli seed treatment**K5.**Impact of application of inappropriate dosage of fungicide/ insecticide during seed treatment**K6.**Safety measures for the usage of sprayers**K7.**Cleanliness and calibration of equipment for seed treatment |
| **A5.** Pack and tag the seeds | **Trainee will be able to:****P1.** Segregate the chilli seeds according to their date of | **Trainee will be able to describe and explain:****K1.**Merits and demerits of various packaging material |

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|  | entry, quality etc**P2.** Select appropriate packing material**P3.** Select suitable means of packaging the chilli seeds**P4.** Pack the seeds properly**P5.** Design the label for chilli seeds to include date of entry, person involved, variety name, germination %, purity %, source involved, expiry date (2-3 Years)**P6.** Label different chilli lots with identity, quantity, dates etc.**P7.** Register the details of chilli lots including date of procurement/entry/treatment, names of person involved in the process etc. | **K2.**Impact of appropriate packaging on storability of seeds**K3.**Storage of different varieties/ types in separate lots**K4.**Knowledge about the proper registration of different chilli lots**K5.**Tagging/labelling of seeds for identification**K6.**The rules of FSC&RD |
| **A6.** Inspect and select the site for storage of seeds and store the seeds under proper conditions keeping their germination intact | **Trainee will be able to:****P1.** Examine the storage conditions**P2.** Select the suitable storage area**P3.** Recognize the presence of pests in storage area**P4.** Identify the type of pests (like rodents, insects etc) present in storage area**P5.** Calculate the extent of damage caused by pests**P6.** Select the suitable means of disinfestations of storage area | **Trainee will be able to describe and explain: K1.**Prerequisites of good storage management **K2.**Factors effecting storage of seeds**K3.**Preventive, protective and corrective measures for control of insects and mites during storage**K4.**Identification of insects and mites that infests stored seeds**K5.**Impact of temperature, humidity, packing material etc. on seed viability during storage**K6.**Periodic Inspection of stores and produce |

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|  | **P7.** Calculate the dosage required for disinfestations of stores**P8.** Disinfest the store from any pre-existing infestation using contact insecticides and ensuring the hygienic conditions-Annually spraying the store according to SOP to escape from any wrong doing**P9.** Fumigation of seeds if and when required to ascertain insect infestation during storage**P10.**Inspect the site of chillies to ensure the proper storage**P11.**Maintain the storage conditions unfavourable for growth and development of fungi and insects ensuring proper ventilation**P12.**Perform the viability test prior to sowing using ready to use methods | **K7.**Importance of seed viability**K8.**Procedures to test seed viability**K9.**Criteria for acceptability of seeds on the basis of viability test**K10.**Determination of seed rate on the basis of germination test |