ANNEX- A

CHECKLISTS FOR SELF-ASSESSMENT FOR GOOD AGRICULTURAL PRACTICES (GAP) FOR MEDICINAL PLANT PRODUCE

Parameters	Control criteria	Level of compliance	Compliance		Remarks
			Yes	No	
1	**SITE SELECTION**				
1.1	Is site free from toxic elements such as industrial wastes and effluents?	Major			
1.2	Are the sites in proximity to graveyards, crematoria or having a traceable history of such usage.	Minor			
1.3	Is the site having access to reliable source of irrigation water (where applicable/relevant)?	Major			
1.4	Has a management plan been developed setting out strategies to minimize all identified risks in respect of parameter at 1.1 to 1.2? Are the results of this analysis recorded and used to justify that the site in question is suitable?	Major			
1.5	Has the meteorological data collated for preceding three years taken into account while judging the suitability of the site.	Minor			
2	**SOIL CONDITIONS**				
2.1	Has the soil map prepared for the farm	Major			
2.2	Is the soil optimal to the selected crop with reference to its water holding capacity and fertility?	Major			
2.3	If soils with low fertility levels use soil amendments as per the specific site and requirement of species, are the latest soil test report on physico-chemical parameters and nutrient profile to decide the nature and quantity of soil amendments available?	Major			
2.4	Has the quality of irrigation water been adequately understood and classified in the context of both soil type and the target crop in terms of total salt concentration, Sodium absorption ratio, Bicarbonate and Boron concentration etc.	Major			

2.5	Irrigation water is required to conform to standards of micro pollutants [disinfection by-products (DBPs), endocrine disrupting chemicals, antibiotics, polymers, pesticides and other bioactive chemicals], heavy metals and residual pesticides) if the water source is vulnerable like canal water etc.?	Major			
2.6	When shade-loving crop is planned for, availability of shade across the field should be ascertained.	Major			
3	**SEEDS AND PROPAGATION MATERIAL**				
3.1	Do seed/planting material accompanied with the following information:- a) Name (pharmacopoeial nomenclature and trade name) b) Botanical name **c)** Cultivar/Selection / Phenotype/ Chemotype / Genotype (If applicable)?	Critical			
3.2	Is marker based analytical projection for the end-product is mandatory requirement when the crop is meant for phyto-pharmaceutical industries?.	Major			
3.3	When the planting material is obtained from wild resources, are efforts made to establish its correct identity? Is planting material obtained from a authorized source?	Major			
3.4	Does the producer keep records on sowing/planting methods, seed/planting rate, sowing/planting date?	Major			
3.5	**Seed**				
3.5.1	The seeds chosen for cultivation purposes must meet the botanical and varietal purity.	Critical			
3.5.2	Are the seeds chosen for cultivation purposes physically free from pests, diseases, weeds, and foreign and inert matter?	Critical			
3.5.3	Does the producer keep records on sowing/ planting methods, seed/planting rate, sowing /planting date?	Major			
3.5.4	Are the seed collected from recently collected lots and are mature seeds in case seeds are collected from wild source?	Major			

3.5.5	Are prescribed seed treatment protocols for the target species, completed well in advance to match the planting season.	Major			
3.5.6	When the process for seedling production under nursery conditions, is it initiated as per the recommended agronomic practices for the target species and carried out reasonably well before the actual schedule of field transplantation and only healthy seedlings transplanted.	Major			
3.6	**Stem cutting**				
3.6.1	Are sources of cuttings authenticated when root induction in stem cuttings under nursery conditions for transplantation into the field for both botanical identity and quality of vegetative propagules?	Critical			
3.6.2	Are only healthy stem cutting giving desired rooting used?	Major			
3.7	**Root cutting**				
3.7.1	Are 'ready-to-transplant saplings' or root cuttings of uniform size and maturity, both in terms of aerial and underground parts, and free from any disease and infection used?	Critical			
4	CROP MANAGEMENT FOR CULTIVATION				
4.1	**Field preparation**				
4.1.1	Is soil brought to the desired tilth to facilitate favourable environment for growing seed and seedling?	Major			
4.1.2	Do field operation performed provide better rhizospheric environment, soil structure and texture, and keep it free from weeds for initial 20-30 days?	Major			
4.2	**Sowing and transplanting**				
4.2.1	Are recommended rate of seedlings per unit of land area adhered to?	Minor			
4.2.2	Is placement of seeds taking place at the appropriate depth in the moist zone of the soil?	Major			
4.2.3	Are saplings where used transplanted following the spacing norms in terms of row-to-row and plant-to-	Minor			

	plant distance governed by the needs of target crop as envisaged in the agronomic protocol for target species?				
4.2.4	Are the seedlings at optimum stage of transplanting uprooted and transplanted immediately thereafter?	Major			
4.2.5	Replenishment of plant populations to compensate mortality losses should be carried out within a reasonable timeframe and in consideration of the gestation period of the target crop.	Minor			
4.2.6	Is there a document that guarantees seed quality (free from injurious pests, diseases, virus, etc.)?	Minor			
4.3	**Manures and Fertilizers**				
4.3.1	Source of information/material about manures and fertilizers used.Parameters used to accept or qualify the manure in case source is from outside.	Major			
4.3.2	Is use of organic manure preferred for growing medicinal plants supplemented by mineral nutrition through inorganic source in consideration of the nutritional needs of the target crop vis-à-vis the soil characteristics?	Minor			
4.3.3	Is use of compost, vermi-compost, green leafy manure and biofertilizers considered desirable?	Minor			
4.3.4	Are specialized nutritional care for distinct purposes such as root production or enhancement of leafy bio-mass etc opted for in the light of recommended agronomic practices for target species?	Major			
4.4	**Irrigation**				
4.4.1	How is the total water requirement of the crop estimated in the light of available agronomic protocol? How the irrigation cycles is planned for and implemented to ensure optimal plant growth.	Major			
4.4.2	Is there a water management plan to optimise water usage and reduce waste in terms of method of irrigation?	Major			
4.4.3	How water harvesting and water conservation methods are followed, wherever possible	Minor			

4.4.4	Is the quality of water considered in the light of prevailing soil conditions and soil and water analysis taken into account for this purpose.	Major			
4.4.5	How soils having the problem of drainage are dealt with in specific manner so as to provide outlet for excess water?	Major			
4.5	**Weeding and intercultural operations**				
4.5.1	How initial flush of weeds are controlled effectively to ensure a weed free environment to young plants?.	Major			
4.5.2	Is the prescribed schedule of all inter-cultural operations such as weeding, hoeing, topping, nipping of buds, pruning, shading and earthing up etc. adhered to in a manner to optimize overall productivity.	Major			
4.5.3	Are use of herbicides avoided as far as possible? In case of their inevitable usage, are available evidence of safety to the target crop considered adequately?	Major			
4.6	**Crop protection**				
4.6.1	Is there a comprehensive preventive and control measures enumerated in the agronomic protocol used for pest management to minimize loss of the final crop and its quality.	Major			
4.6.2	Is crop protection plans limited to the use of bio-control agents and bio-pesticides?	Major			
4.6.3	Integrated Pest Management protocols shall be in place in absence of the protocols at 4.6.1 and 4.6.2.	Critical			
4.6.4	How under compulsive circumstances care is taken to use smallest effective dosage of pesticides on the basis of crop protection protocols prescribed for the target species	Major			
4.6.5	When chemical pesticides are used for crop protection, is residue analysis of final product carried out through appropriate testing agencies following standard procedures?	Critical			
5	HARVEST AND POST HARVEST MANAGEMENT				
5.1	Harvesting				
5.1.1	How the harvesting season is determined and followed on the basis of qualitative parameters set for the end product of the constituents rather than the total vegetative yield?	Major			
5.1.2	How are cutting devices employed for harvesting selected to minimize the contamination by soil	Major			

	particles? How while harvesting, care is taken to avoid incidental and concurrent harvest of weeds?				
5.1.3	How are the containers used for harvested materials kept clean? How care is taken to ensure freedom from the risks of cross contamination by other species, weeds and such other extraneous matter?	Major			
5.2	Primary processing				
5.2.1	Are the washing and cleaning methods for freshly harvested materials laid down in consideration of the target plant part?	Major			
5.2.2	Is the freshly harvested materials not be stored as such and the drying process initiated in a continuum? How is the length of storage minimized and handled in a manner to prevent degradation or rotting?	Major			
5.2.3	How processing yards or sites are kept clean, well ventilated, and have the facilities for protection against sunlight, dust, rain, rodents, insects and livestock?.	Major			
5.2.4	Are the drying procedure and the temperature employed for this purpose in conformity with the quality needs of the farm produce?	Critical			
5.2.5	Whether sorting procedure is carried out after completion of drying phase and before the material is packed?	Major			
5.3	Packaging, storage and transportation				
5.3.1	Is the selection of packaging material based on the quality requirements and possible length of storage before consumption and kept clean, dry and undamaged?	Major			
5.3.2	While packaging, are mechanical damages and undue compacting of the dried plant material that may result in undesirable quality changes avoided? Is care taken to avoid overfilling of the containers?	Major			
5.3.3	Is the storage area kept dry and protected from insects and rodents and such other factors that may be detrimental to the quality of the product?.	Major			
5.3.4	Are organic herbs stored separately from the non-organic products?	Major			

5.3.5	When multiple commodities are handled in the same storage area, is care exercised to prevent product mix up and cross contamination.	Minor			
5.3.6	Are plant materials having strong aromatic compounds kept at a reasonably away from others?	Minor			
6	**IDENTIFICATION AND TRACEABILITY**				
6.1	*Identification*				
6.1.1	Are packs legibly labelled inscribing on every pack with the product name, plant part, month and year of harvest and the name of farmer/farming agency? If the material was tested before, an appropriate label may be used indicating quality approval	Major			
6.2	**Traceability**				
6.2.1	Is registered product traceable back to and trackable from the registered farm (and other relevant registered areas) where it has been grown?	Critical			
7	PERSONNEL AND EQUIPMENT				
7.1	Key resource persons engaged at the site (such as farm owner/ supervisor) must be conversant with all aspects related to the target crop such as, quality requirements of the end product, crop husbandry etc.	Major			
7.2	The personnel should have basic exposure to subject matters like safety and hygiene	Major			
7.3	The machinery used in fertilizer and pesticide application must be calibrated at prescribed schedules and calibration certificates / records should be maintained.	Major			
7.4	Equipment must be clean and mounted where applicable, in an easily accessible manner. Scheduled servicing procedures must be adhered to keep them in working order	Major			
7.5	Additional care should be taken for cleaning those machine parts that get into direct contact with the harvested medicinal plant	Major			
7.6	The material used for the equipment, particularly that coming into direct contact, should be safe. Equipments that pose a risk of hazardous metallic contamination of	Critical			

	the harvested crop should be avoided				
8	**WORKERS HEALTH, SAFETY AND WELFARE**				
8.1	**Risk Assessments**				
8.1.1	Does the farm have a written risk assessment for safe and healthy working conditions?	Major			
8.1.2	Does the farm have a written health, safety and hygiene policy and procedures?	Major			
8.2	**Training**				
8.2.1	Do all workers handling and/or administering plant chemicals, disinfectants, plant protection products, biocides or other hazardous substances and all workers operating dangerous or complex equipment have certificates of competence, and/or details of other such as qualifications?	Major			
8.2.2	Have all workers received adequate health and safety training and are they instructed according to the risk assessment?	Major			
8.2.3	Is there always an appropriate number of persons (at least one person) trained in first aid present on each farm whenever on-farm activities are being carried out?	Major			
8.3	**Hazards and First Aid**				
8.3.1	Do accident and emergency procedures exist; are they visually displayed and communicated to all persons associated with the farm activities?	Major			
8.3.2	Are potential hazards clearly identified by warning signs and placed where appropriate?	Minor			
8.4	**Protective Clothing/Equipment**				
	Are workers (including subcontractors) equipped with suitable protective clothing in accordance with legal requirements and/or label instructions or as authorized by a competent authority?	Major			
9	**RECORD KEEPING AND INTERNAL SELF-ASSESSMENT/ INTERNAL INSPECTION**				

9.1	Are all records requested during the external inspection accessible and kept for a minimum period of time of two years, unless a longer requirement is stated in specific control points?	Major			
9.2	Does the producer take responsibility to undertake a minimum of one internal self-assessment per year against the requirements of this standard?	**Major**			
9.3	Are effective corrective actions taken as a result of non-conformances detected during the internal self-assessment ?	Major			