Manual of Schedules and Instructions for Data Collection

NINTH INPUT SURVEY 2016-17

Directorate of Economics & Statistics,
Government of Telangana, Hyderabad.

Manual of Schedules and Instructions for Data Collection

NINTH INPUT SURVEY 2016-17

Directorate of Economics & Statistics,
Government of Telangana, Hyderabad.

INDEX

List of Boxes

Section - A

Schedules and Instructions for Data Collection

1. Introduction

1.1 Agriculture Census in India is conducted at five yearly intervals to collect and derive quantitative information about structural characteristics of operational holdings in the country. The first comprehensive Agriculture Census was conducted in the country with 1970-71 (July-June) as the reference year. Starting with the second Agriculture Census 1976-77, an Input Survey, as a follow-up survey is conducted to collect data on pattern of input use by the operational holdings. Eight Input Surveys with reference years 1976-77, 1981-82, 1986-87, 1991-92, 1996-97, 2001-02, 2006-07 and 2011-12 have been conducted so far. The next survey which is ninth in the series will be conducted with reference year 2016-2017 (1st July, 2016 to 30th June, 2017). The scope and coverage of the survey have been expanding over the years keeping in view of the data requirements for planning and execution of Agricultural Programmes. In addition to information on soil health, data on input use, such as, use of certified/notified seeds, high yielding variety seeds, hybrid seeds, pest control measures adopted by cultivators, educational qualification, age and size of households of operational holders are also collected through this Survey. The present Input Survey 2016-17 also investigate data on use of Agricultural implements/equipments/machines under owned and hired classification.

2. Objectives

2.1 Main objective of the survey is to collect data on usage of various agricultural inputs, according to major size-groups of operational holdings, viz., marginal (below 1 ha.), small (1- 1.99 ha.), semi-medium (2- 3.99 ha.), medium (4- 9.99 ha.) and large (10 ha. and above). The inputs covered in the survey include chemical fertilizers, HYV seeds, Hybrid seeds, chemical pesticides, bio-pesticides, farmyard manures/compost, bio-fertilizers, agricultural implements and machinery and agricultural credit besides the information as mentioned in para 1.1 above.

3. Scope of the Survey

3.1 The survey covers the whole country. All types of agricultural holdings, except institutional holdings and holdings operated by persons not residing in the sample village, are enumerated. ***Thus, only individual and joint holdings operated by resident cultivators in the sample village will constitute the universe (population) for this Survey***.

3.2 The basic statistical unit (target group) for the survey is the operational holding. Even though an insignificant amount of agriculture takes place in urban areas also, the survey is primarily intended to cover the rural area where agriculture is practiced as a profession. In some States/UTs like Kerala, Goa and Puducherry, a significant portion of the operated area lies in areas declared as

urban. Keeping in view the recommendations of concerned State Governments and the concepts followed in Agriculture Census, such States/UTs have been advised to conduct census of holdings in these areas also during Phase I and II of Agriculture Census. Such areas would be covered in Phase III also. **As a thumb rule, it is therefore, recommended that Input Survey be carried out in those areas where previous phases of Agriculture Census have been conducted**.

3.3 ***Like earlier surveys, the Input Survey 2016-17 would also be restricted only to the resident Operational Holders of the selected villages***. Operational Holders who are residing outside the Tehsil of the sample village but operating some land in the sample village will not be included in the sample as it would not be convenient to approach them for collecting information. Information about the residential status (village or outside the village) will be collected at the time of updation of sampling frame or listing. The data will be collected for All Social Groups and not separately for SC, ST and Others. Institutional Holdings will also not be covered.

4. Reference Period

4.1 ***The reference period for ninth Input Survey will be 2016-17 (July, 2016 to June, 2017)***. The actual fieldwork will start from 1st July, 2017 i.e. immediately after the crop season 2016-17 is over.

5. Coverage

5.1 Under the Input Survey 2016-17, information will be collected according to five size-groups of operational holdings for the following items:-

i) Number of parcels;
ii) Multiple cropping, separately for irrigated and unirrigated areas under crops;
iii) Use of chemical fertilizers, organic manures, chemical pesticides and bio-pesticides, separately for irrigated and unirrigated areas under crops;
iv) Use of agricultural equipments and machines (owned/hired);
v) Agricultural credit availed.
vi) Types of Seeds used (certified/Hybrids) and quality problems.
vii) Integrated Pest Management (IPM) practices.
viii) Age, size of household, educational qualification of holders.
ix) Soil health/Soil testing.

6. Unit of Enumeration

6.1 The data are to be collected in respect of each sampled Operational Holding of selected villages, which has been defined as "***all land which is used wholly or partly for agricultural production and is operated as one technical unit by one person alone or with others, without regard to the title, legal form,***

size or location". The technical unit has been defined as "***a unit which is under the same management and has the same means of production such as labour force, animals and machinery***". It would be seen from this definition that the actual cultivator and not the owner constitutes the statistical unit for the survey. Effort is thus required to be made to contact the cultivator who operates the holding and who takes the decisions in the farm business enterprise.

6.2 For purpose of Input Survey, District will be the boundary for pooling of parcels of an operational holder, as estimates are to be generated at District level in Input Survey.

7. Methodology

7.1 A two-stage stratified sampling will be adopted for the Input Survey 2016-17. Tehsils/CD Blocks would constitute the strata, villages within a stratum form first-stage units and 'Operational Holdings' in the selected villages would be second-stage units. The sample size of first stage units will be 7 per cent of the total number of villages from each stratum. These 7 per cent villages are to be selected randomly out of the villages already selected for Phase-II of Agriculture Census, 2015-16.

7.2 It is important to note that the estimates of both Agriculture Census and Input Survey are to be prepared for all tehsils/blocks in the country. For this, it is necessary that the Survey is conducted in at least one village in each tehsil/block. However, if there were only one or two villages of the tehsil/block where Agriculture Census was conducted, Input Survey is recommended to be conducted in all these villages, to make the sample representative.

7.3 In a selected village, all the operational holdings will be grouped into the following five size groups:

Sl.No.	Size Groups	Codes
1.	Below 1 ha.	1
2.	1 to 1.99 ha. (1 ha. and above but below 2 ha.)	2
3.	2 to 3.99 ha. (2 ha. and above but below 4 ha.)	3
4.	4 to 9.99 ha. (4 ha. and above but below 10 ha.)	4
5.	10 ha. and above.	5

7.4 The codes for size groups given above are to be used for filling the identification particulars in schedules 2.1 to 2.5.

7.5 A simple random sample of four operational holdings will be selected from each of the above five size-groups of holdings. If in a selected village, total number of operational holdings are four or less in a particular size group, then all the holdings of that size-group are to be selected. The data will be collected through household inquiries from selected operational holders of selected villages.

8. Selection of Sample Villages

8.1 The selection of sample villages for the Input Survey is to be done at the State Headquarters by the technical officers as per sampling proportions mentioned in para 7. For making selection of villages, it is recommended that a list of villages where Agriculture Census (phase-II) was conducted, should be prepared for each Tehsil/Block. Serial numbers should be given to the villages separately for each Tehsil/Block. Using random number tables, 35 per cent villages (rounded off to nearest integer and subject to a minimum of one) be selected independently in each Tehsil/Block for further sampling of holdings for enquiry if 20% of the villages were selected in phase-II, otherwise, the above mentioned proportion will vary depending upon the percentage of villages selected in phase-II of Agriculture Census 2015-16. **It may be noted that the sample size would not be less than 7% of total number of villages in a Tehsil/Block.** The procedure for use of random number tables is given in Annexure XIII.

8.2 The estimation procedure recommended for Input Survey utilizes the number of holdings in the sample villages and number of villages in the tehsil as multiplier. Normally, it is expected that in making random selection of villages, all types of villages, i.e., having small or large number of holdings, will be represented in the sample. However, it was observed that this procedure led to selection of villages having very few holdings, leading to an unrepresentative sample and consequentially generation of unreliable estimates. ***It is, therefore, recommended that at the stage of selection of sample villages itself the representative-ness of the sample be examined.***

8.3 In case some *uninhabited villages* get selected in the sample, such villages are to be substituted by inhabited villages where some cultivation is done by residents of the village. At the time of estimation, however, the uninhabited villages should be included in the total number of villages at stratum level for arriving at the expansion factors.

8.4 The exercise of selection of villages, as per procedure given in para 7.2 above, should be completed as quickly as possible. The lists of selected villages are to be communicated to the District authorities who, in turn, will allot the villages to the primary workers for selection of sample operational holdings in the selected villages. The procedure for selection of holdings is described in detail in para 17.3.15.

9. Identification of Agency

9.1 As household inquiry approach is to be followed for the Survey, it is requisite that the information is collected by trained and skilled staff who have experience of similar work. As the availability of statistical staff for purpose of Input Survey differs from State to State, the technical staff available with the

offices like District Statistical Office, Taluk Statistical Office and Directorate of Agriculture may be utilized for the purpose. Depending on the administrative set up in each State, the agency for carrying out the survey and number and names of villages to be covered by individual officials needs to be notified.

10. Time Schedule

10.1 The tentative time schedule for Input Survey 2016-17 is as follows:

S.No.	Items of Work	Deadline
1.	Translation and printing of Schedules and Instructions.	April, 17 – May, 17
2.	Despatch of Schedules and Instructions.	May - June, 2017
3.	Selection of sample villages.	May - June, 2017
4.	Training and Publicity.	May – June, 2017
5.	Fieldwork of Input survey.	July 2017 – Sept., 2017
6.	Scrutiny and coding of schedules.	October 2017
7.	Despatch of schedules to the data processing agency.	October 2017
8.	Data entry, validation and error correction, generation of trial tables, and generation of final tables and their examination by States / UTs.	November 2017 – June 2018
9.	Preparation and printing of State Reports and submission to Government of India by States/UTs.	July 2018 - Sept., 2018

10.2 The State Level Coordination Committees (SLCCs) constituted for Agriculture Census 2015-16 will also coordinate all the activities under the Survey for timely completion of each activity. A representative of Agriculture Census Commissioner, Government of India will invariably be a member of SLCC.

11. Publicity

11.1 It is necessary to explain the objectives of Input Survey to the respondents, clearly pointing out the purpose for which the data are being collected. All the doubts and misgivings of respondents need to be clarified. It may be clarified that the data would be kept confidential and it will not be used for any other purpose like settling of tax, tenancy rights, liabilities, etc. Due publicity in this regard before the actual commencement of the survey will help in collection of reliable data. The State/UT Governments may use print and electronic media (radio and television), posters and hoarding in local languages for this purpose. The village officials should be involved in this process. The fieldwork should be started only after giving the necessary guidance to the

village officials whose relations with the respondents would come handy in getting the requisite cooperation from them.

12. Training

12.1 Training of supervisory and field level officials is the most important activity for successful conduct of a survey. For Input Survey, the supervisory level training should concentrate on the following:

i) Objective and methodology of the survey.
ii) Concepts and definitions followed during conduct of Survey.
iii) Understanding the schedule.
iv) Coverage of crops, Inputs like fertilizers and pesticides etc.
v) Inspection of the progress of work, supervision and quality of data collected.
vi) Importance of adherence to the timeline.
vii) Unit to be used and decimal conventions.

12.2 The salient points to be emphasized in training are discussed in subsequent paras.

Objective of the Survey and Legal Immunity

12.2.1 Respondents are likely to be reluctant to furnish information to enumerators due to the apprehension that such information may disturb tenancy arrangements, land rights, rent liability, etc. It is, therefore, necessary that all Government functionaries, particularly those who come in direct contact with the cultivators, clearly explain the objectives of the present sample survey highlighting the following:

(a) that the information furnished by the cultivators will be used only for statistical purposes,
(b) that it will have nothing to do with matters like consolidation, ceiling, tenancy arrangements, rent liability, etc.
(c) that the entire information furnished by the respondents will be treated as confidential, and
(d) that it has no validity in court of law as a piece of record and/or evidences.

Concepts and Definitions

12.2.2 The concept of "operational holding" as distinct from "ownership holding" and other concepts used in the present survey should be clearly explained to supervisors and enumerators. These concepts are discussed in detail in Annexure-XV.

Crops

12.2.3 The information on crops is to be collected in this survey to ascertain input use pattern for various crops. In particular, data are to be collected on irrigated and unirrigated area under crops, fertilizer, manure and pesticide use, prevalence of HYV and Hybrid for various crops in the Survey. The information on crops may be used for cross-classification in conjunction with other information collected through the survey.

12.2.4 Any difficulty in implementing this may be brought to the notice of Agriculture Census Division, Government of India and Codes for additional crops may be added by the States with concurrence of Agriculture Census Division, Government of India.

High Yielding Varieties/Hybrid

12.2.5 It is likely that the cultivators, may furnish local names of varieties sown by them. The enumerators conducting the Input Survey should be familiar with the high yielding varieties/hybrid used in the area and their local names so that they may be able to decide whether a particular variety mentioned by the cultivator is a high yielding variety/hybrid or not. Information on this may be obtained from State Department of Agriculture, Cooperation and Farmers Welfare. It is advisable to invite a representative from State Agriculture Department in the State Level Training Programme.

Fertilizers, Pesticides and IPM

12.2.6 Information about chemical fertilizers, bio-fertilizers, pesticides, etc. may be furnished by cultivators in terms of trade names like Kissan Khad or local names. Fertilizers, bio-fertilizers, pesticides, etc. used in the area and their local names should be fully explained to enumerators during the training classes. In case of chemical fertilizers, it should be ensured that all fertilizers used are covered and percentages of nutrients (N, P & K) of each chemical fertilizer used are indicated in the schedule. In case of fertilizers covered under complex/mixed types, their nutrients percentages (N, P and K separately) should invariably be indicated. It is advisable that the district level trainers visit a few fertilizer shops patronized by the farmers of their area to ascertain the brand names of fertilizers and their nutrient content. This information could be passed on to enumerators during training. In case, enumerator comes across a brand name whose nutrient content is not known to him, he can ask the farmer to show the bag of this fertilizer on which such information is usually given. Otherwise, he may simply put the brand name of the fertilizer and leave the column for nutrient content blank and fill it later in consultation with local shopkeeper. The concept of Integrated Pest Management (IPM) as given in Annexure-XV may be explained, with particular reference to Question no. 8 of Block-B of Schedule 2.5.

Forms

12.2.7 Forms to be filled up by enumerators should be discussed thoroughly giving specific instructions in respect of each column. Detailed instructions about filling up of forms, given in section 17, may be clearly explained.

Area Tally at Villages Level

12.2.8 The procedure for preparation of Sampling Frame for the selected village is explained in para 17.3. It is important that before finalizing the frame and copying the details of valid holder in Schedule -1, the preliminary check of tallying the area operated by all the holders in the frame (individual and joint holdings) with the total operated area in village and total geographical area of the village may be applied. This procedure is explained for land-record (paras 17.3.5 to 17.3.10) and non-land record (paras 17.3.11 to 17.3.13) States separately.

Number of copies of Schedules to be prepared

12.2.9 Schedule -0 is to be prepared in triplicate at State Headquarters for keeping a record of villages selected for Input Survey, for checking whether all other schedules have been received from selected villages and for informing the data processing agency about the number of selected villages in each tehsil. One copy of this will be sent to all the districts for communicating the names of selected villages and one copy will be submitted to Data Processing Centres later with the filled-in schedules.

12.2.10 Only one copy of Schedule-1 is to be prepared by the enumerator in each selected village. After completion of the Survey, this is to be deposited in Tehsil/Block office for record.

12.2.11 Schedule-2.0 is to be prepared at Tehsil level in Quadruplicate. This will be prepared on the basis of Schedule-1 of all selected villages in Tehsil. One copy of this will be retained in Tehsil office and three copies will be sent to District office along with the filled-in schedules 2.1 to 2.5. The district office would ensure that filled in Schedules of each selected village of each and every Tehsil/Block have been received. They would also check using Schedule-2.0 whether the schedules 2.1 to 2.5, for all the selected holdings, as indicated in Schedule-2.0 are enclosed in the bundles. These bundles along with two copies of Schedule-2.0 are to be sent to State Headquarters. While receiving these, the State Headquarters will tally, using Schedule-0, whether the schedules from all the selected villages in each tehsil are in the bundles.

12.2.12 One copy of Schedule-2.0 is to be retained by State Headquarters. The bundles of Schedule 2.1 to 2.5 along with a copy of Schedule-2.0 and

Schedule-0 will be handed over to the Data Processing Agency, after manual scrutiny and coding for data entry etc.

12.3 For field level functionaries, the training may include explanation of concepts and definitions, procedure for selection of sample holdings, filling up of schedules and application of various checkpoints in schedules. The job of listing and preparation of up-to-date frame of operational holdings which would be used for sampling of holdings from each size group, will be handled by the statistical staff with the assistance of Patwaries. The Schedule L-1 prepared during Phase -I of Agriculture Census 2015-16 will be the base document for preparing the sampling frame.

12.4 The Statistical Enumerator, after checking that the frame of operational holdings has been correctly prepared and duly updated, would select the holdings in the village in the prescribed manner and then collect the information through actual household inquiries by approaching the selected operational holders in selected villages. The enumerators would need intensive training before field operations are carried out.

12.5 The training for the district level officers may be organized at State or regional Headquarters depending upon the convenience of State Governments. **A representative of Agriculture Census Division, Government of India may be invited for attending such training programmes at State level for on the spot guidance, for which advance intimation may be sent**. The training for enumerators could be arranged conveniently at district level.

13 Preparatory Steps for Input Survey

13.1 Before actual commencement of fieldwork for the Survey, following steps are to be followed:

i) Identification of Agency to conduct the Survey.
ii) Printing of Schedules and Instructions.
iii) Distribution of Schedules and Instructions to District Census Officers.
iv) Selection and identification of villages in each Tehsil/Block.
v) Communication of the number and names of villages for Input Survey to the District Census Officers.
vi) Allotment of villages to Patwaris (to obtain L1/L2 schedules from Patwaris) and Statistical enumerators.
vii) Updating of listing schedules.
viii) Preparation of Schedule–I and selection of holdings.
ix) Training of district level staff at the State or Regional Headquarters.
x) Training of Statistical enumerators.
xi) Publicity in the selected villages.

14. Visit to Villages

14.1 It is necessary that the programmes of enumerator's visit to the village is intimated to concerned operational holders in advance through revenue officials. In absence of such intimation, operators may not be available when enumerator visits the village. It is suggested that operational holders to be interviewed as also the programme of visit should be finalized in the joint training meeting itself so that patwaris can inform holders to be available in the village. Village Level Workers (VLWs) should also be asked to remain in the village to assist the enumerator in interpreting information furnished about high yielding varieties/hybrid and other inputs, like, certified seeds, notified variety etc.

15. Supervision

15.1 Effective supervision is to be organized so that the various phases of survey work are carried out according to the prescribed time schedule and also according to the instructions. Supervision plays an important role in ensuring the quality of the data collected. The extent of supervision would vary from State to State depending upon the administrative set up. No uniform guidelines could be laid down in this respect. However, the following minimum amount of supervision should be ensured in each State.

15.2 The District Census Officers should inspect the fieldwork relating to listing of households, collection of data on inputs etc., in respect of at least five villages selected for the Input Survey in the district. Similarly, the Taluk Census Officer should also inspect 25 per cent of the villages selected for the Input Survey in the Tehsil. Since the Statistical enumerators would carry out the fieldwork of Input Survey, their work is to be supervised by higher officers of revenue, land records and statistical departments. Suitable programme for inspection need to be devised for the purpose.

15.3 The inspection should include following aspects.

i) Whether the frame of operational holdings (schedule-1) has been correctly prepared in the light of paras under section 17.3?
ii) Whether the selection of holdings in Input Survey has been correctly done?
iii) Whether statistical enumerator has correctly collected the information relating to fertilizers, pesticides, seed and IPM?
iv) Any other points, which the Inspecting Officer wants to give on the quality of data collected and any other problem faced.

15.4 It is, however, to be noted that the main purpose behind inspection is to ensure proper compliance of instructions rather than mere fault finding. A brief on supervision checkpoints (based on this instruction manual as also the

checkpoints mentioned in various Schedules) may also be provided to the supervising officer(s). They would also submit report to the concerned Senior State officers. It is recommended that once a round of inspection is completed, the supervisory officer should take a meeting of all the enumerators and re-explain their mistakes to them so that these are avoided in all future work. Explaining this in a meeting will facilitate learning from each other's mistakes.

Section - B

16. Schedules

16.1 The following schedules have been prescribed for use in Input Survey 2016-17:

i) Schedule-0: Information on Number of Villages and villages selected in Tehsils/Blocks.
ii) Schedule-1: List of Operational Holdings and their record of selection in the selected village by type of size groups and area operated.
iii) Schedule-2.0: Information on number of total and selected Holdings in Sample Villages in Tehsil/Block.
iv) Schedule-2.1: Parcel-wise details of net area sown under multiple cropping according to irrigated and unirrigated crops during the Agricultural Year 2016-17 (July 2016 – June 2017) (Kharif 2016, Rabi 2016-17 and Jaid 2016-17).
v) Schedule-2.2.1: Area under irrigated crops and usage of chemical fertilizers, manures and pesticides during Agricultural Year 2016-17 (July 2016 – June 2017) (Kharif 2016, Rabi 2016-17 and Jaid 2016-17).
vi) Schedule-2.2.2: Area under unirrigated crops and usage of chemical fertilizers, manures and pesticides during Agricultural Year 2016-17 (July 2016 – June 2017) (Kharif 2016, Rabi 2016-17 and Jaid 2016-17).
vii) Schedule-2.3: Use of agricultural implements / machines / equipments used by operational holder during 2016-17.
viii) Schedule-2.4: Agricultural Credit availed of by operational holder during 2016-17.
ix) Schedule-2.5: Information on use of Seeds, IPM and Soil testing during 2016-17.

16.2 The procedure for filling-up these schedules is explained in subsequent paras.

17. Instruction for filling-up Schedules

17.1 It is recommended that the Input Survey 2016-17 should be conducted within time frame prescribed at para 10.1 so that quality of data is least affected due to recall lapse.

17.2 Schedule-0: Information on Number of Villages and Villages selected in Tehsils/Blocks

17.2.1 This schedule, given at Annexure-I, is to be filled at State Headquarters by the official responsible for selection of villages for Input

Survey. This schedule is to be prepared in triplicate, separately for each district. Both names and codes are to be filled-in at sl.no.1 and 2 of Identification portion of the schedule. At sl.no.3, total numbers of Tehsils / Blocks in the district are to be filled. This number should tally with last sl.no. in col.1. Column numbers 2 to 6 are self-explanatory. More details of this schedule has been explained in para 12.2.9 above.

17.3 Schedule 1: List of Operational Holdings and their record of selection in the Selected Villages

17.3.1 Preparation of an updated sampling frame for any sample survey is the foremost prerequisite for successful conduct of the Survey and generation of reliable estimates. *This frame is a collection of all the units in the universe (population) about which an estimate is to be prepared*. This frame (or list of resident operational holdings in Input Survey 2016-17) is to be used for drawing of sample holdings on which information is to be collected through personal enquiry. Such a frame (list) will be prepared in Schedule-1 given at Annexure-II, separately for each village selected for Input Survey. For preparation of reliable estimates, it is important that this list is complete, exhaustive and up-to-date for the reference period of the Survey.

17.3.2 For administrative convenience, it has been decided that schedule L-1 of Agriculture Census 2015-16, which has been prepared on the basis of Land Records in Land record States and through Household enquiry in non-Land Record States, will be used as starting point for preparation of list of holders (frame). Thus, fresh household numbering and listing may not be necessary and the exercise of preparation of Schedule-1 would merely involve updation of pucca (final) L-1, prepared after receiving L-2 from other villages, in LR States on the basis of which T-1 has been prepared.

17.3.3 The exercise of updation will include the following:

- To include division/augmentation of operated area of the holding and consequential changes in size;
- Deletion of Institutional holdings from the list as these are out of the scope of Input Survey;
- Deletion of non-resident operational holders of the villages in land record States;
- Deletion of deemed cultivators.

17.3.4 It is reiterated here that urban area will not be covered for Input Survey in Land Record States. However, in States, such as Goa, Kerala and Puducherry, where Agriculture Census 2015-16 has been conducted in urban area also on the ground that there are no distinct boundaries between urban and rural areas, and that a significant portion of agricultural activity takes place in urban area also, the Input Survey will be conducted in such urban areas also. **Thus, as a thumb**

rule, it may be stated that the coverage of Input Survey 2016-17 will be extended to all those areas where Agriculture Census 2015-16 has been conducted. Selection of villages/ blocks/panchayat wards/wards for the purpose of Input Survey 2016-17 will thus be confined to only such areas.

Preparation of Schedule-1 in Land Record States

17.3.5 In Agriculture Census Documents relating to Schedules and Instructions for Data collection in Land Record States, the procedure for preparation of Schedule L1 has been described in section 20 (page-20). It is to be clarified here that no consideration is to be given for gender, social status and type (individual/joint) of holding for the purpose of Input Survey. All holdings, except those mentioned in para 17.3.3 above, are to be grouped in 5 size-group described in para 7.3 of this document.

17.3.6 A copy of pucca (final) Schedule-L1 which was used for preparing T-1 in Agriculture Census 2015-16 will be supplied by the Patwaris to the enumerator for the village. This schedule also includes details of area operated by the holder in other villages of the Tehsil. This is to be further updated by the enumerator for changes that might have taken place during the intervening period. The enumerator will make door-to-door enquiry in the sample village for all the holder listed in pucca (final) L1. ***The reference date for updation will be beginning of Kharif 2016 season, i.e., July 2016***.

17.3.7 The enquiry during updation will specially relate to:

i. Whether any addition/deletion in operated area has taken place by way of purchase/taking on lease of additional land or sale/leasing out of some land?
ii. Whether any additional land has been allotted by government for cultivation?
iii. Whether any partition of holding has taken place?
iv. Whether any person has migrated to the village and has done cultivation during the reference period?
v. Whether the entire household of an old operational holder has migrated out of the village?
vi. Any other relevant point which enumerator thinks necessary for Input Survey.

17.3.8 Correction will be carried out in Cols 3 to 10 of pucca (final) L1 of Agriculture Census Document relating to the Land Record States on the basis of this enquiry. If splitting of a particular holding has taken place, then the name of original holder will remain at the same place and only cols 3 to 10 may be modified. The name of the new holder arising as a result of partition may be entered at the end of L1 with an indication that it is a new holder. All other

types of new cases should also be added at the end of L1 and running serial number may be given to them. The portion of L1 dealing with institutional holdings may be deleted. **Operational holders, who have migrated to other villages and are not available for enquiry, even though they may be cultivating some land in the selected village, will be treated as non-resident operational holder. Hence, their names will also be deleted from L1.** After making addition/deletion in L-1, fresh running serial numbers may be given to all the valid holders. **This updated L1 is the desired sampling frame**. Serial numbers and operated area of valid holders appearing in updated L1 are to be copied in cols. 1 and 2 of Schedule-1 afresh.

17.3.9 It is to be noted that information to be collected in the Survey for entire reference year 2016-17 (i.e. Kharif, Rabi and Jaid Seasons) would relate to the same operated area. **In case, size of a selected holding changes during the reference period but its size class is not affected, the area obtaining in Kharif season should be taken as standard**. In such cases effort should be made to obtain information for entire area of the undivided holding. **But if size class of the holding changes as a result of division/amalgamation, it will be substituted by another holding of the same size class**. For example, if a particular holding X belonging to the size group 1 to 1.99 ha. (small holding) is divided into smaller holdings in such a way that the sub-divided holdings belong to different size class (marginal holding), then the enumerator will select another holding, say Y, randomly from the same size group of (1 to 1.99 ha.) in place of holding X. The required information for Kharif, Rabi and Jaid seasons will be collected for the newly selected holding (Y) and the holding X will be removed from the sample of small holdings. On the contrary, if the size of group of the holding changes upwards due to acquiring of additional area by operational holder, then the area of holding obtaining in Kharif will be taken as standard. The information in Kharif, Rabi and Jaid would relate to the original area, and the information in respect of additional area will be ignored totally for purpose of Input Survey.

17.3.10 To make sure that the list of all operational holders prepared as described above is complete, a simple check may be applied before treating it as final. From the annual crops statistics maintained by the Patwari, the operated area for the village for the reference year would be available. The total of col.7 of updated L1 should be less than the operated area in the village. The difference between the two would normally relate to area operated by non-resident and institutional holders, which are operating some land in the sample village.

Preparation of Schedule-1 in non-Land Record States

17.3.11 Section 20.2 of Agriculture Census Document relating to Non-Land Record States prescribes the procedure for preparation of Schedule L1. A copy

of this schedule may be provided to enumerator for the sample village. The enumerator will visit all households of the village, listed in cols 2 and 3 of schedule L1. Any new household which might have come up during the intervening period is to be listed at the end of the list and enquiries are to be made from this household also. In short, the whole exercise of preparing L1 is to be repeated for updation. Particular emphasis is to be given for updation of cols. 14, 15 and 18 to 21 relating to area operated by the holder as on 1st July, 2016 to make it applicable as on 1st July 2017. Even after updation, cols. 14 and 15 will total to col.21 and the size class in col.22 will relate to area given in col.21. The inquiry will, particularly relate to points mentioned in para 17.3.3 and 17.3.7 above. After making necessary corrections on the basis of enquiry, a fresh running serial number of operational holders will be given in column-9 of updated L1. The columns 9 and 21 of schedule L1 will be copied a fresh in Schedule-1 of Input Survey 2016-17, which will be used for sampling of holdings.

17.3.12 The points mentioned in para 17.3.9 regarding standard operated area of the holding are relevant in case of non-land record States also.

17.3.13 Under the scheme EARAS (Establishment of Agency for Reporting Agriculture Statistics), some estimation of operated area in the village during the reference year would have been done. These figures may be utilized for ensuring correctness of the sampling frame. The total area operated in the sample village by all the resident holders (col.14) should be less than the operated area in the village. The difference would reflect the extent of area operated by the institutional (given in L2) and non-resident holders of the sample village.

Sampling of Holdings

17.3.14 Schedule-1 of Input Survey 2016-17, given at Annexure-II, is same for both land record and non-land record States. Only the procedure for its preparation differs slightly in the two situations, as the basic schedule L1 are different in these States. The use of this schedule for sampling of holdings is discussed below:

17.3.15 After cols.1 and 2 are filled up as per procedure described in paras 17.3.5 to 17.3.13 above, the enumerator will categorise the holdings in 5 size groups, according to area operated. For this he will pick-up holders one-by-one serially and segregate them in 5 categories, viz., marginal (below 1.0 ha), small (1 – 1.99 ha), semi-medium (2 – 3.99 ha), medium (4 – 9.99 ha) and large (10 ha & above), by putting a tick mark in one of the relevant columns, viz., 4, 6, 8, 10 or 12. The procedure for this is explained in the filled-in schedule -1 at Box-1 at page 34. For example, the first holder operates 0.85 ha. area and thus a tick has been marked in col.4 of schedule relating to marginal category. Similarly, the 5th holder belongs to the medium category. After all the holders listed in col.1 have been categorized in this way, the enumerator will give a running

serial number to the holders, separately for each category in col. no. 3, 5, 7, 9 and 11. The sum of the last serial number in the five categories will be the total number of holders in the sampling frame i.e. last serial number of col.1.

17.3.16 The selection of four holdings from each of the five size group will be done independently. Thus process of sample selection is to be repeated 5 times. ***In case number of holdings available in a particular size group is 4 or less, all the holdings will be included in the sample***.

Sample Casualty and Reserve Samples

17.3.17 It has been observed in previous surveys that often the selected holder is not available for enumeration even after repeated visits. Also, after meeting the cultivator, in some cases, it was found that the sample holder has not cultivated any part of his operated area during reference year. As such, the question of Input Survey becomes irrelevant, since such a holding does not constitute valid sampling unit for detailed enquiry. To overcome these limitations, it is recommended that substitution of sampling unit may be adopted in field itself. To facilitate this, it is suggested that before leaving for village the enumerator is also provided a reserve list of 2 additional holders in each size group, in addition to 4 selected holders. These additional 2 holders could be used for substitution, in the event any of the 4 selected units turns out to be sample casualty. It is recommended that all the six holdings of a particular size class are selected in one go; the first 4 constituting the main sample and the next 2 the reserve sample.

Sample Selection

17.3.18 The general procedure recommended for selection of four holdings for each size group is that of Simple Random Sampling without replacement. The selection is to be made using random number tables given at Annexure-XIII. The procedure for use of tables is also explained therein. The sample of holdings may also be generated by using MS Excel. The function to generate sample is RANDBETWEEN(bottom,top). This function returns the random numbers between the numbers specified in the function. Use of this function is further explained in Annexure-XIV.

17.3.19 Schedule-1 is to be used in conjunction with random number tables for making a selection. For example, to make a selection in marginal category which has 7 holdings, a random number between 1 to 7 is to be selected. Suppose, number 2 is selected. Then the investigator will encircle sl.no.2 in col.3 to indicate that this unit has been selected in the sample. This procedure will be repeated six times (4 times for main sample and 2 times for reserve sample) for each of the categories. To make a distinction between the units in the main sample and in the reserve sample two separate marks, e.g., circles and squares may be used respectively. After the selection in each of the 5 categories is complete, the investigator will mark corresponding sl. no. in col.1 with

crosses (x) to distinguish the unit selected in the sample for detailed data collection. Against the reserve sampling units 'R' may also be written to indicate that this is a reserve units. This list may be passed on to the enumerators for visiting the households for detailed data collection. He should also be made aware of the role of reserve units in the sample and be advised that he has to collect data only in respect of 4 units.

17.3.20 However, in case the State Government feels that on account of peculiarities of agricultural holdings in the State, this sampling procedure may lead to biased or unrepresentative sample, an alternative procedure, e.g., circular systematic sampling may be considered for adoption, by arranging the holdings in each size group in ascending or descending order of operated area.

17.4 Schedule 2.0: Information on Holdings in Sample Villages in Tehsil/Block

17.4.1 This schedule as given at Annexure-III, to be prepared on the basis of schedule-1 of sample villages, gives the summary information in respect of each selected village. Each row of the table given in the schedule gives size group-wise information about total number of operational holdings in the village and the number of operational holding selected for which schedules 2.1 to 2.5 have been filled. This schedule will be consolidated for all the sample villages by tehsil level officer who will also ensure that all the schedules of all selected holders, as indicated in cols. 5, 7, 9, 11 and 13, have been received from enumerator.

17.5 Schedule 2.1: Parcel-wise details of net area sown under Multiple Cropping according to irrigated and unirrigated crops during agriculture year 2016-17 (Kharif 2016, Rabi 2016-17 and Jaid 2016-17)

17.5.1 This Schedule as given at Annexure-IV, mainly relates to intensity of cultivation. It is necessary that the enumerator is fully aware of concepts, like, multiple cropping (Kharif, Rabi and Jaid), net and gross area under irrigated and unirrigated crops, uncultivated area, etc. before canvassing this schedule. Each form will contain data for one operational holding only.

17.5.2 The first part of the Schedule (Block-A) contains identification details such as, names of the district, tehsil, Village, Revenue Inspector Circle, Patwari Circle, serial number of operational holder (as given in col.1 of Schedule-1), total area of the operational holder and size class of holding. Whereas item nos.9 and 10 of this Schedule will be copied from Schedule-1, the size group code in col.11 will be given by investigator based upon information in col.10 using the codes given in para 7.3 of this document.

17.5.3 In col.12 of Block-A, the investigator will fill-in words, the name of unit used for recording area. Whereas in Col.13, the conversion factor of area unit to hectare (in 3 decimal places) has to be recorded. General instructions

with regard to use of decimal places and units given under section 18, may be referred to. ***It is, however, to be noted that in Tehsils/Blocks where more than one unit is in vogue, the investigator may fill Block-B of the schedule in local unit indicating its name in col.12 of Block-A and its conversion factor to hectare in col.13 of this block. In Block-B, after making the totals of all the parcels in local units, they will invariably convert the total figure in hectare***. To avoid errors and inconsistencies, it is recommended that the parcel-wise details may be filled accurately, but the approximations to three decimal places may be made in the final converted totals. While making the approximations in total figures, the consistency checks given in para 17.5.16 may be kept in view.

17.5.4 In Block-B, the information is to be filled in separately for each parcel (one row for each parcel) constituting the operational holding. If any parcel is not cultivated during the reference year, its area will fall in col.8 and/or 7, and other columns 9 to 21 will have no data.

17.5.5 It is advisable, that before starting this sequence of question for filling up columns 4 onwards, the enumerator fills cols. 1 to 3 completely and makes totals except col.3 to ensure that all the parcels operated by the holder have been covered. As a check point it may be seen whether total of col.3 of Block-B tallies with item number 10 of Block-A or not. Item no.10, Block-A should be filled from Schedule-1 of Input Survey.

Column 1: Sl.No. of Parcel

17.5.6 Continuous serial numbers of all parcels, included in the operational holding are to be given. While numbering the parcels, the parcels located within the village are to be listed first, followed by parcels outside the sample village but within the tehsil/block and then those outside the tehsil but within the district. This is recommended just to systematize the process of interview. The district would be the outer limit for pooling of all the parcels of the operational holder as estimates are to be generated at district level in Input Survey.

Column 2 & 3: Identification particulars and Area of the Parcel

17.5.7 Area of each parcel and Khasra No. of parcels for identifications in these columns is to be written. If the operator does not remember the khasra number, some other identification details for location such as ‘near the well’ or ‘near the temple’, etc., may be recorded.

Column 4, 5 & 6: Location of Parcel

17.5.8 Filling of col.4 to 6 is to be done row-by-row for each parcel, after all the parcels are listed.

17.5.9 These columns relate to the location in which the corresponding parcel is located. In each row, a tick mark will be made in one of the three columns numbered 4, 5 and 6, depending upon the location of the parcel. After filling cols. 4 to 6 in respect of each parcel, a total of ticks in each column will

be made in the last row. The totals in cols.4, 5 and 6 will indicate the number of parcel within the village, outside the village but within tehsil and outside the tehsil. Thus sum of figures reported against total of cols.4, 5 and 6 will be equal to the total number of parcels operated by the holder, i.e., the last sl.no. in col.1.

Column 7 to 21: Intensity of Cultivation and Irrigation

17.5.10 These columns aim at gathering information about intensity of cultivation under irrigated and unirrigated conditions. **A particular parcel is classified as irrigated if it receives at least one irrigation during a year. If it receives no irrigation, it is classed as unirrigated**. Under both irrigated and unirrigated conditions, multiple cropping is, nevertheless, possible. But on irrigated land, it is quite possible that only some of the crops taken on the land received irrigation. ***A crop will be considered as irrigated if it receives at least one irrigation. For the purpose of this schedule, number of times a particular crop receives irrigation is of no consequence***. Thus, on an irrigated land there are six possibilities, if we were to classify the cropping intensity in 3 broad categories. These categories under irrigated conditions are: (i) One crop sown with irrigation (ii) two crops sown but only one crop received irrigation (iii) two crops sown and both crops received irrigation (iv) three or more crops sown but only one received irrigation (v) three or more crops sown but only two crops received irrigation (vi) three or more crops sown and all the crops received irrigation.

17.5.11 The sequential logic to be followed for filling cols 7 to 21 of this schedule is clarified in the tree diagram given in Box 2 on page 38. The tree diagram indicates successive divisions of area of parcel, which has been assumed to be 5.00 ha.; as an example for explanation.

17.5.12 The entire information required in this schedule could be obtained by posing a series of six nodal questions. An illustrative list of questions to be asked by the enumerator with reference to example adopted in Box-2 is given as modal interview schedule in Box-3 at page 39. The expected answers and the figures to be filled in different columns are also given under the heading of Action.

17.5.13 It would be seen that the above logic works through successive elimination of area and focusing on smaller and smaller segments of the area of the parcel. The sequence of questions given in Box-3 is to be followed for all parcels of the land.

17.5.14 It is to be noted that this schedule has been designed to cover all possible situations that could be encountered in the field. The example adopted for Boxes 2 & 3, is such that figures are obtained in most of the columns of the

schedule. However, in practice it may be that there is no figure in some of the columns.

17.5.15 After filling all the columns for each parcel, the enumerator is to make total of each columns. **Since it is only these totals that will be entered in the computer for processing, it is important that totals are carried out meticulously and are error-free**.

Checkpoints

17.5.16 The supervisory officers should carry out following checks on the row of the totals in Block-B/Block-C before forwarding this schedule.

i) Col.1(Total) = Col.4 (Total) + Col.5 (Total) + Col.6 (Total)
ii) Col.3 = Col.7 + Col.8 + Col.9 = S.No.10, Block-A
iii) Col.9 = Col.10 + Col.11
iv) Col.10 = Col.12 + Col.13
v) Col.11 = Col.14 + Col.15 + Col.18
vi) Col.15 = Col.16 + Col.17
vii) Col.18 = Col.19 + Col.20 + Col.21

17.6 Schedule 2.2.1: Area under irrigated crops and usage of chemical fertilizers, manures and pesticides during Agriculture year 2016-17 (July 2016 to June 2017) (Kharif 2016, Rabi 2016-17 and Jaid 2016-17)

17.6.1 This schedule as given at Annexure-V(a), is meant for collection of information pertaining to area under irrigated crops, use of chemical fertilizers, organic manures, bio-fertilizers and pesticides in respect of irrigated crops.

17.6.2 Ideally, the enumerator should visit the holder during each of 3 seasons, viz. Kharif, Rabi and Jaid (data to be recorded separately for irrigated and unirrigated crops). However, if the investigator goes only once at the end of Jaid season and collects data for year as a whole, code 4 may be assigned at S.No.14 of Block-A indicating data for the entire agricultural year 2016-17.

17.6.3 For illustration, provision has been made only for three crops in the schedule. However, if more crops are grown by the cultivator additional pages may be used to record the information. Alternatively, the States may add additional columns as per their requirement. The last three columns of the schedule are for data on 'all crops' under irrigated conditions. Area of all crops under HYV/Hybrid and Others under Cols. 12, 13 & 14 should be equal to sum of area under Cols. 3 + 6 + 9, Cols. 4 + 7 + 10 and Cols. 5 + 8 + 11 respectively. Thus for each item (row) area reported under Cols. 3, 6, 9 will total to area under Col.12 and Cols. 4, 7, 10 will total to Col.13 and Cols.5, 8, 11 will total to Col.14.

17.6.4 For item number 1, area under high-yielding varieties (HYV), Hybrid and local varieties is to be given in columns under each of the crops. Similar information for all the remaining crops may be given in respective columns. Against item 2, the area treated with one or more of chemical fertilizers for each of the crops are to be recorded. This area under the crop is not the total of the areas indicated against various fertilizers but the area treated with some chemical fertilizer. It may be noted that area treated with one or more chemical fertilizers under col.2 should be either greater or equal to area treated with any specific fertilizer under the crop. Similarly, area treated with one or more chemical fertilizers under col.2 would be either less or equal to area under a crop mentioned in col.1.

17.6.5 Items listed in Sl. No.3 refer to the use of chemical fertilizers. The information required is to be collected for each of the fertilizers used by the selected operational holder. For each crop, the area fertilized and the quantity of specific fertilizer used in that crop is to be given in the column for the crop in rows corresponding to those specific fertilizers. A comprehensive list of fertilizers and their codes is given in Annexure-X. For convenience of investigators, the names of seven major fertilizers and their codes have been pre-provided in col.3 in the schedule. For other popular brand of complex/mixture fertilizers, remaining 4 rows [3(h) to 3(k)] are to be used. As this block of information is to be used for estimation of nutrient wise consumption of fertilizers for each crop, it is important to know the nutrient content of the fertilizers. The nutrient content of seven major fertilizers, viz., Urea, CAN, MOP, Super Phosphate (SP), Triple Superphosphate, DAP, ZnS are standard and there is no need to fill-up composition of these fertilizers. However, in view of large number of complex/mixtures popular in different parts of the country, the nutrient content of these fertilizers is to be provided in nine small boxes in each of the 4 sub-items. Also, ***the code for the mixture is to be filled by the investigator by referring to the code list***. For example, if the farmer tells the name of popular brand, the same could be recorded in the margin at the time of interview. Suppose, it is known that this brand contains 12% nitrogen (N), 32% Phosphate (P) and 16% Potash (K), the investigator will record 12-32-16 and the corresponding code in square brackets provided in col.2. The area and quantity of application of this fertilizer may be indicated in the row below the column of crop for which it is used. The unit recommended for recording area is hectare and that for quantity of fertilizer in kgs only. If farmer tells information in number of bags, it should be converted to equivalent Kgs for filling in the schedule.

17.6.6 Items listed in Sl. No.4 to 8 relate to the use of organic manures, green manures, bio-fertilizers and Pesticides. The concepts of organic manure, green manure and bio-fertilizers are discussed in Annexure-XV. For the purpose of the survey, “Pesticide” would mean all types of chemicals used for killing pests on plants and would thus include insecticide, weedicide and fungicides.

17.6.7 The Schedule is to be canvassed for kharif season, rabi season and jaid season. *In case of long duration crops which cover both Kharif and Rabi/Jaid seasons, it should be ensured that the area is taken into account only once during the year and the quantity of various fertilizers, etc. used for the entire duration of the crop may be indicated.*

17.6.8 After filling up of Schedule separately for irrigated crops for each crop seasons (viz., Kharif, Rabi and Jaid) the investigator will reconcile the reported Gross Cropped Area with figures computed in Schedule 2.1. The total of figures in col. 12, 13 and 14 of item-1, will be compared with Gross Irrigated Area reported in col. 23 of Schedule 2.1. In case these figures do not tally, the chances are that the respondent has forgotten to report some of the crops and use of inputs therein or the figures in cols.22 and 23 have not been calculated correctly or different columns of this schedule have not been filled -up correctly. This kind of inconsistency can be reconciled only in the field. **It is recommended that after completing enumeration of all the selected holders in a village, enumerator should compute cols.22 and 23 of Schedule 2.1 based on row figures given against 'Total' and apply above checks. In case of any discrepancy, he may revisit the farmer to reconcile the discrepancy.** In no case, the data with above discrepancy between Schedules 2.1 and 2.2.1 be allowed to be passed on to the higher levels. The supervisory officer at Tehsil level may be instructed to take special care of this.

17.7 Schedule 2.2.2: Area under unirrigated crops and usage of chemical fertilizers, manures and pesticides during Agriculture year 2016-17 (July 2016 – June 2017) (Kharif 2016, Rabi 2016-17 and Jaid 2016-17)

17.7.1 This Schedule as given at Annexure-V(b) is meant for collection of information pertaining to area under unirrigated crops, use of chemical fertilizers, organic manures, bio-fertilizers and pesticides etc in respect of unirrigated crops.

17.7.2 The instructions for canvassing Schedule 2.2.2 is the same as adopted for Schedule 2.2.1 and explained above in para 17.6.1 to 17.6.8 except for the cross checks of the area reported in Schedule 2.1.

17.7.3 For unirrigated crops the total of figures reported under Cols.12, 13 and 14 of item 1 will be compared with gross unirrigated area reported in Col.22 of Schedule 2.1.

17.8 Schedule 2.3: Use of Agricultural Machines / Equipments / Implements by Operational Holder during 2016-17.

17.8.1 This schedule as given at Annexure-VI, has been designed to record the usage of various Agricultural Machinery and Implements by the operational holder during 2016-17. The revised list of Agricultural Implements and Machinery have been given in column 2. Against each item, the enumerator would record whether the operational holder has used the particular machine/equipment during the reference year 2016-17 or not. If reply is yes, it will further be probed whether the operational holder owns the Agricultural implements/machinery/equipment or it has been hired. In case of owned, Col.4 will be filled-in and in case of hired, col.5 will be filled-in. If operational holder has not used Machine/Equipments then Col.6 will be filled-in. The relevant codes for making entries in Cols.4-6 are given on the body of the Schedule.

17.8.2 For definition of various items of machinery and equipment, Annexure-XI may be referred. Using these broad definitions, local names of the machinery may be provided in the schedule. But it is important that same codes are used in all the States. However, if it is known with certainty that some machinery is not used in the State, that item and the corresponding code may not be printed in the schedule in that State. A decision in this regard may be taken in consultation with the Department of Agriculture of the State. On the other hand, if some machinery popular in the State is not given in the list and it is considered important by the State, the same could be included by making a reference to Government of India for providing a code for it.

17.9 Schedule 2.4: Agricultural Credit availed by operational holder during 2016-17

17.9.1 This schedule as given in Annexure-VII, has been designed to collect information on institutional credit taken by operational holders for agricultural purposes during the Agricultural year 2016-17. ***Only Institutional credit whether short-term, medium-term or long-term, taken for agricultural purposes during 2016-17 would be recorded in this schedule***. The loans taken exclusively for dairy, poultry, fisheries, piggery, crop insurance, purchase of tractors for non -agricultural use, social functions etc. will not be included for reporting credit data.

17.9.2 The Schedule 2.4 used in the last Input Survey 2011-12 has been modified for Input Survey 2016-17. Source-code refers to Institutions from where the loans have been taken by the operational holder. There are four possible sources of institutional credit, viz., Primary Agricultural Credit Societies (code -1), Primary Land Development Bank/State Land Development Bank (code-2), Regional Rural Banks (code-3) and Commercial Banks (code -4). These source-codes are already printed in the schedule and the information has to be filled -up against the codes. Each row is meant for recording information relating to one source code, i.e. agricultural loans taken by the operational holder during the reference year are to be recorded in the schedule by using one

row for each source-code against columns for short-term/medium-term/long-term loans and the corresponding information be recorded under columns 3 to 6, 8 and 9.

17.9.3 Based on the repayment period, loans have been divided into three categories:

(a) Short Term: Repayment period upto 18 months. (code-1)
(b) Medium Term: Repayment period more than 18 months but less than 5 years.(code-2)
(c) Long term: Repayment period 5 years or more. (code-3)

17.9.4 The information in columns 2 to 6 pertains to short-term loan. The corresponding amount of loan taken/received for fertilizer, other inputs and 'in cash' be recorded in cols.3, 4, 5 respectively. The sum of Cols.3 to 5 may be indicated in Col.6. The amount of loan availed under medium and long-terms in respect of each source mentioned in column 7 would be indicated under Col.8 and Col.9 respectively.

17.10 Schedule 2.5: Information on use of Seeds, IPM and Soil Testing during 2016-17

17.10.1 The schedule 2.5 is given at Annexure-VIII. The purpose of this schedule is to gather information on usage of improved quality seeds by farmers and problem faced on account of varietal impurity, germination problem etc. The data on soil testing ever done in any part of the operational holding has been introduced for the first time in Input Survey through this schedule. There is no reference period for this item of information listed at Sl. Nos. 9 & 10 of Block -B of the schedule. If soil testing was done on any of the Survey numbers being operated by the farmer at any time upto 30 June, 2017, then under Sl.No.9, Y (Code 1) will be reported and area for which soil testing was done would be reported at Sl.No.10. At the time of interview, for data on seed, the enumerator can fill only the variety name and crop name for HYV/hybrid and certified seeds. The codes for crop could be given later by referring to the list of crop codes at Annexure-IX.

17.10.2 Item 8 relates to information on package of practices followed by farmer for Pest Management. This question is designed to know whether the farmer is relying on package of practices recommended under Integrated Pest Management (IPM) approach or is solely depending upon use of pesticides. The various components of IPM programmes are discussed in Annexure-XV. The investigator is required to ask open-ended question to the farmer regarding **his usual (normal, customary, most of the time) practice for pest control**. The farmer (respondent) should be allowed to reply at length explaining all, what he does. After listening to the response, the investigator would tick one or more of

the 6 given options. Efforts should be made to cover all the approaches adopted by the farmer in marking the response. **It is to be noted that the question allows for more than one response from the farmer**.

18. Miscellaneous Instructions

18.1 Units for Measurement of Area

18.1.1 It has been observed that a large number of units for area measurement are prevalent in the country. Even within a State, many systems of measurements and units are prevalent in different regions. For preparing all India estimates it is necessary to adopt a uniform unit of measurement. It has, therefore, been decided that results of Input Survey at All India level will be released in metric system and unit of area will be hectare. In the States where it is difficult to adopt hectare as unit uniformly, it is suggested that ***for filling parcel-wise details local units and system of measurement may be used, but final totals are to be expressed only in decimal system***. **But it is to be ensured that within each Tehsil (Stratum) only one unit is used for area reporting.**

18.1.2 In case adoption of hectare for parcel-wise area in Schedules of Input Survey is not possible, such details could be filled in local units. Even, the totals for various types of areas under a holding could be filled in local unit but ***decimal system is to be used for expressing fractional parts***, eg., the area of plot with dimensions "12 feet 3 inch –by- 12 feet 6 inch" should be given as "153.125 square feet", if it is not possible to express it in hectares.

18.1.3 In States where several units for reporting area are in vogue, a decision may need to be taken regarding choice and use of units in different tehsils. Such a decision is to be taken by concerned State Government themselves keeping in view the following points:-

- While the facility for conversion of results to hectares is available using the computers, the data entry is to be done in three decimal places,
- Restriction of data entry to three decimal places involves truncation and approximation errors,
- Modal (most frequent) size of holding in a tehsil and likely approximation error in using a particular unit,
- Administrative convenience, popularity of units and labour involved in converting the area figures to a common unit.

While the computer programme allows for use of different units in different stratum (Tehsil/Block), ***States have to ensure that in no case more than one unit is used in a particular stratum.*** Specific instructions are to be given to field staff to convert area figure in all the schedules in a stratum to a common unit to be decided by the State. ***A record of use of units in each stratum is to be maintained at State Headquarters and the same is to be provided to the***

data processing agency. Also at the manual scrutiny stage, it is to be checked whether the specified unit has been used or not. Such schedules where deviation is found, should be rectified before submitting the schedules to the Data Processing Agency.

18.1.4 The following example will explain the consideration for errors in reporting area. Suppose, the average size of modal holding in a Tehsil is 553 sq. mt. = 0.0553 ha = 0.1366463 acre. Because of restriction to two decimal places, the following approximation errors will be committed while adopting the three units:-

- No error will be committed in adopting sq. mts. as the figure recorded will be exact i.e. 553 sq. mt.
- In using hectare, an error of 8.50% will be committed as the figure recorded will be 0.06 ha = 600 sq. mt. against the actual figure of 553 sq. mt.
- In using acre the error will be 2.45% as the figure recorded will be 0.14 acre = 566.55 sq. mt. against the actual figure of 553 sq. mt.

Thus, if figures are available in sq. mt. in most cases, this unit should be adopted, as it does not involve any error. But if most common unit in the area were acre, it would be appropriate to adopt acre itself as it would be cumbersome to convert all data to hectare in the field and also it will introduce a higher degree of error.

18.1.5 **In area where marginal holdings are most frequent, it would be desirable to use smaller units (sq. mts. or 3/4 decimal places of hectare or other smaller local units) for filling parcel wise details.** After making totals in smaller/local units, these could be converted to standard unit adopted for Tehsils by the State Government. This would reduce the possibilities of errors and inconsistencies normally reported at validation stage.

18.2 Script of Numerals

18.2.1 Only Arabic numerals (1, 2, 3, 4, 5 etc.) should be used for filling schedules.

18.3 Manual Scrutiny and Coding of Schedules

18.3.1 All the Schedules should be manually scrutinized by statistical staff before these are submitted for data entry. The following points are to be checked in Manual Scrutiny.

i) Whether the schedules have been filled legibly.
ii) Whether the instructions for use of area unit and system for expressing fractions have been followed.

iii) Whether the column total in Schedule, wherever necessary, have been provided.
iv) Whether the data given in the schedule is consistent. All the consistency checks given in this manual are to be re-applied at the manual scrutiny stage.
v) Whether correct codes have been used.
vi) Whether necessary multiplier tables (Schedule-0 and Schedule-2.0) are enclosed in the bundles of schedules for each village.

18.4 Printing of Schedules

18.4.1 While sending the schedules for printing, it is important to ensure that order of the columns/blocks given in the schedules is not changed. Any change in order of the columns adversely affects the use of standard computer programmes which are prepared keeping in view the standard format of the schedules.

18.4.2 It is recommended that the code for the State is printed in all the forms to be used in the State for the purpose of Input Survey. The State codes are given at Annexure-XII.

18.5 Seeking Clarifications

18.5.1 Any issue regarding Concept, Definition and Procedures relating to Input Survey 2016-17, which could not be clarified at the State level, should be referred to Government of India at the following address.

Dr. V. Parameswaran, Deputy Director General-cum-Agriculture Census Commissioner of India, Department of Agriculture & Cooperation, Government of India, Room No.344, 3rd Floor, Krishi Bhawan, New Delhi. TeleFax: 011-23382523, Email: agcensus.krishi@nic.in.

Section - C

Annexure-I

(To be prepared in Triplicate at State Head Quarters)

Schedule-0: Information on Number of Villages and villages selected in Tehsils/Blocks

1.State : _____ ☐☐

2.District : _____ ☐☐

3. Total Number of Tehsils/Block in the District : ☐☐

Sl. No.	Tehsil/Block Name	Tehsil / Block Code		Number of Villages in Tehsil/Block	No. of Villages selected for Input Survey	Names of selected villages with their codes						
						Name of selected village	Code					
1	2	3		4	5	6	7					

(**Signature of State level Census Authority**)

Annexure-II

(only one copy to be prepared)

Schedule – 1: **List of Operational Holdings and their record of selection in the selected village by type of size groups and area operated.**

1. State : ☐☐ 2. District : ☐☐ 3. Tehsil : ☐☐

4. Block : ☐☐ 5. Village : ☐☐☐☐☐☐ 6. R.I. Circle : ☐☐

7. Patwari Circle: ☐☐ 8. Name of Enumerator:

S.No. of Operational Holder as per Col.1 of updated schedule L-1 in LR States or Col.9 of updated L-1 in NLR States of Agriculture Census 2015-16	Area Operated (in ha.)	Size Groups									
		Marginal (Below 1 ha.)		Small (1 to 1.99 ha.)		Semi-medium (2 to 3.99 ha.)		Medium (4 to 9.99 ha.)		Large (10 ha. & above)	
		S. No.	Tickmark	S. No.	Tickmark	S. No.	Tickmark	S. No.	Tickmark	S. No.	Tickmark
1	2	3	4	5	6	7	8	9	10	11	12
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
Total:											

Note: (1) The names of selected operational holders may be copied in Col.1 from updated L-1 for convenience in approaching them for interviewing/data collection. (2) The sum of Col.3, 5, 7, 9 and 11 = No. of holders in the frame.

(**Signature of Enumerator**)
Name and Designation

(**Signature of supervisor**)
Name and Designation

Box-1: Example of Use of Schedule-1 for Sampling

(only one copy to be prepared)

Schedule – 1: List of Operational Holdings and their record of selection in the selected village.

1. State : ☐☐ 2. District : ☐☐ 3. Tehsil : ☐☐

4. Block : ☐☐ 5. Village : ☐☐☐☐☐☐ 6. R.I. Circle : ☐☐

7. Patwari Circle: ☐☐ 8. Name of Enumerator:

S.No. of Operational Holder as per Col.1 of updated schedule L-1 in LR States or Col.9 of updated L-1 in NLR States of Agriculture Census 2015-16	Area Operated (in ha.)	Size Groups									
		Marginal (Below 1 ha.)		Small (1 to 1.99 ha.)		Semi-medium (2 to 3.99 ha.)		Medium (4 to 9.99 ha.)		Large (10 ha. & above)	
		S. No.	Tickmark	S. No.	Tickmark	S. No.	Tickmark	S. No.	Tickmark	S. No.	Tickmark
1	2	3	4	5	6	7	8	9	10	11	12
1	0.85	1	✓								
2 (Name of holder) x	1.65			(1)	✓						
3	2.89					1	✓				
4 (Name of holder) x	0.35	(2)	✓								
5	6.89							1	✓		
6 (Name of holder) x	15.00									(1)	✓
7	0.55	3	✓								
8	1.75			2	✓						
9	1.39			3	✓						
10	3.21					2	✓				
11 (Name of holder) x	0.35	(4)	✓								
12	5.38							2	✓		
13 (Name of holder) x	3.60					(3)	✓				
14 (Name of holder) x	6.97							(3)	✓		
15 (Name of holder) x	0.25	(5)	✓								
16	17.25									2	✓
17 (Name of holder) x	1.73			(4)	✓						

Note: 1. The names of selected operational holders may be copied in Col.1 from updated L-1 for convenience in approaching them for interviewing.
2. For lack of space only 17 holdings are listed here. In actual practice the list will be long enough to allow selection of required number of holdings. Three, two or one holding selected here are for illustration only.

(**Signature of Enumerator**)
Name and Designation

(**Signature of supervisor**)
Name and Designation

Annexure-III

(To be prepared at Tehsil level in quadruplicate)

Schedule 2.0: Information on number of total and selected Holdings in Sample Villages in Tehsil/Block.

1.State : _____ ☐☐

2.District : _____ ☐☐

3.Tehsil/Block : _____ ☐☐

Sl. No.	Name of Sample Village	Code of Sample Village	Number of total and selected holdings in sample village									
			Marginal (below 1.0 ha)		Small (1 – 1.99 ha.)		Semi-medium (2 – 3.99 ha.)		Medium (4 – 9.99 ha.)		Large (10 ha. & above)	
			Total	In Sample	Total	In Sample	Total	In Sample	Total	In Sample	Total	In Sample
1	2	3	4	5	6	7	8	9	10	11	12	13

(**Signature of Tehsil/Block level census officer**) (**Signature of District level Census Authority**)

Annexure-IV

Schedule – 2.1: Parcel-wise details of net area sown under multiple cropping according to irrigated and unirrigated crops during the Agricultural Year 2016-17 (July 2016 – June 2017) (Kharif 2016, Rabi 2016-17 and Jaid 2016-17).

Block-A: Identification details

1. State :	☐☐	8. Name of operational holder with father / husband's name	
2. District :	☐☐	9. Sl.No. of operational holder as in Col.1 of Schedule-I :	
3. Tehsil :	☐☐		
4. Block :	☐☐	10. Total area operated:	
5. Village:	☐☐☐☐☐☐	11. Size Group (1-5) :	☐
6. R.I. Circle :	☐☐	12. Unit used for reporting area	
7. Patwari circle :	☐☐	13. Conversion factor of area unit to hectare (in 3 decimal places)	

Block-B

Sl. No. of Parcel	Identification particulars of parcel/survey number	Area of parcel	Location of Parcel		
			Within village	Outside village but within tehsil/block	Outside tehsil/block but within district/State
1	2	3	4	5	6
1.					
2.					
3.					
4.					
Total:					

N.B.: Please tick any appropriate Col. 4 or Col.5 or Col.6

Col.1 (Total) = Col.4 + Col.5 + Col.6

Col.3 (Total) = S.No.10 of Block A = Col.7+Col.8+Col.9

The total no. of parcels as per Col.1 must tally with the total no. of parcels as per columns 4, 5 & 6

Code for item 11 (Block -A): Below 1.00 ha. – Code 1, 1.00 to 1.99 ha. – Code 2, 2.00 to 3.99 ha. – Code 3, 4.00 to 9.99 ha. – Code 4, 10 ha. & above – Code 5.

Uncultivated area	Area under current fallow	Net Area Sown			Net Unirrigated Area	
		Total	Unirrigated	Irrigated	Cropped once	Cropped more than once
7	8	9 (Col.10+ Col.11)	10 (Col.12 + Col.13)	11 (Col.14 + Col.15 + Col.18)	12	13
1.						
2.						
3.						
4.						
Total:						

Net Area Irrigated			
Cropped once	Cropped twice		
	Total	One crop irrigated	Both crop irrigated
14	15 (Col.16 + Col.17)	16	17
1.			
2.			
3.			
4.			
Total:			

Net Area Irrigated			
Cropped thrice or more			
Total	One crop irrigated	Two crop irrigated	Three or more crop irrigated
18 (Col.19 + Col.20 + Col.21)	19	20	21
1.			
2.			
3.			
4.			
Total:			

Block-C

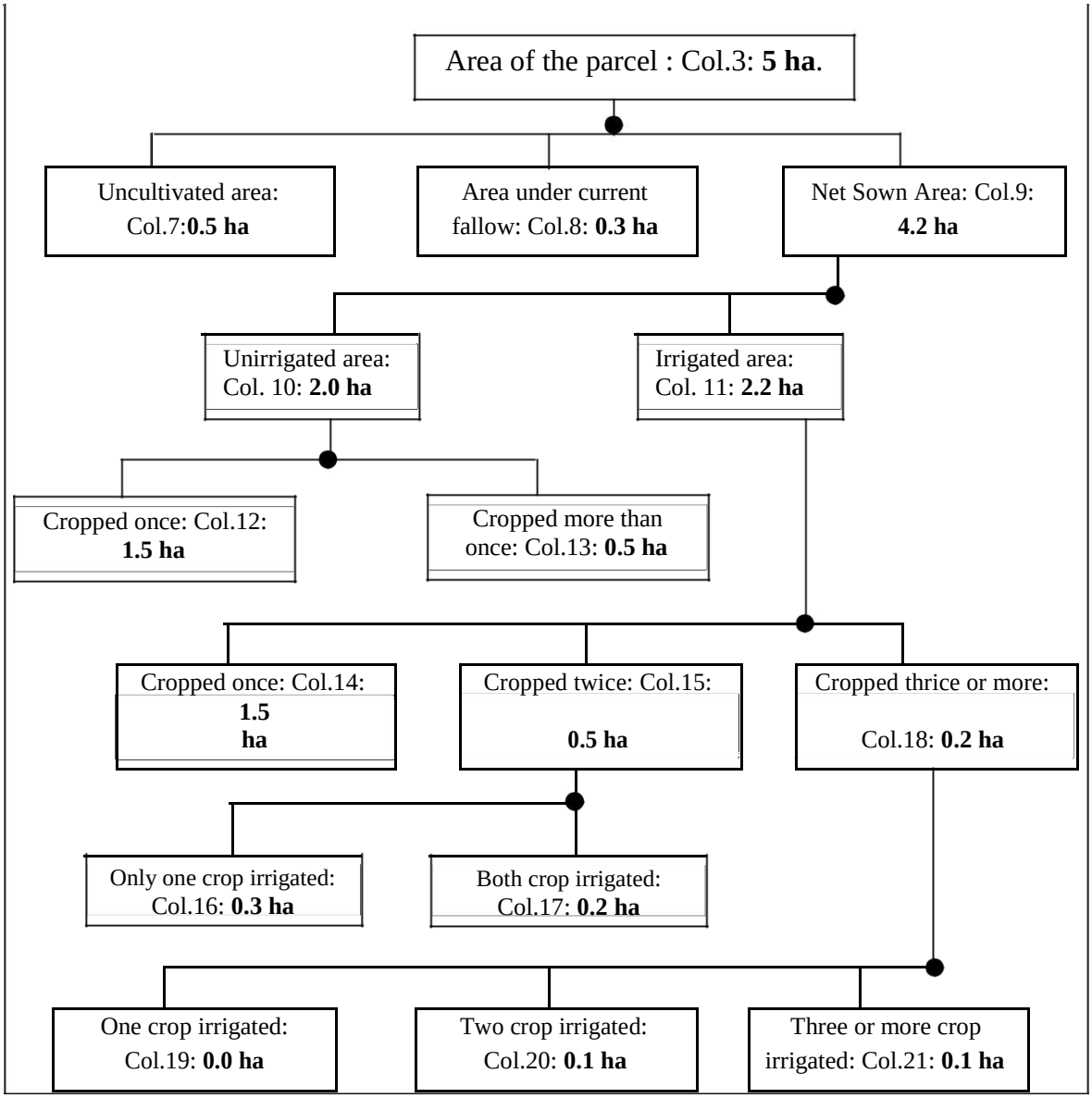
Gross Cropped Area		
Gross un-irrigated area†	Gross irrigated area†	Total (Col.22+23)
22	23	24
Total:		

The following calculations may be done for Col.22 and Col.23:

1. Col.22 = Col.12 + 2*Col.13 + Col.16 + 2*Col.19 + Col.20.
2. Col.23 = Col.14 + Col.16 + 2*Col.17 + Col.19 + 2*Col.20 + 3*Col.21.

Note: † Cols. 22 and 23 will be filled-up on the basis of 'Totals' given in cols. 12 to 21 after applying the above mentioned formulae.

Box-2: Sequential Division of Area under various Categories in Schedule 2.1.



Box-3: Model Interview Sequence for Schedule 2.1

Nodal Question/ Answer/Action	Description
Question No.1	How much of total 5 ha. area of the parcel did you cultivate in the reference year?
Answer No.1	4.2 ha.
Auxiliary Question No.1(a)	How much of 0.8 ha. of uncultivated land was current fallow and how much was under other uncultivated area?
Answer No.1(a)	Only 0.3 ha. was current fallow and remaining 0.5 ha. was old fallow or culturable waste or not available for cultivation etc.
Action	Fill-up figures in Col.7, 8 and 9, ensuring that these figures total to the figure in Col.3.
Question No.2	How much of your Net Sown Area of 4. 2 ha. receives no irrigation?
Answer No.2	2 ha. was totally unirrigated and 2.2 ha. was irrigated.
Action	Fill Cols.10 and 11, ensuring the figures in these columns total to Col.9.
Question No.3	On how much your 2.0 ha. unirrigated land took only one crop and on how much more than one crop?
Answer No.3	On 1.5 ha. only one crop and on remaining more than one crop.
Action	Fill column 12 and 13, ensuring they total to column 10.
Question No.4	On how much of your 2.2 ha. portion of the parcel which received irrigation, you took one crop, two crop or more than two crops? (This question may be put in two steps also by making auxiliary question, as in question 1).
Answer No.4	Only one crop on 1.5 ha., two crops on 0.5 ha. and three crops on 0.2 ha..
Action	Fill columns 14, 15 and 18, ensuring that they total to col.11.
Question No.5	In how much of your 0.5 ha. area which was irrigated and was cropped twice only one crop was irrigated and in how much two crops were irrigated.
Answer No.5	In 0.3 ha. only one crop was irrigated, and in remaining both crop was irrigated.
Action	Fill Column 16 and 17, ensuring that figures in these columns total to column 15.
Question No.6	In how much of your 0.2 ha. area which was irrigated and was cropped thrice or more only one crop was irrigated, two crops were irrigated and three or more crops were irrigated? (This question may be split in auxiliary question as in question 1).
Answer No.6	In 0.1 ha. two crops were irrigated and in remaining 0.1 ha. three or more crops were irrigated. Thus there was no area under one crop irrigated.
Action	Fill Columns 19, 20 and 21, ensuring that figures in these columns total to Col.18.

Schedule – 2.2.1: Area under irrigated crops and usage of chemical fertilizers, manures and pesticides during Agricultural Year 2016-17 (July 2016 – June 2017) (Kharif 2016, Rabi 2016-17 and Jaid 2016-17).

Block-A

1. State : ☐☐
2. District : ☐☐
3. Tehsil : ☐☐
4. Block : ☐☐
5. Village: ☐☐☐☐☐
6. R.I. Circle : ☐☐
7. Patwari Circle : ☐☐
8. Name of operational holder with father / husband's name :
9. Sl.No. of operational holder as in Col.1 of Schedule-I :
10. Total area operated:
11. Size Group (1-5): ☐
12. Unit used for reporting area:
13. Conversion factor of area unit to hectare (in 3 decimal places):
14. Season Code:
    - Kharif – 1
    - Rabi - 2
    - Jaid -3
    - Full year - 4

    ☐
15. Irrigation Status of crops:
    - Irrigated crops

    1

Block-B

Sl. No.	Items	Irrigated Crops									Total of Irrigated crops		
		Crop 1: (Code)			Crop 2: (Code)			Crop 3 : (Code)					
		HYV	Hybrid	Others	HYV	Hybrid	Others	HYV	Hybrid	Others	HYV	Hybrid	Others
		Code1	Code2	Code3	Code1	Code2	Code3	Code1	Code2	Code3	Code1	Code2	Code3
1	2	3	4	5	6	7	8	9	10	11	12	13	14
I.	Area irrigated under crop												
2.	Area treated with one or more chemical fertilizers under crop												
3.	Particulars of area treated with different chemical fertilizers under crop												
	(a) **Urea** [**02**]												
	1. Area treated												
	2. Quantity (kg.)												
	(b) **Calcium Ammonium Nitrate (CAN) [04]**												
	1. Area treated												
	2. Quantity (kg.)												
	(c) **Muriate of Potash (MOP) [11]**												
	1. Area treated												
	2. Quantity (kg.)												
	(d) **Super Phosphate (SP) [05,06]**												
	1. Area treated												
	2. Quantity (kg.)												
	(e) **Triple Superphosphate [07]**												
	1. Area treated												
	2. Quantity (kg.)												
	(f) **Di-Ammonium Phosphate (DAP) [13]**												
	1. Area treated												
	2. Quantity (kg.)												
	(g) **Zinc Sulphate [51]**												
	1. Area treated												
	2. Quantity (kg.)												
	(h) **Complex/Mixed [ ]**												

Sl. No.	Items	Irrigated Crops									Total of Irrigated crops		
		Crop 1: (Code)			Crop 2: (Code)			Crop 3 : (Code)					
		HYV	Hybrid	Others	HYV	Hybrid	Others	HYV	Hybrid	Others	HYV	Hybrid	Others
		Code1	Code2	Code3	Code1	Code2	Code3	Code1	Code2	Code3	Code1	Code2	Code3
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	1. Area treated												
	2. Quantity (kg.)												
	(i) **Complex/Mixed[ ]**												
	1. Area treated												
	2. Quantity (kg.)												
	(j) **Complex/Mixed[ ]**												
	1. Area treated												
	2. Quantity (kg.)												
	(k) **Complex/Mixed[ ]**												
	2. Quantity (kg.)												
4.	Particulars of area treated with different organic manures under crop												
	a) **Farm Yard Manure (FYM)/Compost/Bio-gas manure [80]**												
	1. Area treated												
	2. Quantity (kg.)												
	b) **Oil Cakes [81]**												
	1. Area treated												
	2. Quantity (kg.)												
	c) **Other organic manures [82]**												
	1. Area treated												
	2. Quantity (kg.)												
5.	**Area treated with Green Manure [87]**												
6.	**Bio-fertilizers**												
	a) Area treated with Rhizobium [83]												
	b) Area treated with Azetobactor [84]												
	c) Area treated with Blue-												

Sl. No.	Items	Irrigated Crops									Total of Irrigated crops		
		Crop 1: (Code)			Crop 2: (Code)			Crop 3 : (Code)					
		HYV	Hybrid	Others	HYV	Hybrid	Others	HYV	Hybrid	Others	HYV	Hybrid	Others
		Code1	Code2	Code3	Code1	Code2	Code3	Code1	Code2	Code3	Code1	Code2	Code3
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	green algae [85]												
	d) Area treated with Phosphate Solubilizing Bacteria (PSB) [86]												
	e) Area treated with Azospirillum [88]												
7.	Area treated with Chemical Pesticides [89]												
8.	Area treated with Bio-Pesticides [90]												

1. Net area under a crop <= net sown area.
2. Net irrigated area under a crop <= net irrigated area.
3. Net unirrigated area under a crop <= net unirrigated area.
4. Area treated with one or more chemical fertilizers under a crop >= area treated with any specific chemical fertilizer under that crop.
5. Area treated with one or more chemical fertilizers under a crop ≤ area under that crop.

Schedule – 2.2.2: Area under unirrigated crops and usage of chemical fertilizers, manures and pesticides during Agricultural Year 2016-17 (July 2016 – June 2017) (Kharif 2016, Rabi 2016-17 and Jaid 2016-17).

Block-A

1. State : ☐☐
2. District : ☐☐
3. Tehsil : ☐☐
4. Block : ☐☐
5. Village: ☐☐☐☐☐
6. R.I. Circle : ☐☐
7. Patwari Circle : ☐☐
8. Name of operational holder with father / husband's name :
9. Sl.No. of operational holder as in Col.1 of Schedule-I :
10. Total area operated:
11. Size Group (1-5): ☐
12. Unit used for reporting area:
13. Conversion factor of area unit to hectare (in 3 decimal places):
14. Season Code:
    - Kharif – 1
    - Rabi - 2
    - Jaid -3
    - Full year - 4

    ☐
15. Irrigation Status of crops:
    - Unirrigated crops

    2

Block-B

Sl. No.	Items	Unirrigated Crops									Total of unirrigated crops		
		Crop 1: (Code)			Crop 2: (Code)			Crop 3: (Code)					
		HYV	Hybrid	Others	HYV	Hybrid	Others	HYV	Hybrid	Others	HYV	Hybrid	Others
		Code1	Code2	Code3	Code1	Code2	Code3	Code1	Code2	Code3	Code1	Code2	Code3
1	2	3	4	5	6	7	8	9	10	11	12	13	14
I.	Area unirrigated under crop												
2.	Area treated with one or more chemical fertilizers under crop												
3.	Particulars of area treated with different chemical fertilizers under crop												
	(a) **Urea** [**02**]												
	1. Area treated												
	2. Quantity (kg.)												
	(b) **Calcium Ammonium Nitrate (CAN) [04]**												
	1. Area treated												
	2. Quantity (kg.)												
	(c) **Muriate of Potash (MOP) [11]**												
	1. Area treated												
	2. Quantity (kg.)												
	(d) **Super Phosphate (SP) [05,06]**												
	1. Area treated												
	2. Quantity (kg.)												
	(e) **Triple Superphosphate [07]**												
	1. Area treated												
	2. Quantity (kg.)												
	(f) **Di-Ammonium Phosphate (DAP) [13]**												
	1. Area treated												
	2. Quantity (kg.)												
	(g) **Zinc Sulphate [51]**												
	1. Area treated												
	2. Quantity (kg.)												
	(h) **Complex/Mixed [ ]**												
	1. Area treated												

Sl. No.	Items	Unirrigated Crops									Total of unirrigated crops		
		Crop 1: (Code)			Crop 2: (Code)			Crop 3: (Code)					
		HYV	Hybrid	Others	HYV	Hybrid	Others	HYV	Hybrid	Others	HYV	Hybrid	Others
		Code1	Code2	Code3	Code1	Code2	Code3	Code1	Code2	Code3	Code1	Code2	Code3
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	2. Quantity (kg.)												
	(i) **Complex/Mixed[ ]**												
	1. Area treated												
	2. Quantity (kg.)												
	(j) **Complex/Mixed[ ]**												
	2. Quantity (kg.)												
	(k) **Complex/Mixed[ ]**												
	1. Area treated												
4.	Particulars of area treated with different organic manures under crop												
	a) **Farm Yard Manure (FYM)/Compost/Bio-gas manure [80]**												
	1. Area treated												
	2. Quantity (kg.)												
	b) **Oil Cakes [81]**												
	1. Area treated												
	2. Quantity (kg.)												
	c) **Other organic manures [82]**												
	1. Area treated												
	2. Quantity (kg.)												
5.	**Area treated with Green Manure [87]**												
6.	**Bio-fertilizers**												
	a) Area treated with Rhizobium [83]												
	b) Area treated with Azetobactor [84]												
	c) Area treated with Blue-green algae [85]												

Sl. No.	Items	Unirrigated Crops									Total of unirrigated crops		
		Crop 1: (Code)			Crop 2: (Code)			Crop 3: (Code)					
		HYV	Hybrid	Others	HYV	Hybrid	Others	HYV	Hybrid	Others	HYV	Hybrid	Others
		Code1	Code2	Code3	Code1	Code2	Code3	Code1	Code2	Code3	Code1	Code2	Code3
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	d) Area treated with Phosphate Solubilizing Bacteria (PSB) [86]												
	e) Area treated with Azospirillum [88]												
7.	Area treated with Chemical Pesticides [89]												
8.	Area treated with Bio-Pesticides [90]												

1. Net area under a crop <= net sown area.
2. Net irrigated area under a crop <= net irrigated area.
3. Net unirrigated area under a crop <= net unirrigated area.
4. Area treated with one or more chemical fertilizers under a crop >= area treated with any specific chemical fertilizer under that crop.
5. Area treated with one or more chemical fertilizers under a crop ≤ area under that crop.

Annexure-VI

Schedule – 2.3: Agricultural implements / machines / equipments used by operational holder during 2016-17.

Block-A

1. State :		8. Name of operational holder with father / husband's name	
2. District :		9. Sl.No. of operational holder as in Col.1 of Schedule-I :	
3. Tehsil :			
4. Block :		10. Total area operated:	
5. Village:		11. Size Group (1-5) :	
6. R.I. Circle :		12. Unit used for reporting area	
7. Patwari circle :		13. Conversion factor of area unit to hectare (in 3 decimal places)	

Block-B

S.No.	Item	Codes	Whether used		
			Yes		No
			Owned	Hired	
1	2	3	4	5	6
A.	***MANUAL MACHINES/EQUIPMENTS***				
	1. Hand seed fertilizer drill	101			
	2. Pedal operated thresher	102			
	3. Winnowing fan	103			
	4. Hand maize sheller	104			
	5. Chaff cutter	105			
	6. Hand-operated knapsack sprayer/duster	106			
	7. Hand-hoe	107			
	8. Hand wheel-hoe	108			
	9. Blade-hoe	109			
	10. Paddy transplanter	110			
	11. Cono weeder	111			
	12. Paddy drum seeder	112			
	13. Sugarcane crusher	113			
	14. Others	188			
B.	***ANIMAL-DRAWN IMPLEMENTS***				
	15. Wooden plough	201			
	16. Mould Board plough	202			
	17. Disc harrow	203			
	18. Cultivator (Triphali)	204			
	19. Seed-cum -fertilizer drill/seed drill	205			
	20. Levelling karah	206			
	21. Seed planter	207			
	22. Bund former	208			
	23. Potato/groundnut digger	209			

S.No.	Item	Codes	Whether used		
			Yes		No
			Owned	Hired	
1	2	3	4	5	6
	24. Animal drawn puddler	210			
	25. Others	288			
C.	***POWERED EQUIPMENTS/MACHINES***				
	26. Power sprayer	301			
	27. Power tillers	302			
	28. Agricultural tractors	303			
	29. Tractor drawn mould board plough	304			
	30. Tractor drawn disc harrow	305			
	31. Tractor drawn seed drill/seed-cum-fertilizer drill	306			
	32. Tractor drawn planter	307			
	33. Tractor drawn leveller	308			
	34. Tractor drawn potato digger	309			
	35. Power threshers (wheat, paddy, multicrop)	310			
	36. Power chaff cutter	311			
	37. Power cane crusher	312			
	38. Combine harvester (tractor powered)	313			
	39. Combine harvester (self-propelled)	314			
	40. Cultivator (tractor-drawn)	315			
	41. Rotavator	316			
	42. Cage wheels used for puddling	317			
	43. Self-propelled reaper	318			
	44. Power maize sheller	319			
	45. Groundnut decorticator	320			
	46. Tractor mounted reaper	321			
	47. Raised – bed planter / BBF planter (tractor drawn)	322			
	48. Zero – Till Seed – cum – Fertilizer Drill (tractor drawn)	323			
	49. Strip – Till – Drill (tractor drawn)	324			
	50. Sugarcane cutter planter (tractor drawn)	325			
	51. Vegetable transplanter (tractor driven)	326			
	52. Aero-blast sprayer	327			
	53. Power weeder (self propelled)	328			
	54. Pneumatic planter (tractor drawn)	329			
	55. Self propelled rice transplanter (both riding type and walk behind)	330			
	56. Straw combines (tractor drawn)	331			
	57. Tractor drawn disc plough	332			
	58. The laser land leveler	333			
	59. Straw baler	334			
	60. Reaper binder	335			
	61. Sugarcane harvester	336			

S.No.	Item	Codes	Whether used		
			Yes		No
			Owned	Hired	
1	2	3	4	5	6
	62. Tractor mounted post hole digger	337			
	63. Happy seeder	338			
	64. Tractor mounted spray pump	339			
	65. Brush cutter	340			
	66. Chain saw	341			
	67. Portable augur digger	342			
	68. Hedge trimmers	343			
	69. Diesel engine pumpset	344			
	70. Electric pump sets	345			
	71. Sprinkler irrigation sets/micro sprinkler/ rain gun	346			
	72. Drip irrigation set	347			
	73. Solar pumping set	348			
	74. Others	349			

Note: ***Codes for Col.4, 5 & 6.***

1. Agricultural implements/machines/equipments owned & used by operational holder ***Code – 1*** will be recorded in Col.4.
2. Used on hire basis ***Code – 2*** will be recorded in Col.5.
3. Not used any Agricultural implements etc. ***Code – 3*** will be recorded in Col.6

Annexure-VII

Schedule – 2.4: Agricultural Credit availed of by operational holder during 2016-17.

Block-A

1. State :	☐☐	8. Name of operational holder with father / husband's name	
2. District :	☐☐	9. Sl.No. of operational holder as in Col.1 of Schedule-I :	
3. Tehsil :	☐☐		
4. Block :	☐☐	10. Total area operated:	
5. Village:	☐☐☐☐☐☐	11. Size Group (1-5) :	☐
6. R.I. Circle :	☐☐	12. Unit used for reporting area	
7. Patwari circle :	☐☐	13. Conversion factor of area unit to hectare (in 3 decimal places)	

Block-B

Short Term (≤) Code (1)

S.No.	Source Code*	Loan Taken (in ₹)			
		For Fertilizer	For Other Inputs	Received in Cash	Total (Cols.3+4+5)
1	2	3	4	5	6
1	1 - (Primary Agricultural Credit Society)				
2	3 - (Regional Rural Bank Branch)				
3	4 – (Commercial Bank Branch)				
Total:					

S. No.	Source Code*	Medium Term (> 18 months < 5 years) Code (2)	Long Term (≥ 5 years) Code (3)
		Loan Taken (in ₹)	Loan Taken (in ₹)
1	7	8	9
1	2 – (Primary Land Development Bank (PLDB)/Branch of SLDB)		
2	3 – (Regional Rural Bank Branch)		
3	4 – (Commercial Bank Branch)		
Total:			

* Please tick appropriate source code from where agricultural loan including loan taken through Kisan Credit Card has been taken by the holder and record the corresponding information.

Annexure-VIII

Schedule – 2.5: Information on use of Seeds, IPM and Soil testing during 2016-17.

Block-A

1. State :	☐☐	9. Sl.No. of operational holder as in Col.1 of Schedule-I :	
2. District :	☐☐	10. Total area operated:	
3. Tehsil :	☐☐	11. Size Group (1-5) :	☐
4. Block :	☐☐	12. Unit used for reporting area	
5. Village:	☐☐☐☐☐☐	13. Conversion factor of area unit to hectare (in 3 decimal places)	
6. R.I. Circle :	☐☐	14. Age (as on the last birthday of holder) (in completed year).	☐☐☐
7. Patwari circle :	☐☐	15. Education Qualification[⊗] of holder	☐
8. Name of operational holder with father / husband's name		16. Number of persons in household	☐☐

Block-B

Sl. No.	Item	Response		
1	2	3		
1.	Whether certified seed (blue tag) was used by operational holder for sowing during reference year	Yes - 1 No – 2		☐
2.	If Yes i.e. code 1 at Sl.No.1, then the name of crops for which certified seeds (blue tag) were used for sowing	**Variety**	**Crop**	
			Name	**Code**
				☐☐☐☐
				☐☐☐☐
				☐☐☐☐
3.	If code 1 at Sl.No.1, then name up to three sources from where certified seed (blue tag) was purchased. **Codes:** Deptt. of Agriculture – 1, Seed Corporation – 2, State Agriculture University Farms – 3, Cooperatives/ Federations – 4, Private Seed Companies – 5, Private Seed Dealers/Retailers – 6.	☐ ☐ ☐		
4.	Name of crop for which hybrids were used for sowing	**Variety (hybrids)**	**Crop**	
			Name	**Code**
				☐☐☐☐
				☐☐☐☐
				☐☐☐☐

[⊗] **Codes for education (Item 15)**: Illiterate – 0; Primary (Standard V) – 1; Middle – 2; High School / Secondary – 3; Senior Secondary / Pre-degree – 4; Technical diploma below degree level – 5; Graduate and above – 6.

Sl. No.	Item	Response		
1	2	3		
5.	Whether any seed quality problems were encountered?	Yes – 1 No – 2 .		☐
6.	If Yes in Question 5, then Nature of the Seed quality problems encountered. **Codes for Quality problem**: (1) Varietal impurity; (2) Germination failure; (3) Physical impurity; (4) Insect damage; (5) Other	**Crop Name**	**Crop Code**	**Codes for Quality Problem**
7.	Was foundation / certified seed multiplication programme taken up by the operational holder?	Yes – 1 No – 2		☐
8.	What practices you followed for protection of your crop from pests? 1. Agronomic and cultural practices ☐ 2. Mechanical control ☐ 3. Biological, nature based or environmental methods ☐ 4. Chemical methods ☐ 5. Others (none of the above 4) ☐ 6. No effort/practices ☐			
9.	Whether soil testing ever done on the field of holder up to 30 June, 2017?	Yes – 1 No – 2		☐
10.	If yes in Col.9, please indicate area of the entire parcel(s) on which soil testing was carried out.			

Annexure-IX

List of Crops and their Codes

SL. NO.	CROP CODE	CROPS
1.	9999	All Crops
2.	0101	All Paddy (Total Of 0111, 0121, 0131)
3.	0111	Pre Kharif Paddy
4.	0121	Summer Paddy
5.	0131	Kharif Paddy
6.	0102	Jowar
7.	0103	Bajra
8.	0104	Maize
9.	0105	Ragi
10.	0106	Wheat
11.	0107	Barley
12.	0108	Small Millets
13.	0109	Jobstears
14.	0110	Grim
15.	0186	Sawan
16.	0187	Ramdana
17.	0188	Other Cereals
18.	0199	Total Cereals
19.	0201	Gram
20.	0202	Tur (Arhar)
21.	0203	Urad
22.	0204	Moong
23.	0205	Masur
24.	0206	Horsegram
25.	0207	Beans (Pulses)
26.	0208	Peas (Pulses)
27.	0209	Moth
28.	0288	Other Pulses
29.	0299	Total Pulses
30.	0399	Total Foodgrains
31.	0401	Sugarcane
32.	0402	Palmvriah
33.	0488	Other Sugar Crops
34.	0499	Total Sugar Crops
35.	0501	Pepper (Black)
36.	0502	Chillies

SL. NO.	CROP CODE	CROPS
37.	0503	Ginger
38.	0504	Turmeric
39.	0505	Cardamom (Small)
40.	0506	Cardamom (Large)
41.	0507	Betelnuts (Arecanuts)
42.	0508	Garlic
43.	0509	Coriander
44.	0510	Tamarind
45.	0511	Cumin Seed
46.	0512	Fennel / Anise Seed
47.	0513	Nutmeg
48.	0514	Fenugreek
49.	0515	Cloves
50.	0516	Cinnamon
51.	0517	Cocoa
52.	0518	Kacholam
53.	0519	Beetlvine
54.	0520	Ajwain
55.	0521	Saffron
56.	0522	Bayleafs (Tejpatta)
57.	0588	Other Condi. & Spices
58.	0599	Total Spices & Condiments
59.	0601	Mangoes
60.	0602	Orange
61.	0603	Mosambi
62.	0604	Lemon / Acid Lime
63.	0605	Other Citrus Fruits
64.	0606	Banana
65.	0607	Table Grapes
66.	0608	Wine Grapes (Black)
67.	0609	Apple
68.	0610	Pear
69.	0611	Peaches
70.	0612	Plum
71.	0613	Kiwi Fruit
72.	0614	Chiku
73.	0615	Papaya
74.	0616	Guava
75.	0617	Almond
76.	0618	Walnut

SL. NO.	CROP CODE	CROPS
77.	0619	Cashewnuts
78.	0620	Apricot
79.	0621	Jack Fruit
80.	0622	Lichi
81.	0623	Pineapple
82.	0624	Watermelon
83.	0625	Musk Melon
84.	0626	Bread Fruits
85.	0627	Ber
86.	0628	Bel
87.	0629	Sahatoot
88.	0630	Aonla (Amla)
89.	0631	Pomegranate
90.	0632	Custard Apple
91.	0633	Passion
92.	0634	Remputan
93.	0635	Jamun
94.	0636	Plantain
95.	0637	Kinnoo
96.	0638	Strawberry
97.	0688	Other Fruits
98.	0699	Total Fruits
99.	0701	Potato
100.	0702	Tapioca (Cassava)
101.	0703	Sweet Potato
102.	0704	Yam
103.	0705	Elephant Foot Yam
104.	0706	Colocasia/Arum
105.	0707	Other Tuber Crop
106.	0708	Onion
107.	0709	Carrot
108.	0710	Radish
109.	0711	Beetroot
110.	0712	Turnip (Shalgam)
111.	0713	Tomato
112.	0714	Spinach
113.	0715	Amaranths (Chaulai)
114.	0716	Cabbage
115.	0717	Other Leafy Vegetable
116.	0718	Brinjal

SL. NO.	CROP CODE	CROPS
117.	0719	Peas (Vegetable) (Green)
118.	0720	Lady's Finger (Bhindi)
119.	0721	Cauliflower
120.	0722	Cucumber
121.	0723	Bottle Gourd (Lauki)
122.	0724	Pumpkin
123.	0725	Bitter Gourd
124.	0726	Other Gourd
125.	0727	Vench (Guar)
126.	0728	Beans (Green)
127.	0729	Drumstick
128.	0730	Green Chillies
129.	0731	Ridge Gourd
130.	0732	Tinda
131.	0733	Snake Gourd
132.	0734	Koval (Little Gourd)
133.	0788	Other Vegetables
134.	0799	All Vegetables
135.	0899	Total Food Crops
136.	1001	Groundnut
137.	1002	Castorseed
138.	1003	Sesamum (Til)
139.	1004	Rapeseed & Mustard (Toria/ Taramira)
140.	1005	Linseed
141.	1006	Coconut
142.	1007	Sunflower
143.	1008	Safflower
144.	1009	Soyabean
145.	1010	Nigerseed
146.	1011	Oil Palm
147.	1088	Other Oilseeds
148.	1099	Total Oilseeds
149.	1101	Cotton
150.	1102	Jute
151.	1103	Mesta
152.	1104	Sunhemp
153.	1188	Other Fibres
154.	1199	Total Fibres
155.	1201	Indigo
156.	1288	Other Dyes & Tanning Materials

SL. NO.	CROP CODE	CROPS
157.	1299	Total Dyes & Tanning Materials
158.	1301	Opium
159.	1302	Tobacco
160.	1388	Other Drugs & Narcotics
161.	1399	Total Drugs & Narcotics
162.	1401	Guar
163.	1402	Oats
164.	1403	Green Manures
165.	1488	Other Fodder Crops
166.	1499	Fodder & Green Manures
167.	1501	Tea
168.	1502	Coffee
169.	1503	Rubber
170.	1588	Other Plantation Crops
171.	1599	Total Plantation Crops
172.	1601	Orchids
173.	1602	Rose
174.	1603	Gladiolus
175.	1604	Carnation
176.	1605	Merigold
177.	1606	Jasmine
178.	1607	Chrysanthemum
179.	1608	Tuberose
180.	1609	Gerbera
181.	1610	Gaillardia
182.	1611	Anthurium (Flower)
183.	1688	Other Flowers
184.	1699	Total Floriculture Crops
185.	1701	Asgandh
186.	1702	Isabgol
187.	1703	Sena
188.	1704	Moosli
189.	1705	Other Medicinal Plant
190.	1706	Mehandi
191.	1707	Allovera
192.	1708	Bacopamonnieri
193.	1711	Lemon Grass
194.	1712	Mint
195.	1713	Menthol
196.	1714	Eucalyptus

SL. NO.	CROP CODE	CROPS
197.	1715	Other Aromatic Plant
198.	1716	Sandalwood
199.	1717	Vanilla
200.	1799	Total Aromatic And Medicinal Plants
201.	1801	Canes
202.	1802	Bamboos
203.	1803	Mulberry Crop
204.	1804	Thespesia
205.	1805	Teak
206.	1806	Subabul
207.	1807	Casuarina
208.	1888	Other Non-Food Crops
209.	1899	Total Other Non-Food Crops
210.	1999	Total Non-Food Crops

Annexure-X

List of Fertilizers and Pesticides

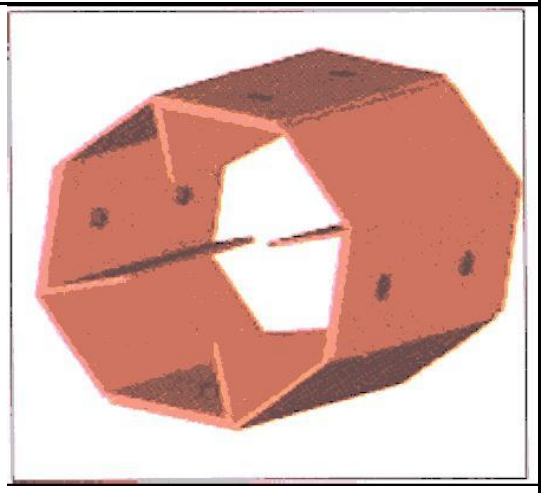
Sl. No.	Description	Code	Nutrient Content		
			N	P	K
1	2	3	4	5	6
A. Macro Nutrient					
1	All Chemical Fertilizers	00	00.0	00.0	00.0
2	Ammonium Sulphate	01	20.6	00.0	00.0
3	Urea	02	46.0	00.0	00.0
4	Ammonium Chloride	03	25.0	00.0	00.0
5	Calcium Ammonium Nitrate	04	25.0	00.0	00.0
6	Single Super Phosphate	05	00.0	16.0	00.0
7	Single Super Phosphate	06	00.0	14.0	00.0
8	Triple Super Phosphate	07	00.0	46.0	00.0
9	Bone Meal (Raw)	08	00.0	20.0	00.0
10	Bone Meal (Steamed)	09	00.0	22.0	00.0
11	Rock Phosphate	10	00.0	18.0	00.0
12	Muriate of Potash	11	00.0	00.0	60.0
13	Potassium Sulphate	12	00.0	00.0	50.0
14	Diammonium Phosphate	13	18.0	46.0	00.0
15	Ammonium Phosphate Sulphate	14	16.0	20.0	00.0
16	Ammonium Phosphate Sulphate / Nitro Phosphate	15	20.0	20.0	00.0
17	Ammonium Phosphate Sulphate	16	18.0	9.0	00.0
18	Urea Ammonium Phosphate	17	28.0	28.0	00.0
19	Urea Ammonium Phosphate	18	24.0	24.0	00.0
20	Urea Ammonium Phosphate	19	20.0	20.0	00.0
21	Mono Ammonium Phosphate	20	00.0	52.0	00.0
22	Nitro Phosphate	21	23.0	23.0	00.0
23	Ammonium Nitrate Phosphate	22	23.0	23.0	00.0
24	Nitro Phosphate Potash	23	15.0	15.0	15.0
25	N P K Mixture	24	10.0	26.0	26.0
26	N P K Mixture	25	12.0	32.0	16.0
27	N P K Mixture	26	22.0	22.0	11.0
28	N P K Mixture	27	14.0	35.0	14.0
29	N P K Mixture	28	17.0	17.0	17.0
30	N P K Mixture	29	14.0	28.0	14.0
31	N P K Mixture	30	19.0	19.0	19.0
32	N P K Mixture	31	16.0	16.0	16.0
33	N P K Mixture	32	13.0	33.0	0.0
34	N P K Mixture	33	12.0	61.0	0.0
B. Micro Nutrient					
35	Zinc Sulphate Heptahydrate/Monohydrate	51	00.0	00.0	00.0
36	Manganese Sulphate	52	00.0	00.0	00.0

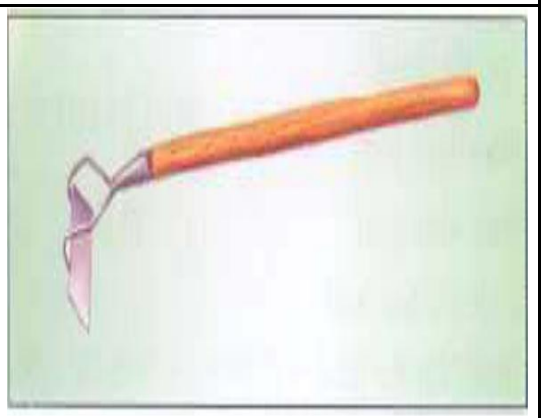
Sl. No.	Description	Code	Nutrient Content		
			N	P	K
1	2	3	4	5	6
37	Sodium Tetraborate (Borax)	53	00.0	00.0	00.0
38	Solubor	54	00.0	00.0	00.0
39	Copper Sulphate	55	00.0	00.0	00.0
40	Ferrous Sulphate	56	00.0	00.0	00.0
41	Ammonium Molybdate	57	00.0	00.0	00.0
C. Organic Fertilizer/Manure					
42	FYM	80	000	000	000
43	Oil Cakes	81	000	000	000
44	Other Organic Manures	82	000	000	000
D. Bio-fertilizers					
45	Rhizobium	83	000	000	000
46	Azetobactor	84	000	000	000
47	Blue Green Algae	85	000	000	000
48	Phosphate Sublizing Bacteria (PSB)	86	000	000	000
49	Azospirillum	88	000	000	000
E. Green Manure					
50	GREEN MANURE	87	000	000	000
F. Others					
51	Gypsum	41	000	000	000
52	Chemical Pesticides	89	000	000	000
53	Bio-pesticides	90	000	000	000

Annexure-XI

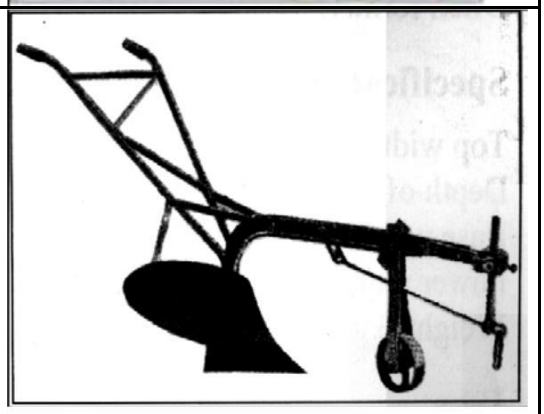
List of Agri. Machinery & Implement and their Codes and descriptions

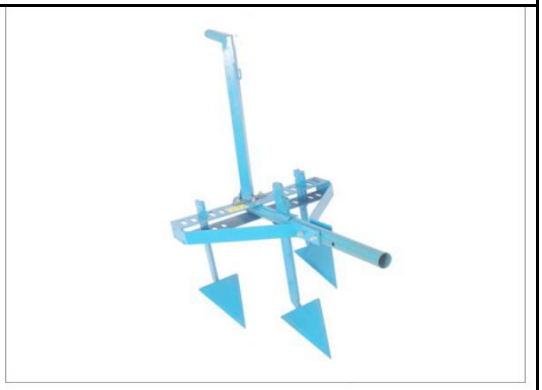
Sl. No.	Code	Item/Definition	Picture
A. Manual Tools/Machines/Equipments			
1.	101	**Hand Seed Fertilizer Drill** This is a small manually operated single row seed cum fertilizer drill in which fluted roller metering mechanism is provided. A ground wheel is provided to drive the metering rollers. Seed and fertiliser are stored in a small hopper and a long beam is provided by which the implement could be pulled by one operator. Another worker guides the machine.	
2.	102	**Pedal Operated Thresher** It consists of wire-loop type threshing cylinder, power transmIssion system, mild steel sheet body and foot pedal. For operation, paddy bundle is held in hands and earhead portion of the crop is placed on the rotating cylinder. The wire-loops hit the ear heads and grain get detached from the rest of the crop.	
3.	103	**Winnowing Fan** This is a mechanical device for generating winds for cleaning of grains from chaff when natural wind is not available. It consists of a frame, 3-bladed fan, bicycle pedal drive arrangement with seat, pulley belt transmission system and a grill partition.	

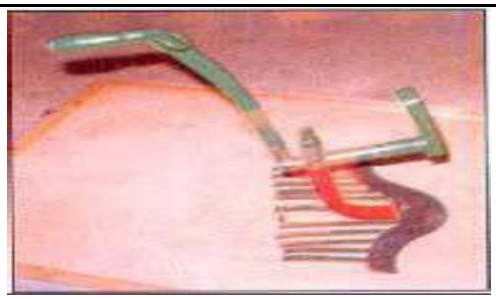
Sl. No.	Code	Item/Definition	Picture
4.	104	**Hand Maize Sheller** The Octagonal Hand Maize Sheller is a manually operated simple device to remove maize grains from the dehusked cobs. The sheller consists of 4 mild steel fins tapered along their length, one edge of the fin is taper. For operation, the sheller is held in left hand and the dehusked maize cob in right hand (for right hand person). The cob is inserted in the sheller and is given forward and backward twist or given clockwise and anticlockwise strokes repeatedly.	
5.	105	**Chaff Cutter** Two persons operate the machine, one feeds the forage or grass in the feeding trough and another rotates the flywheel with handle. The material fed in the hopper is gripped between the feed rolls which pull it and the material get chopped between blades mounted on the flywheel and stationary shear plate. Dry or green fodder can easily be chopped with the machine.	
6.	106	**Knapsack Sprayer** Knapsack sprayer consists of a pump and a air chamber permanently installed in a 9 to 22.5 liters tank. The handle of the pump extending over the shoulder or under the arm of operator makes it possible to pump with one hand and spray with the other. Uniform pressure can be maintained by keeping the pump in continuous operation.	

Sl. No.	Code	Item/Definition	Picture
7.	107	**Hand Hoe** The V -blade hand hoe is a long handled weeding tool for operation in between the crop rows. The hoe consists of a V blade, arms, ferrule and a wooden handle. The arms are welded to the ferrule. Wooden handle is inserted in the ferrule. The blade of the hoe is the important component, which enters into the soil and performs the cutting and uprooting of weeds	
8.	108	**Hand Wheel Hoe** The wheel hoe is a widely accepted weeding tool for weeding and interculture in row crops. It is a long handled tools operated by push and pull action. As the name implies, the general construction of wheel hoe comprises of wheel assembly, miniature tool frame, a set of replaceable tools and handle assembly. The number of wheel varies from one to two and the Diameter depends upon the design.	
9.	109	**Blade Hoe** The straight blade hand hoe is a long handled hand tool for operation between the crop rows. It consists of a blade, curved arm, ferrule and a long wooden handle. Being a long handled tool, the straight blade hand hoe is operated in the standing posture by pulling action. The pulling action of the blade into the soil cuts or uproots the weeds in between the rows of the crop. The cut or uprooted weeds are buried under the soil and thus creates mulch.	

Sl. No.	Code	Item/Definition	Picture
10.	110	**Paddy Transplanter** The transplanter consists of two wooden floats, a main frame that supports the seedling tray, mat pusher, tray movement mechanism and picker bar assembly and handle. The machine is Manually operated and pulled through the field by operator.	
11.	111	**Cono Weeder** The weeder consists of two rotors, float, frame and handle. The rotors are cone frustum in shape, smooth and serrated strips are welded on the surface along its length. The rotors are mounted in tandem with opposite orientation. The float, rotors and handle are joined to the frame. The float controls working depth and does not allow rotor assembly to sink in the puddle. The cono weeder is operated by pushing action. The orientation of rotors create a back and forth movement in the top 3 cm of soil.	
12	112	**Paddy Drum Seeder** The seeder consists of a seed drum, main shaft, ground wheel, floats, and handle. Joining smaller ends of frustum of cones makes the seed drum. Nine numbers of seed metering holes of 10 mm diameter are provided along the circumference of the drum at both the ends for a row-to-row spacing of 200 mm.	
13.	113	**Sugarcane Crusher** The vertical type sugarcane crusher, consists of crushing roller, king and extracting roller. The crusher can be operated either by a pair of bullocks or electric motor/stationary engine with gear drive. The crushing roller has horizontal V -grooves on its	

Sl. No.	Code	Item/Definition	Picture
		periphery that help in crushing the sugarcane. The other rollers have straight grooved for extracting and removing juice.	
B. Animal Drawn Implements			
15.	201	**Wooden Plough** This plough is suitable for ploughing in wetlands for raising rice crop using a pair of bullocks. The depth of cut in black soil is 3.5 cm and the width is 100-130 mm. The shoe is made of single casting with ribbed surface. The pole shaft is made of babul or vengai wood.	
16.	202	**Mould Board Plough** The implement consists of a share, mouldboard, landside, handle, depth gauge wheel and wooden beam. It has convenient handles for easy operation. For operation the plough is moved in the soil with the help of a pair of bullock. Share of the plough penetrates into the soil and makes a cut below the soil surface. Mould board lifts, pulverizes and inverts the furrow slice.	
17.	203	**Disc Harrow** It is a single acting double gang type disc harrow suitable for secondary tillage operation. The harrow is provided with an operator's seat and a transport wheel which aids in easy transportation.	

Sl. No.	Code	Item/Definition	Picture
18.	204	**Cultivator (Triphali)** The unit consists of reversible tines, frame, handle and a wooden beam. The working width of the cultivator can be adjusted by varying the spacing between the tines or expanding the frame. For operation the implement is attached to a pair of bullock by beam and moved in the soil. The tines dig into the soil and cut a small furrow slice.	
19.	205	**Seed Drill/Seed Cum Fertilizer Drill** It is a standardized animal drawn seed cum fertilizer drill which is suitable for crops like wheat, gram, sorghum, soybean, lentil, pea, sunflower, safflower etc. The shoe type furrow openers with non clogging boot place the seed at desired depth.	
20.	206	**Levelling Karah:** The animal drawn leveling Karah consists of a heavy batten made of Sal wood having 1500mm length and 100mm thickness on which a Mild Steel angle frame is fixed by means of screws. The frame carries a bar to which curved and pointed hooks are attached. It is secondary tillage equipment for clod crushing, stubble or trash collection, levelling and smoothing of land surface before seeding.	
21.	207	**Seed Planter** Animal drawn 3-row inclined plate planter is a multi-crop planter for planting of bold and small seeds. The planter consists of a frame with tool bar, modular seed boxes; furrow openers and ground wheel. It has three independent seed boxes with inclined plate type seed metering mechanism. Seed plates for sowing different seeds can be	

Sl. No.	Code	Item/Definition	Picture
		selected and easily changed.	
22.	208	**Bund Former** The implement consists of two blades, flat iron frame bent at an angle a handle attached to the frame with tie bars and wooden beam. The profile of blades is made to a shape so that bund formed is trapezoidal and remains stable. For operation, a pair of bullock pulls the implement; the blades gather the loose soil and accumulate it in the form of bund.	
23.	209	**Potato Digger** This is a simple implement suitable for digging and exposing potato and Groundnut from one row. It is provided with a V -shaped blade with round bars at the rear. The blade at the front digs out the tubers and the rods at the rear help in the separation of soil from the tubers.	
24.	210	**Animal Drawn Puddler** It is rectangular blade type puddller suitable for puddling operation under wetland conditions. It has a wooden frame on which bushes are mounted. Shaft carrying the blades fixed in a staggered fashion rotates in the bushes. The blades are fixed at an angle to the direction of motion. The blades on the implement rotate and impart a lateral and turning action on the soil particles, thus achieving a good puddle.	
C. Powered		**Equipments/Machines**	

Sl. No.	Code	Item/Definition	Picture
26.	301	**Power Sprayer** The motorized knapsack mist blower has a small 2-stroke petrol/ kerosene engine of 35 cc to which a centrifugal fan is connected. The centrifugal fan is usually mounted vertically. The fan produces a high velocity air stream, which is diverted through a 90-degree elbow to a flexible (plastic) discharge hose, which has a divergent outlet. The spray tank that has also a compartment for fuel and engine-fan unit is mounted on a common frame, which fits to the back of operator.	
27.	302	**Power Tiller** The power tiller is powered with a diesel engine. The engine power is transmitted to ground wheels through V –belt pulley. A tail wheel is provided at the rear to maintain the operating depth. The rotary weeding attachment does weeding.	
28.	303	**Agricultural Tractor** It is prime-mover used for operating various agricultural equipments/ machines.	
29.	304	**Tractor Drawn MB Plough** It is a tractor-operated implement and consists of share point, share, mouldboard, landslide, frog, shank, frame and hitch system. The working of the plough is controlled by hydraulic system lever and three-point linkage.	

Sl. No.	Code	Item/Definition	Picture
30.	305	**Tractor Drawn Disc Harrow** The tractor mounted disc harrow consists of two gangs of discs mounted one behind the other. The discs on the front gang throw soil outward and the rear gang inward. Therefore, no soil remains uncut by the offset disc harrow.	
31.	306	**Tractor Drawn Seed Drill/Seed Cum Fertilizer Drill** It consists of seed box, fertilizer box, seed metering mechanism, fertilizer metering mechanisms, seed tubes, furrow openers, seed rate adjusting lever and transport cum power transmitting wheel.	
32.	307	**Tractor Drawn planter** It has a hopper, ground wheel and seed metering mechanism, which are mounted on a common frame and hitched to the tractor with the three point linkage. It consists of modular frame, individual hopper for each row with seed and fertilizer chamber, vertical roller metering mechanism ground wheel etc. It is suitable for planting groundnut, soybean Bengal gram etc.	
33.	308	**Tractor Drawn Leveller** It consists of hitch system, replaceable cutting blade with sharp edge, and a curved plate with side wings, which form a bucket. The blade is made from medium carbon steel or low alloy steel, hardened and tempered to suitable hardness. During operation, the blade digs into the soil and extra soil is collected in the bucket, which is released in the depressions of the field. The angle and pitch of leveller is adjustable. The leveller can also angled left or right, or reversed for back filling.	

Sl. No.	Code	Item/Definition	Picture
34.	309	**Tractor Drawn Potato Digger** The tractor pto operated potato digger elevator consists of a crescent/ convex/ triangular shape-cutting blade, elevator rollers generally made of iron bars, power transmission device and a tractor hitching system. The crescent shape blade helps in digging of the potatoes, which are carried to the shaking conveyor belt and finally delivered at the rear of the machine in windrows form	
35.	310	**Power Thresher** It consists of spike tooth cylinder, aspirator type blower and sieve shaker. Two top covers, three concaves, three sieves, variable cyc1inder speeds are provided for threshing different crops. It is suitable for threshing wheat, maize, sorghum, rice, gram, pigeon pea, soybean, mustard, sunflower, safflower and linseed crops.	
36.	311	**Power Chaff Cutter** The chaff cutter consists of a trough, cutting blades, flywheel, cover plate, feed rolls, shear plate and stand. The blades are made of high carbon steel or alloy steel hardened and tempered to suitable hardness. The chaff cutter is powered by a electric motor and power to the flywheel is transmitted through V belt and pulley	

Sl. No.	Code	Item/Definition	Picture
37.	312	**Power Cane Crusher** The horizontal type sugarcane crusher consist of crushing rollers, roller axles, and set of gears, side blades, trash blades and gear guard. There are three rollers, one for feeding and other two for crushing. The rollers are made of high-grade cast iron and V - grooved in order to hold the sugarcane. The rollers are held between cast iron side plates and mounted on heavy cast iron frame. The rollers receive power from motor or engine through a set of gears. The machine is operated by electric motor or stationary engine	
38.	313	**Combine Harvester (Tractor Powered)** Machine is used for harvesting field crops and consists of cutting unit, threshing unit, cleaning and grain handling units. The cutting section includes reel, cutter bar, an auger and a feeder conveyer. Threshing section has threshing cylinder, concave and cylinder beater. The cleaning section mainly consists of straw walker, chaffer sieve, grain collection pan and blower. It is powered by a tractor	
39.	314	**Combine Harvester (Self Propelled)** Machine is used for harvesting field crops and consists of cutting unit, threshing unit, cleaning and grain handling units. The cutting section includes reel, cutter bar, an auger and a feeder conveyer. Threshing section has threshing cylinder, concave and cylinder beater. The cleaning section mainly consists of straw walker, chaffer sieve, grain collection pan and blower. It is powered by a diesel engine mounted on it.	

Sl. No.	Code	Item/Definition	Picture
40.	315	**Cultivator (Tractor drawn)** It consists of a rectangular frame made of mild steel angle or channel section, heavy-duty tynes made of mild steel flat or plate section, reversible shovels joined to tynes with fasteners, and hitch assembly.	
41.	316	**Rotavator** It consists of a steel frame, a rotary shaft on which blades are mounted, power transmission system, and gearbox. The blades are of L-type, made from medium carbon steel or alloy steel, hardened and tempered to suitable hardness. The PTO of tractor drives the rotavator. Rotary motion of the PTO is transmitted to the shaft carrying the blades through gearbox and transmission system. A good seedbed and pulverization of the soil is achieved in a single pass of the rotavator.	
42.	317	**Cage Wheels Used for Puddling** Mounted on the wheels of tractors and used for puddling operation	
43.	318	**Self Propelled Reaper** It is self propelled front mounted, walk behind type reaper windrower. The reaping attachment consists of cutter bar, two crop conveyor belts, crop row dividers and star wheels. The cutter bar and conveyor belts are driven by engine through belt-pulley and safety clutch. It is suitable for harvesting and windrowing of erect rice and wheat crops.	

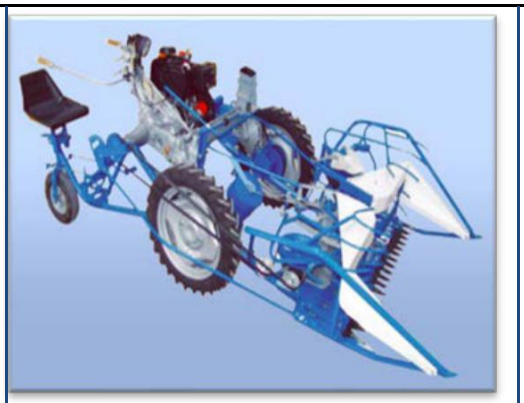
Sl. No.	Code	Item/Definition	Picture
44.	319	**Power Maize Sheller** The machine consists of a threshing cylinder, concave and centrifugal blower mounted on a frame. Crop feeding is manual. The threshing cylinder is of spike tooth type. Round bars are used as spikes, which are fitted on circular rings. The head comes out through the opening at the far end of threshing drum. A blower is used for cleaning the grains.	
45.	320	**Groundnut Decorticator** Used for separating the kernels from groundnut pods.	
46.	321	**Tractor Mounted Reaper** The machine is mounted in front of the tractor and the power to the machine is given from tractor PTO with the help of intermediate shaft running beneath the chassis of the tractor and a coupling shaft. Height of the machine above ground is controlled by tractor hydraulic with the help of pulleys and steel ropes. After the crop is cut by the cutter bar, it is held in a vertical position and delivered to one side of the machine by lugged belt conveyors and fall on the ground in the form of a windrow perpendicular to the direction of movement of machine.	

Sl. No.	Code	Item/Definition	Picture
47.	322	**Raised Bed Planter** The bed planter consists of a frame, planting hoppers, fertilizer box, furrow openers bed shaper and power transmitting wheel. The furrow openers are ridger type and have mouldboard and share point. The machine makes two beds. Machine can sow two or three rows of wheat on each bed. Machine has seed metering unit of vertical disc type.	
48.	323	**Zero Till Seed Cum Fertilizer Drill** No till drill consists of frame, seed box, fertilizer box, seed metering mechanism, fertilizer metering mechanism, seed tubes, furrow openers ,seed adjusting lever and transport cum power transmitting wheel. The main difference between Zero-till drill machine and conventional drill is that it has narrow shovels known as inverted T -type furrow openers instead of tyne type furrow openers. The main advantage of narrow shovels is lower draft requirement and easier penetration in the soil.	
49.	324	**Strip Till Drill (Tractor Drawn)** It consists of a standard seed drill with a rotary attachment mounted in the front. The rotary system has C-type blades, which prepare a 75 mm wide strip in the front of every furrow opener. Thus with every row, 125 mm of the strip is left untilled and only 40 percent of area is tilled. Tilling and sowing is done simultaneously.	

Sl. No.	Code	Item/Definition	Picture
50.	325	**Sugarcane Cutter Planter (Tractor Drawn)** Machine consists of furrow opening unit, sett cutting unit, fertilizer application unit, chemical application unit, sett covering unit and seed box. For the operation, two labourers sitting on the machine feed completes sugarcane one by one into the sett cutting unit by picking from the seed hopper. The rotating blades cut the setts automatically before dropping into the furrows. Fertilizer and chemicals are also applied simultaneously a long with the setts, before covering of furrows.	
51.	326	**Vegetable Transplanter** The machine consists of seedljng tray, seat for the operator, furrow opener, compaction wheels, finger guide tunnel, picker wheel type metering mechanism. Picking forks has spring mounted rubber flappers, which open before passing through the tunnel and close during its passage. These flappers open again at the bottom end of the tunnel to release the seedlings in a furrow. The inclined wheels compact the soil around the seedlings. Two persons one for each row sitting on the machine are required to place the seedlings in the flappers when these open at the top position. The root side of the seedlings is kept towards the operator.	
52.	327	**Aero Blast Sprayer** The machine consists of tank of 400 litres capacity, , pump, fan, control valve, filling unit, spout adjustable handle and spraying nozzles to release the pesticide solution in to stream of air blast produced by the centrifugal blower. The air blast distributes chemical in the form of very fine	

Sl. No.	Code	Item/Definition	Picture
		particles throughout its swath, II which is on one side of tractor. The major portion of swath is taken care of by the main blast through the main spout and the auxiliary nozzles cover the swath area near the tractor. The sprayer is mounted on the tractor 3-point linkage and is operated by tractor pto.	
53.	328	**Power Weeder (Self Propelled)** The power from the engine is transmitted with the help of belt pulleys and chain- sprockets to the rotary and ground wheels for rotating the blades and propelling the machine forward. The clutch is also provided on both sides for turning the machine to right or left. The rotary blades are the soil working tool for weeding or seedbed preparation.	
54.	329	**Pneumatic Planter** It consists of pneumatic metering system for five independent rows. Separate sets of seed plates are required for planting different sizes of seeds. It is provided with compressor for creating suction and pressure heads for singulation of seeds independently in the five hoppers. (**Apprx. Cost Rs. 80000/-)**	
55.	330	**Self Propelled Rice Transplanter** It consists of prime mover, transmission, engine, float, lugged wheels, seedling tray, seedling tray shifter, pickup fork and pickup fork cleaner. It is a walk behind type rice transplanter using mat type nursery and it transplants the seedling uniformly without damaging them. The planting depth and hill-to-hill spacing can be adjusted. Automatic depth control helps in maintaining uniform planting depth.	

Sl. No.	Code	Item/Definition	Picture
56.	331	**Straw Combine** Straw combine tractor mounted and is tractor pto operated. It has cutter bar reel, feeding auger and bruising cylinder like a traditional thresher. Straw thrown and stubble left by the grain combine is collected by straw combine and delivered to the cylinder concave section, where it is cut into pieces and passed through the concave.	
57.	332	**Tractor Drawn Disc Plough** The plough consists of common mainframe, disc beam assemblies, rockshaft, a heavy spring loaded furrow wheel and a gauge wheel. The discs of the plough are made of high carbon steel or alloy steel and the edges are hardened and sharpened. The discs are mounted on tapered roller bearings.	
58.	333	**The laser land leveler** consists of a laser transmitter, a laser receiver, an electrical control panel, a twin solenoid hydraulic control valve, two wheels and a leveling bucket. The laser transmitter transmits a laser beam, which is intercepted by the laser receiver mounted on the leveling bucket. The control panel mounted on the tractor interprets the signal from the receiver and opens or closes the hydraulic control valve, which raises or lowers the bucket. Some laser transmitters have the ability to operate over graded slopes ranging from 0.01% to 15% and apply dual controlled slope in the field. The leveling bucket can be either 3-point linkage mounted or pulled by the tractor's drawbar. Bucket dimensions, number of wheels and capacity will vary according to the available power source and field conditions.	

Sl. No.	Code	Item/Definition	Picture
59.	334	**Straw Baler:** The tractor PTO operated machine consists of reel type straw pick up assembly, and straw compaction and tying units. It automatically picks up the residue straw from field with the help of reel which is transferred into bale chamber with the help of feeder and then straw is compressed with the reciprocating ram into a compact variable length size. It also automatically ties the knots using metal wire or nylon rope.	
60.	335	**Reaper-Binder** is a unique harvesting machine that reaps the crop as well as binds it simultaneously with a twine. This Innovative Mechanical machine ensures 100% recovery of straw with negligible grain losses at a surprisingly low cost of operation. This machine is mainly used in Wheat, Paddy, Oats, Barley and other grain crops.	
61.	336	**Sugarcane Harvester**: It is a chopper harvester with a cleaning system and whole cane harvesters are also available. It can cut one/two rows of cane at a time. The cane is fed between the crop dividers and is cut at the root zone by base cutter blades and simultaneously de-topped from top. The cane is then fed through the roller train and is cut by the chopper drums into small cane pieces of 24.5 to 30 cm.	

Sl. No.	Code	Item/Definition	Picture
62.	337	**Tractor Mounted Post Hole Digger-** Used for digging pits which are ideal for installing fence posts, decks, planting trees and shrubs, ice fishing, and more.	
63.	338	**Happy Seeder:** are specially designed for sowing of wheat in standing paddy stubbles after combine harvesting. it saves working time, fuel & irrigation expenses.	
64.	339	**Tractor Mounted Spray Pump**: It is mounted on the tractor three point linkage and is powered by tractor PTO. It is used for spraying pesticides and fertilizer on the crops, in order to protect it from the pest and increase the fertility of the soil respectively.	
65.	340	**Brush Cutter:** It is equipped with a Mini Petrol engine and used as an Agricultural Grass Cutting Machine, which is widely used in Agriculture Industry for cutting grass, vegetable stems, etc. With little modification it is also used for cereal crop harvesting.	

Sl. No.	Code	Item/Definition	Picture
66.	341	**Chain Saw:** It is also called power saw and is a light and portable machine normally and operated by one person. Cutting is done by an endless chain fitted with cutters, which runs around a flat piece called the bar.	
67.	342	**Portable Augur Digger:** It is equipped with a Mini Petrol engine. Used for digging pits which are ideal for installing fence posts, decks, planting trees and shrubs, ice fishing, and more.	
68.	343	**Hedge Trimmers;** sometimes also called hedge shears, or hedge clippers used for cutting hedge.. These are designed as large scissors or large pruning shears. Motorized hedge trimmers allow work to be done faster and with less effort.	
69.	344	**Diesel Engine Pumpset** The pump for water lifting is coupled to a Diesel engine.	
70.	345	**Electric Pump Sets** The pump is driven by an electric motor	

Sl. No.	Code	Item/Definition	Picture
71.	346	**Sprinkler Irrigation Sets** Irrigation by sprinkler is nearest to natural rainfall, where water is sprayed into air in the form of coarse droplets. The major components of sprinkler system are: (i) pump, which lifts the water from source and sends it under pressure in the system. (ii) main lines, which may be permanent or portable; portable lines are usually made of aluminum where as permanent lines may be of steel, asbestos cement or PVC. Main lines receive water from pump and discharge into laterals. (iii) lateral lines, which are usually made from aluminum and are portable; however in some orchards and nurseries permanent laterals are buried, (iv) riser pipes which are attached to the laterals. The height of the riser depends on the height of the crop, (v) sprinkler head, which convert the water stream into coarse droplets and also throw the droplets to a distance, since the sprinkler head rotates while in operation, a circular pattern is achieved.	
72.	347	**Drip Irrigation Set** Also known as trickle irrigation; it is one of the efficient ways of applying irrigation water to the horticultural crops. The water can be applied on the surface or sub surface, very near to the root zone of the plant. The system consists of main line, sub lines, supply lines, laterals and emitters. The water is discharged either through emitters or micro-tubes. The pipe lines are made from black PVC to avoid growth of algae in the lines. Besides above, the system has a centrifugal pump, fertilizer tank and filtration tank.	

Sl. No.	Code	Item/Definition	Picture
73.	348	**Solar Pumping Sets** A solar water pump has a mini power house at its heart and consists of a calibrated and matching solar array of modules – tuned with the equivalent power of pump. Each solar array has a number of solar modules connected in parallel or series. Every solar PV panel generates current by converting solar radiation to electrical energy. The electrical energy from the entire array is controlled, tuned and directed by the inbuilt controller in DC pumps or through the Variable Frequency Driver (VFD) and enables the connected pump to draw water and feed the delivery pipelines.	

Annexure-XII

State/UT Code List

S.NO.	STATES/UTs	STATE/UT CODE
1.	Andhra Pradesh	01
2.	Arunachal Pradesh	02
3.	Assam	03
4.	Bihar	04
5.	Chhattisgarh	05
6.	Goa	06
7.	Gujarat	07
8.	Haryana	08
9.	Himachal Pradesh	09
10.	Jammu & Kashmir	10
11.	Jharkhand	11
12.	Karnataka	12
13.	Kerala	13
14.	Madhya Pradesh	14
15.	Maharashtra	15
16.	Manipur	16
17.	Meghalaya	17
18.	Mizoram	18
19.	Nagaland	19
20.	Odisha	20
21.	Punjab	21
22.	Rajasthan	22
23.	Sikkim	23
24.	Tamil Nadu	24
25.	Telangana	25
26.	Tripura	26
27.	Uttar Pradesh	27
28.	Uttarakhand	28
29.	West Bengal	29
30.	Andaman & Nicobar Islands	30
31.	Chandigarh	31
32.	Dadra & Nagar Haveli	32
33.	Daman & Diu	33
34.	Delhi	34
35.	Lakshadweep	35
36.	Puducherry	36
37.	All India	37

Annexure-XIII

Sample Selection using Random Number Tables

To illustrate the use of a table of random numbers, consider the problem of obtaining a sample of $n = 6$ holdings from a list of $N = 19$ holdings in a size class. Refer to a table of random numbers and proceed through the following steps.

1. Select by any one of the four pages of tabled values at random.

2. Without a sense of direction, bring a pencil point down anywhere on the printed page so as to hit a random digit which are printed in a block of five numbers.

3. Since the available number of holdings (19) is in two digits, select either the first two or last two columns in block. Suppose, we had selected the random number 09517 (given in row 15 and cols 20 to 24 of the table) and we decided to select only the first two digits of the number, i.e., 09 which will be the random number selected. Suppose we decided to go col`umn-wise downward, the string of random number selected would be **09**, 25, 81, 55, 38, 60, 44, 52, 56, **07**, **14**, 82, 45, **10**, **04**, 38 ----------. The numbers 25, 81, 55, 38, 60, 44, 52, 56, 82, 45 do not result in a selection because they exceed the number of units in given population (universe), i.e., 19. More units can be selected in this way. It is to be noted that the sampling recommended here is Simple Random Sampling without replacement, i.e., a particular unit cannot be included in the sample twice. Thus after a particular unit has been selected, if the random number corresponding to this unit is found again in the string, this number is to be rejected and new unit corresponding to this number will be selected.

The above exercise is to be repeated separately for each size-group.

RANDOM NUMBERS

	00 04	05 09	10 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49
00	39591	66082	48626	95780	55228	87189	75717	97042	19696	48613
01	46304	97377	43462	21739	14566	72533	60171	29024	77581	72760
02	99547	60779	22734	23678	44895	89767	18249	41702	35850	40543
03	06743	63537	24553	77225	94743	79448	12753	95986	78088	48019
04	69568	65496	49033	88577	98606	92156	08846	54912	12691	13170
05	68198	69571	34349	73141	42640	44721	30462	35075	33475	47407
06	27974	12609	77428	64441	49008	60489	66780	55499	80842	57706
07	50552	20688	02769	63037	15494	71784	70559	58158	53437	46216
08	74687	02033	98290	62635	88877	28599	63682	35566	03271	05651
09	49303	76629	71897	30990	62923	36686	96167	11492	90333	84501
10	89734	39183	52026	14997	15140	18250	62831	51236	61236	09179
11	74042	40747	02617	11346	01884	82066	55913	72422	13971	64209
12	84706	31375	67053	73367	95349	31074	36908	42782	89690	48002
13	83664	21365	28882	48926	45435	60577	85270	02777	06878	27561
14	47813	74854	73388	11385	99108	97878	32858	17473	07682	20166
15	00371	56525	38880	53702	09517	47281	15995	98350	25233	79718
16	81182	48434	27431	55806	25389	40774	72978	16835	65066	28732
17	75242	35904	73077	24537	81354	48902	03478	42867	04552	66034
18	96239	80246	07000	09555	55051	49596	44629	88225	28195	44598
19	82988	17440	85311	03360	38176	51462	86070	03924	84413	92363
20	77599	29143	89088	57593	60036	17297	30923	36224	46327	96266
21	61433	33118	53488	82981	44709	63655	64388	00498	14135	57514
22	76008	15045	45440	84062	52363	18079	33726	44301	86246	99727
23	26494	76598	85834	10844	56300	02244	72118	96510	98388	80161
24	46570	88558	77533	33359	07830	84752	53260	46755	36881	98535
25	73995	41532	87933	79930	14310	64833	49020	70067	99726	97007
26	93901	38276	75544	19679	82899	11365	22896	42118	77165	08734
27	41925	28215	40966	93501	45446	27913	21708	01788	81404	15119
28	80720	02782	24326	41328	10357	86883	80086	77138	57072	12100
29	92596	39416	50362	04423	04561	58179	54188	44978	14322	97056
30	39693	58559	45839	47278	38548	38885	19875	26829	86711	57005
31	86923	37863	14340	30929	04079	65274	03030	15106	09362	82972
32	99700	79237	18172	58879	56221	65644	33331	87502	32961	40996
33	60248	21953	52321	16984	03252	90433	97304	50181	71026	01946
34	29136	71987	03992	67025	31070	78348	47823	11033	13037	47732
35	57471	42913	85212	42319	92901	97727	04775	94396	38154	25238
36	57424	93847	03269	56096	95028	14039	76128	63747	27301	65529
37	56768	71694	63361	80836	30841	71875	40944	54827	01887	54822
38	70400	81534	02148	41441	26582	27481	84262	14084	42409	62950
39	05454	88418	48646	99565	36635	85496	18894	77271	26894	00889
40	80934	56136	47063	96311	19067	59790	08752	68040	85685	83076
41	06919	46237	50676	11238	75637	43086	95323	52867	06891	32089
42	00152	23997	41751	74756	50975	75365	70158	67663	51431	46375
43	88505	74625	71783	82511	13661	63178	39291	76796	74736	10980
44	64514	80967	33545	09582	86329	58152	05931	35961	70069	12142
45	25280	53007	99651	96366	49378	80971	10419	12981	70572	11575
46	71292	63716	93210	59312	39493	24252	54849	29754	41497	79228
47	49734	50498	08974	05904	68172	02864	10994	22482	12912	17920
48	43075	09754	71880	92614	99928	94424	86353	87549	94499	11459
49	15116	16643	03981	06566	14050	33671	03814	48856	41267	76252

50 54	55 59	60 64	65 69	70 74	75 79	80 84	85 89	90 94	95 99	
25178	77518	41773	39926	09843	29694	43801	69276	44707	23455	00
45803	95106	85816	33366	37383	76832	37024	06581	22587	24827	01
15532	30898	14922	13923	44987	45122	86515	55836	96165	19650	02
99068	35453	42152	12078	04913	06083	06645	93310	40016	85421	03
70983	88359	95583	79848	24101	67502	25692	42496	77732	19278	04
71181	48289	03153	18779	65702	03612	64608	84071	47588	09982	05
44052	59163	74033	86112	27731	46135	63092	59171	44816	12354	06
91555	87708	70964	43346	56811	08725	75139	77674	82467	41899	07
54307	12188	58089	73745	35569	97352	77301	37684	36823	69218	08
63631	23919	06785	13891	89918	76211	09362	34292	17640	65907	09
46832	30801	98898	28954	97793	20825	36775	71974	15574	09184	10
05944	82632	39310	74857	61725	50569	81937	16820	85446	51168	11
28199	90116	59501	49025	73005	84954	11587	97691	90415	84685	12
08391	05600	00624	95068	33776	44985	01505	76911	45539	32181	13
29634	13021	96568	15124	55092	44043	31073	92371	51288	33378	14
61509	18842	79201	46451	68594	98120	68110	91062	42095	61839	15
87888	23033	69837	65661	15130	44649	42515	83861	50721	36110	16
94585	15218	74838	61809	92293	85400	46934	08531	70107	65707	17
82033	93915	34898	79913	70013	27573	39256	35167	35070	47095	18
79131	10022	82199	78976	22702	37936	10445	96846	84927	69745	19
79344	39236	41333	11473	15049	47930	99029	97150	82275	55149	20
15384	44585	18773	89733	40779	59664	83328	25162	58758	17761	21
38802	90957	32910	97485	10358	88588	95310	22252	19143	69011	22
85874	18400	28151	29541	63706	43197	65726	94117	22169	91806	23
26200	72680	12364	46010	92208	59103	60417	45389	56122	85353	24
13772	75282	81418	42188	66529	47981	92548	10079	68179	40915	25
91876	07434	96946	98382	97374	34444	17992	42811	01579	48741	26
31721	21713	83632	40605	24227	53219	05482	86768	53239	24812	27
92570	53242	98133	84706	78048	29645	79336	66091	05793	25922	28
02880	29307	73734	66448	64739	74645	29562	13999	17492	49891	29
80982	14684	31038	85302	98349	57313	86371	33938	10768	60837	30
38000	43364	94825	32413	46781	09685	69058	56644	85531	55173	31
14218	94289	79484	61868	40034	22546	68726	14736	89844	13466	32
74358	21940	40280	22233	09123	49375	55094	46113	54046	51771	33
39049	14986	94000	26649	13037	34609	45186	89515	63214	66886	34
48727	06300	91486	67316	84576	11100	37580	49629	83224	46321	35
22719	29784	40682	96715	40745	57458	70048	48306	50270	87424	36
33980	36769	51977	03689	79071	20279	64787	48877	44063	93733	37
23885	66721	16542	12648	65986	43104	45583	75729	35118	58742	38
85190	44068	78477	69133	58983	96504	44232	74809	25266	73872	39
33453	36333	45814	78128	55914	89829	43251	41634	48488	49153	40
98236	11489	97240	01678	30779	75214	80039	68895	95271	19654	41
21295	53563	43609	48439	87427	88065	09892	58524	43815	31340	42
28335	79849	69842	71669	38770	54445	48736	03242	83181	85403	43
95449	35273	62581	85522	35813	34475	97514	72839	10387	31649	44
88167	03878	89405	55461	73248	48620	31732	47317	06252	54652	45
86131	62596	98785	02360	54271	26242	93735	20752	17146	18315	46
71134	90264	30126	08586	97497	61678	81940	00907	39096	02082	47
02664	53438	76839	52290	77999	05799	93744	16634	84924	31344	48
90664	96876	16663	25608	67140	84619	67167	13192	81774	58619	49

	00 04	05 09	10 14	15 19	20 24	25 29	30 34	35 39	40 44	45 49
50	93873	86558	72524	02542	73184	37905	05882	15596	73646	50798
51	08761	47547	02216	48086	56490	89959	69975	04500	23779	76697
52	61270	98773	40298	26077	80396	08166	35723	61933	13985	19102
53	73758	15578	95748	02967	35122	36539	72822	68241	34803	42457
54	17132	32196	60523	00544	73700	70122	27962	85597	36011	79971
55	26175	29794	44838	84414	82748	22246	70694	57953	39780	17791
56	06004	04516	06210	03536	84451	30767	37928	26986	07396	64611
57	34687	73753	36327	73704	61564	99434	90938	03967	97420	19913
58	27865	08255	57859	04746	79700	68823	16002	58115	07589	12675
59	89423	51114	90820	26786	77404	05795	49036	34686	98767	32284
60	99030	80312	69745	87636	10058	84834	89485	08775	19041	61375
61	02852	54339	45496	20587	85921	06763	68873	35367	42627	54973
62	10850	42788	94737	74549	74296	13053	46816	32141	02533	25648
63	38301	18507	33151	69434	80103	02603	61110	89395	67621	67025
64	48181	95478	62739	90148	00156	09338	44558	53271	87549	45974
65	23098	23720	76508	69083	56584	90423	21634	35999	09234	95116
66	25104	82019	21120	06165	44324	77577	15774	44091	69687	67576
67	22205	40198	86884	28103	57306	54915	03426	66700	45993	36668
68	64975	05064	29617	40622	20330	18518	45312	57921	23188	82361
69	58710	75278	47730	26093	16436	38868	76861	85914	14162	21984
70	12140	72905	26022	07675	16362	34504	47740	39923	04081	03162
71	73226	39840	47958	97249	14146	34543	76162	74158	59739	67447
72	12320	86217	66162	70941	58940	58006	80731	66680	02183	94678
73	41364	64156	23000	23188	64945	33815	32884	76955	56574	61666
74	97881	80867	70117	72041	03554	29087	19767	71838	80545	61402
75	88295	87271	82812	97588	09960	06312	03050	77332	25977	18385
76	95321	89836	78230	46037	72483	87533	74571	88859	26908	55626
77	24337	14264	30185	36753	22343	81737	62926	76494	93536	75502
78	00718	66303	75009	91431	64245	61863	16738	23127	89435	45109
79	38093	10328	96998	91386	34967	40407	48380	09115	59367	49596
80	87661	31701	29974	56777	66751	35181	63887	95094	20056	84990
81	87142	91818	51857	85061	17890	39057	44506	00969	32942	54794
82	60634	27142	21199	50437	04685	70252	91453	75952	66753	50664
83	73356	64431	05068	56334	34487	78253	67684	69916	63885	88491
84	29889	11378	65915	66776	95034	81447	98035	16815	68432	63020
85	48257	36438	48479	72173	31418	14035	84239	02032	40409	11715
86	38425	29462	79880	45713	90049	01136	72426	25077	64361	94284
87	48226	31868	38620	12135	28346	17552	03293	42618	44151	78438
88	80189	30031	15435	76730	58565	29817	36775	64007	47912	16754
89	33208	33475	95219	29832	74569	50667	90569	66717	46958	04820
90	19750	48564	49690	43352	53884	80125	47795	99701	06800	22794
91	62820	23174	71124	36040	34873	95650	79059	23894	58534	78296
92	95737	34362	81520	79481	26442	37826	76866	01580	83713	94272
93	64642	62961	37566	41064	69372	84369	92823	91391	61056	44495
94	77636	60163	14915	50744	95611	99346	39741	04407	72940	87936
95	43633	52102	93561	31010	11299	52661	79014	17910	88492	60753
96	93686	41960	61280	96529	52924	87371	34855	67125	40279	10186
97	23775	33402	28647	42314	51213	29116	26243	40243	32137	25177
98	91325	64698	58868	63107	08993	96000	66854	11567	80604	72299
99	58129	44367	31924	73586	24422	92799	28963	36444	01315	10226

50 54	55 59	60 64	65 69	70 74	75 79	80 84	85 89	90 94	95 99	
37686	78520	31209	83677	99115	94024	09286	58927	24078	16770	50
58108	29344	11825	51955	50618	99753	02200	50503	32466	50055	51
71545	42326	66429	93607	55276	85482	24449	41764	19884	46443	52
93303	90557	79166	90097	01627	96690	77434	06402	05379	59549	53
36731	37929	13079	83036	31525	35811	59131	65257	03731	86703	54
49781	31581	80391	84608	23390	30433	08240	85136	80060	43651	55
65995	94208	68785	04370	44192	91852	01129	28739	08705	54538	56
19663	09309	02836	10223	90814	92786	96747	46014	54765	76001	57
88479	24307	63812	47615	17220	27942	11785	49933	03923	35432	58
95407	95006	95421	20811	76761	47475	58865	06204	36543	81002	59
22789	87011	61926	97996	10604	80855	48714	52754	98279	96467	60
96783	18403	36729	18760	30810	73087	94565	68682	15792	60020	61
68933	05665	12264	23954	01583	75411	04460	83939	66528	22576	62
68794	13000	20066	98963	93483	51165	63358	12373	13877	37580	63
40537	31604	60323	51235	65546	85117	15647	09617	73520	48525	64
41249	42504	91773	81579	02882	74657	73765	10932	74607	83825	65
08813	84525	30329	33144	76884	89996	07834	67266	96820	15128	66
46609	30917	29996	10848	39555	09233	58988	82131	69232	76762	67
68543	69424	92072	57937	05563	80727	67053	35431	00881	56541	68
09926	84219	30089	08843	24998	27105	18397	79071	40738	73876	69
30515	76316	49597	37900	98604	05857	51729	19006	15239	27129	70
21611	26346	04877	71584	55724	39616	64648	36811	60915	34108	71
47410	83767	56454	96768	27001	83712	01245	27256	57991	75758	72
18572	31214	41015	64110	61807	72472	78059	69701	78681	17356	73
28078	02819	02459	33308	96540	15817	78694	81476	87856	99737	74
56644	50430	34562	75842	67724	02918	55603	55195	88219	39676	75
27331	48055	18928	47763	61966	64507	06559	81329	29481	03660	76
32080	21524	32929	07739	00836	39497	94476	27433	96857	52987	77
27027	69762	65362	90214	89572	52054	43067	73017	87664	03293	78
56471	68839	09969	45853	72627	71793	49920	64544	71874	74053	79
22689	19799	18870	49272	74783	38777	76176	40961	18089	32499	80
71263	82247	66684	90239	67686	48963	30842	59354	33551	87966	81
64084	57386	89278	27187	52142	96305	87393	80164	95518	82742	82
23121	10194	09911	37062	43446	09107	47156	70179	00858	92326	83
78906	48080	76745	65814	51167	87755	66884	12718	14951	47937	84
87257	26005	21544	37223	53288	72056	96396	67099	49416	91891	85
39529	98126	33694	29025	94308	24426	63072	51444	04718	49891	86
89632	11606	87159	89408	06295	31055	15530	46432	49871	37982	87
23708	98919	14407	53722	58779	92849	04176	24870	56688	25405	88
51445	46758	42024	27940	64237	10086	95601	53923	85209	79385	89
23849	65272	24743	39960	27313	99925	29743	87270	05773	21797	90
78613	15441	34568	57398	25872	61792	94599	60944	90908	38948	91
90694	27996	94181	87428	41135	29461	72716	68956	67871	72459	92
96772	86829	36403	40087	67456	21071	39039	91937	45280	00066	93
24527	40701	56894	73327	00789	97573	09303	41704	05772	95372	94
31596	70876	46807	06741	29352	23829	52465	00336	24155	61871	95
31613	99249	17260	05242	19535	52702	64761	66694	06150	13820	96
02911	09514	50864	80622	20017	59019	43450	75942	08567	40547	97
02484	74068	04671	19646	41951	05111	34013	57443	87481	48994	98
69259	75535	73007	15236	01572	44870	53280	25132	70276	87334	99

Annexure-XIV

Usage of RANDBETWEEN

Description

This function returns a random integer number between the numbers you specify. A new random integer number is returned every time the worksheet is calculated.

Syntax

RANDBETWEEN(start ,*end*)

The RANDBETWEEN function syntax has the following arguments:

start and end indicate the interval between which the random number is to be chosen. For example, if there are 80 operational holdings in marginal category and four random numbers are required between 1 and 80, start will be equal to 1 and end will be equal to 80. The function will be written as =RANDBETWEEN(1,80). This will give you one random number. Now copy this formula downwards to 3 more cells to get total 4 random numbers. In case, 6 random numbers are required, the formula may be copied downwards to 5 more cells to get total 6 random numbers.

Note: ***If a random number appears more than once, the same may be discarded and new number generated to get the sample without replacement.***

Annexure-XV

Concepts and Definitions

1. Operational Holding

1.1 Operational holding is defined as '*all land which is used wholly or partly for agricultural production and is operated as one technical unit by one person alone or with others, without regard to the title, legal form, size or location*'. The technical unit has been defined as '*that unit which is under the same management and has the same means of production such as labour force, machinery and animals*'. It would be seen from this definition that the actual cultivator and not the owner is the unit for collection of data.

1.2 An operational holding would include both cultivated and uncultivated area. If, for example, an operational holding consists of four survey numbers out of which one survey number is put to non-agricultural uses, the total area of the operational holding would be equal to the total geographical area of the four survey numbers. The holding will exclude Government Forest land, Government waste land and village common grazing land. If Government waste land is allotted to an individual then it will be included in the holding.

1.3 If all the survey numbers of an operational holding are put to non-agricultural uses, then it would not be considered as an operational holding for the purpose of Agriculture Census as also for Input Survey. Besides, 'Abadi Area' (Residential Area) is completely excluded from the total area of the holding.

1.4 If, during the reference year, the entire area of the operational holding is under current fallow, this will still be considered as an operational holding for Agriculture Census, but as no information can be gathered in Input Survey from such holding, these holdings will not be included in the sampling frame for collecting information in Input Survey. Nevertheless, these holdings will be included for preparation of multiplier tables in their respective size classes. If the entire area of the holding is under old fallow, it will also not be considered as an operational holding for Input Survey.

1.5 In some cases, land is divided amongst all the members of the family. Where it is divided among husband, wife and minor children and cultivation is being done by the husband as head of the family, the land may appropriately be treated as one operational holding.

1.6 There might be cases where in the record, a holding is shown jointly in the names of more than one co-sharer while in practice the land might have been privately divided and the co-sharers are independently cultivating. In such cases where there is no dispute these should be treated as many operational holdings as are the number of independent cultivators.

1.7 In some States, in the zamabandhi register against a Khata, names of three or four persons are shown. While from the records it would appear that there is only one holding, but in practice, all the three or four brothers are actually cultivating the land independently of each other although there is no legal partition of land. From the census point of view, this would constitute three or four operational holdings and thus these would be separately listed in the Sampling Frame for Input Survey.

1.8 For cultivated areas in the State Forests, no detailed land records are prepared. In the absence of the land records and revenue agency such areas are excluded for census purposes and thus will not be included in Input Survey also.

2. Parcel

2.1 A parcel is all land entirely surrounded by land of other holdings or by land not forming part of any holding. It may consist of one or more cadastral units, plots or fields.

3. Holder or the Operator

3.1 The holder, for census purposes, is the person who has the responsibility for the operation of the agricultural holding. He exercises the technical initiative and responsibility for the operation of the holding and may have full economic responsibility (i.e. as owner) for it or share this with others (as a tenant). When two or more persons share jointly (as partners) in the economic and technical responsibility for the operation of an agricultural holding, each is to be considered as the holder if they belong to different households and the holding will be termed as joint holding. For Input Survey any one of these could be taken as operational holder and be approached for giving response to questionnaire.

4. Total Area of the Holding

4.1 The total area of the holding should include the total of all land forming part of a unit which is under the same technical responsibility and management. It should also comprise the land occupied by the farm buildings, including the house of the holder, provided such buildings are within the cultivated area. If

the farm buildings are located outside cultivated area and are covered under Abadi Area, then such buildings will not be included in the area of the holding.

5. Agricultural Production

5.1 For the purpose of Input Survey, Agricultural Production would mean the growing of field crops, fruits, grapes, nuts, seeds, tree nurseries (except those of forest trees), bulbs, vegetables and flowers, production of coffee, tea, cocoa, rubber, jute, oilseeds, fodder, grasses, etc.

5.2 In place where special efforts are made to raise grass, it would be treated as a crop for the purpose of the survey.

6. Land Utilisation

6.1 Usually for land records, a nine-fold classification of land use is followed by the State Governments. For the purpose of Input Survey and Agriculture Census, this has been abridged to only three categories comprising of uncultivated area, area under current fallow and net sown area. The most of the questions in Schedule 2.1 are focused on obtaining details of what is happening on net sown area. These details relate to knowing the cropping intensity under irrigated and unirrigated conditions. These concepts are explained below:

Net Area Sown

6.2 This would represent the total cultivated area during the reference year without any regard to number of times it has been cultivated in an year. Thus for finding the net sown area, the areas cultivated more than once during the same year will be counted only once. Both field crops and orchards will form part of the net sown area.

Area under Current Fallow

6.3 This would include all the areas which are usually cropped but have not been cultivated during the reference year. For an area to be classified as current fallow, it should be fallow during the current year and should have been cultivated during the previous year. If an area is not being cultivated for more than one year, it will be categorised as old fallow or culturable waste.

Uncultivated Area

6.4 This would include the following seven categories :-

i) *Fallow land other than current fallow*: This should include all lands which were taken up for cultivation but are temporarily out of cultivation for a period of greater than one year and not more than five years, i.e. less than or equal to five years. The reason for keeping lands fallow may be one or more of the following:-

a) Poverty of cultivators'
b) Inadequate supply of water;
c) Adverse climatic conditions;
d) Silting of canals and rivers; and
e) Unremunerative nature of farming

ii) *Culturable waste*: This should include lands available for cultivation, whether or not taken up for cultivation at any time. These are lands which were not cultivated during the current year and the last five years or more in succession for one reason or the other, i.e. > 5 years in succession. Such lands may be either fallow or covered with shrubs and jungles which are not put to any use. Land once cultivated but not cultivated afterwards for five years in succession should also be included in this category at the end of the five years. Culturable waste land within the holdings would alone be covered for the Input Survey.

iii) *Permanent pastures and other grazing land*: This should include all grazing lands, whether they are permanent pastures and meadows or not. Village common grazing land shall be excluded for the purpose of our Census.

iv) *Land under miscellaneous tree crops*: This would include cultivable land, which is not included in the net area sown but are put to some Agricultural use. Lands under Casuarine trees, thatching grasses, bamboo bushes and 'Orchards' should be classed under this category. Lands of this type outside the holdings will not be included.

v) *Forests*: This should include all lands classified as 'Forests' under any legal enactment dealing with forests or administered as forests, whether State owned or private, and whether wooded or maintained as potential forest land. The area of crops raised in the forest and grazing lands or areas open for grazing within the forests should remain included under the forest area. **Only private forests belonging to the operational holder would be covered for the purpose of Agriculture Census and Input Survey**.

vi) *Area under non-agricultural use*: This should include all lands occupied by buildings, tanks and ponds put to uses other than agricultural purpose within the holdings. Only such lands within the cultivated

holding of the operational holder should be covered in Input Survey / Census.

vii) *Barren and uncultivated land*: This should include all barren and uncultivated land within cultivated holding of the operational holder.

7. Integrated Pest Management

7.1 Traditionally there have been a number of practices which have been adopted by farmers as plant protection measures. These practices could be categorized in four groups, viz., agronomic and cultural control, mechanical control, biological control and chemical control. Usually, a specific approach keeping in view crop variety and agro-climatic conditions is adopted by the farmer for protection of his crops against insects and pests. The approach may be a combination of methods falling in one or more of the above four categories. For best results the experts advise a judicious combination of these approaches and label it as Integrated Pest Management (IPM). The components of IPM program are outline below:

Agronomic and Cultural Practices

7.1.1 This is a preventive method and is based upon knowledge of life history and habits of pest. The practices covered in this category include: deep ploughing after harvesting a crop to expose the hiding or resting insects, weeding, removing and destroying of stubbles and other trash, adjusting the time of sowing to avoid peak incidence period of pests, clean cultivation, the removal of alternative wild hosts, crop rotations and choosing of insect and disease resistant varieties.

Physical and Mechanical Control

7.1.2 This is one of the oldest methods and includes measures, such as collection of eggs and caterpillars (in active stages of pests); removal and destruction of infected part of the plant, beating of drums, laying of night traps and yellow traps. These methods are found effective at initial stage of the pest incidence when practiced by a large number of farmers in a particular area.

Biological Control

7.1.3 Most of the crops have their natural enemies in the form of parasites and predators and disease causing organism. Large scale multiplication and liberation of such other agents, which naturally occur in environment but are enemies of crops (friends of crops) results in effective control of the harmful organisms. These methods are often applied by specialized agencies in conjunction with chemical methods so that harmful effects of insecticide do not interfere with the activities of nature based enemies of pests.

Chemical Control

7.1.4 This method relates to use of insecticides, pesticides and weedicides, which are used as dusts, sprays and granules on the crops. Because of their nature of producing immediate results such chemicals are most popular among the farmers. Serious limitations, particularly those relating to residues on crops and destruction of useful insects, have been noted in recent years in usage of these chemicals.

8. Chemical Fertilizers, Organic Manure, Green Manure and Bio-Fertilizers

8.1 Package of practices followed for replenishing the nutrient losses from the soil as a result of cultivation to maintain the fertility of the soil involves use of organic manure, green manure, chemical fertilizers and bio-fertilizers. It is important that the Investigator understands the difference between these very clearly before interviewing for schedule 2.2.1 & 2.2.2. These are explained below:

Chemical Fertilizers

8.1.1 The chemical fertilizers refers to chemical compounds which are manufactured in factories and are used as soil nutrients. These are further classified as "macro nutrients" which supply nitrogen (N), phosphate (P) and Potash (K) and "micro nutrient" fertilizers which supply Zinc, Manganese, Copper, Iron, Aluminium etc. The popular macro nutrient fertilizers are Urea, DAP, MOP, CAN and a number of complex fertilizers and the physical mixtures of these. A specified list of the chemicals is given at Annexure-X. Micro-nutrient fertilizers to be covered in Input Survey are also listed in this Annexure.

Organic Manure

8.1.2 The Organic Manure is usually not manufactured in chemical factories and is produced by the farmers in their fields using various types of agricultural wastes. Sometimes these are also prepared using the sewage silt or municipal waste in urban areas. The organic manure is usually bulky material and is transported in trolleys. The types of manures covered in this would be Farm Yard Manure (FYM), which is prepared by putting agricultural wastes in a pit for decomposition and composting. This would also include the Vermi Compost. The various forms of oil cakes which are used as fertilizers would also fall in this category. Earth-worm forms part of other organic manure.

Bio-fertilizers

8.1.3 Bio-fertilizers are sold in small packets and require storage at specified temperature. These carry some living bacteria on organic base. The examples of bio-fertilizers are Rhizobium, Azetobactor, Blue-green Algae and Phosphate Solubilizing Bacteria (PSB). When bio-fertilizers are put in the soil, the bacteria contained in the fertilizer packet are spread in the soil and start their activity, e.g., fixing the nitrogen from air to soil. Hence bio-fertilizers are not soil nutrients in themselves, rather they act as catalysts/direct agents for making the soil nutrients available. These type of fertilizers are not very common among farmers and only some progressive farmers use them. Also because of their storage requirements these are not available everywhere.

Green Manure

8.1.4 Green manure refers to cultivation of a specific type of vegetation with the intention of ploughing it back in the soil when the leaves are tender and easily decomposable. The popular types of green manure used by the farmers include Sesbania (Dhencha), Sunhemp (Sanai), Indigo, Urd and Cowpea. There is also a practice of ploughing back the leafy portion of leguminous crops in the field after first or second picking for the purpose of green manuring. All such cases will be counted for the purpose of obtaining area under green manure.

9. Soil Health

9.1 For assessing the soil health status, State Governments have established testing laboratories in their respective State for testing the PH value, i.e. N (Nitrogen), P (Phosphorus) and K (Potash) values of the soil samples collected from the farmers' fields on nominal charges. Farmers are accordingly, advised by the Agriculture Departments of the State Governments to increase the fertility of the soil by using specific fertilizers and chemicals depending upon the PH values. Besides it, soil samples are also tested at IARI, Pusa, New Delhi for the farmers who take the samples at IARI Lab, Delhi.

10. Seeds

Classes of Quality Seed

10.1 The various classes of seed that are used in a seed production programme are: (1) breeder seed, (2) foundation seed, (3) registered seed, and (4) certified seed. These classes of seeds were first clearly defined by the International Crop Improvement Association in 1946 in relation with fodder and forage crops; in 1968 it recommended the adoption of the same system in the case of grain crops

as well. These different classes of seed have different requirements and serve different functions, a brief description of which is given below.

10.2 Breeder Seed: Breeder seed is the seed or the vegetative propagating material produced by the breeder who developed the particular variety. It is produced by the institution where the variety was developed in case the breeder who developed the variety is not available. In India, Breeder seed is also produced by other Agriculture Universities under the direct supervision of the breeder of the concerned crop working in that University; this arrangement is made in view of the large quantities of the breeder seed required every year. Breeder seed is used to produce the foundation seed.

10.3 Breeder seed is genetically pure. In case of self-pollinated species, mass selection is regularly practiced to maintain the genetic purity of the variety. Off-type plants are promptly eliminated and care is taken to prevent outcrossing or natural hybridization and mechanical mixtures.

10.4 Foundation Seed: foundation seed is obtained from breeder seed by direct increase. Foundation seed is genetically pure and is the source of registered and/or certified seed. Production of foundation seed is the responsibility of NSC. Foundation seed is produced on Government farms, at experiment stations, by Agriculture Universities or by competent seed growers under strict supervision of experts from NSC. This class of seed should be produced in the area of adaptation of the concerned variety.

10.5 Registered Seed: Registered seed is produced from foundation seed or from registered seed. Registered seed is genetically pure and is used to produce certified seed or registered seed. It is usually produced by progressive farmers according to technical advice and supervision provided by NSC. Often registered seed is omitted and certified seed is produced directly from foundation seed; this is the general practice in India.

10.6 Certified Seed: Certified seed is produced from foundation, registered or certified seed. This is so known because it is certified by a seed certification agency, in this case State Seed Certification Agency, to be suitable for raising a good crop. The certified seed is annually produced by progressive farmers according to standard seed production practices. To be certified, the seed must meet the prescribed requirements regarding purity and quality. Certified seed is available for general described to farmers for commercial crop production. Its production is generally by State Seeds Corporations, but NSC also undertakes the supervision of certified seed production, if required. The production of breeder and foundation seeds is very costly since a very high standard of purity

must be maintained. The requirements for certified seeds are relatively less rigid than those for foundation seed, and hence it is considerably cheaper.

Requirements for Certified Seed

10.7 Seed has to meet certain regid requirements before it can be certified for distribution. The first and foremost requirement is that the seed must be of an improved variety released by either the Central or a State Variety Release Committee for general cultivation and notified by the Ministry of Agriculture and Farmers Welfare, Government of India; this is essential for the seed to be certified. The other requirements are related to genetic purity, freedom from weeds, diseases and pests, germination etc. It may be noted that there is considerable variation in the requirements for certification in various crops. In certain cases, e.g., maize, the requirements are more rigid than in the others.

High-Yield Crops

10.8 High-yield agricultural crops are those that have been bred, genetically modified, or fertilized to increase their production yields. The health and well-being of the world's growing population are largely dependent on the ability of the agricultural industry to raise high yielding food and fiber crops. No one knows for certain when the first crops were cultivated. At some time in the past, people discovered that seeds from certain wild grasses could be collected and later planted where they could be controlled during the growing process and eventually harvested for food.

Hybrid Seed

10.9 In agriculture and gardening, hybrid seed is seed produced by cross-pollinated plants. Hybrid seed production is predominant in agriculture and home gardening. It is one of the main contributors to the dramatic rise in agricultural output during the last half of the 20^{th} century. The alternatives to hybridization are open pollination and clonal propagation.

10.10 All of the hybrid seeds planted by the farmer will produce similar plants while the seeds of the next generation from those hybrids will not consistently have the desired characteristics. Controlled hybrids provide very uniform characteristics because they are produced by crossing two inbred strains. Elite inbred strains are used that express well-documented and consistent phenotypes (such as high crop yield) that are relatively good for inbred plants.

10.11 Hybrids are chosen to improve the characteristics of the resulting plants, such as better yield, greater uniformity, improved color, disease resistance. An

important factor is the heterosis or combining ability of the parent plants. Crossing any particular pair of inbred strains may or may not result in superior offspring. The parent strains used are therefore carefully chosen so as to achieve the uniformity that comes from the uniformity of the parents, and the superior performance that comes from heterosis.

11. Cropwise Area (Irrigated and Unirrigated)

11.1 The classification system for crops has been used for coding system of them for the purpose of Agriculture Census and Input Survey, which can be seen at Annexure-IX.