

1. CROP ESTIMATION SURVEYS ON FOOD & NON-FOOD CROPS

For arriving at the production estimates of a crop, two parameters viz., area of the crop and productivity of the crop are necessary. Among these two parameters, the productivity estimate is much more sensitive than the area. Therefore, necessary care should be taken in following the procedures for estimating the productivity of a crop.

In order to estimate the average yields per hectare of principal crops and their total production in the State, sample surveys (Crop Estimation Surveys) based on the principles of random sampling are organized by this Directorate. Under this survey, certain number of villages for each crop is selected by adopting standard sampling techniques and crop yield per hectare (productivity) is estimated by conducting crop cutting experiments in randomly chosen fields within the selected villages.

Objective:

The objective of Crop Estimation Surveys is to obtain the estimates of average yield per hectare (productivity) and total production of principal crops, both at District and State levels by conducting crop cutting experiments. The scheme is being implemented from 1950-51 onwards in the State.

A crop cutting experiment for any specified crop involves marking of experimental plot of specified size in the selected field, harvesting, threshing and weighing of the produce obtained from it. In a specified number of cases, the produce so obtained will be stored and dried for a further period in order to determine the weight of the dried produce. The following crops are covered under this survey.

| Sl. No. | Food Crops | Non-Food Crops |
|---------|-----------------------|--------------------|
| 1 | Paddy (Rice) (K & R) | Groundnut (K & R) |
| 2 | Jowar (K & R) | Sesamum (K & R) |
| 3 | Bajra (K) | Castor (K) |
| 4 | Maize (K & R) | Sunflower (K & R) |
| 5 | Ragi (K & R) | Soyabean (K) |
| 6 | Korra (K) | Cotton (K) |
| 7 | Redgram (K) | Chillies (K & R) |
| 8 | Greengram (K & R) | Sugarcane (K) |
| 9 | Blackgram (K & R) | Mesta (K) |
| 10 | Horsegram (K & R) | Tobacco (R) |
| 11 | Bengalgram (R) | |

K – Kharif, R – Rabi

Planning and Designing:

A **Multistage Stratified Random Sampling** with the Mandal as the stratum, villages within the stratum as first stage units, the field in the selected village as the secondary unit of sampling and the plot of the specified size within the field as the ultimate unit of sampling shall be adopted for carrying out crop cutting experiments.

The sample size i.e. the total number of sample villages for each crop will be fixed at the State level by the Directorate so as to give estimates of average yield with a desired degree of precision at the State level. The total number of sample villages will then be allocated to different districts and different Mandals within a district in proportion to the area under the crop in the District/ Mandal. The required number of villages arrived at on the above lines will then be selected at random from the list of villages selected under T.R.A.S. Programme during the year. From each selected village two experiments shall be conducted and for this purpose two survey numbers growing the crop will be selected at random. In the selected field a plot of the specified size will be located randomly for conducting the crop cutting experiment. The procedures and techniques involved in the Survey have been finalized based on the results of pilot surveys carried out by the "Indian Agricultural Statistics Research Institute" (**IASRI**), New Delhi.

At State level, based on the Percentage Standard Error obtained for a crop during the previous year, the plan size of crop will be decided.

District level: The sample size at State level will be distributed to the districts in proportion to the area under the crop in the district. For this purpose, previous 3 years average area of the crop will be considered.

Mandal level: Similarly, the sample size at District level will be distributed among the mandals in proportion to the area under the crop in the mandal. For this purpose, previous 3 years average area of the crop will be considered.

Primary Workers: For conducting the crop cutting experiments, the field staff is drawn from the Statistics, Agriculture, Horticulture and Sugarcane Departments. The Assistant Statistical Officers of DES working at Tahsil Office, AEOs/Agriculture officers, Horticulture Officers for Horticulture crops, Sugarcane Inspectors for Sugarcane crops are generally be the primary workers/supervisors for conducting of Crop Cutting Experiments.

Forms to be submitted:

The details of selection and experimental results are collected in three different forms which are detailed below:

- (i) Form – I - This contains information on selection of survey numbers, name of the crop, condition of the crop sown, source of irrigation, expected harvest date, particulars of farmer etc. (This should be sent to Chief Planning Officer after the sown crop is stabilized and at least one month prior to harvest of the crop.)
- (ii) Form – II - This gives information on plot yields, inputs, irrigation facility etc. (This should be dispatched to the CPO immediately after harvest of the crop in the experimental plot.)
- (iii) Form – III - This provides information on driage experiment results. (This form should be sent to the CPO immediately after ensuring the constant weight of the produce)

METHODOLOGY:

Selection of Villages for Crop Cutting Experiments:

Common villages are now being selected for both food and non-food crops and for Kharif and Rabi seasons.

The sample villages for conducting CCE are drawn from the villages selected under the TRAS programme during current year. If sample size (i.e.) villages under a particular crop exceeds the number of villages in the current year's TRAS list, the remaining sample villages should be selected from the balance villages of the mandal as per census codes.

Example: If there are 20 villages in a mandal, every year, 4 villages would be covered under TRAS. If the sample size is 6 villages, the remaining 2 villages will be selected from balance 16 villages of mandal as per census codes.

If the experimental crop is not grown in at least two survey numbers in the selected village, the same should be brought to the notice of the Assistant Statistical Officer who in turn will arrange for a substitute village. The substitute village should correspond to the village bearing the next higher serial number in the TRAS list. In the process of substitution, the TRAS list for that year should be first exhausted. If no village in that list has the experimental crop, the substitute village will be taken from the balance villages as per census codes, the 1st village in the serial order from the list of remaining villages. The primary worker should, therefore, address the concerned CPO/ASO sufficiently in advance if any substitution is required. The same random numbers allotted to the original village should be used for the substitution of the village.

In accessibility of a village or prior harvest of crop in the village cannot be considered as valid reason for substituting a village or survey number. In such case, the experiments are treated to have been lost due to the negligence of the primary worker and he will be held responsible for the loss of the experiments.

During the Kharif season, experiments are planned separately for the Irrigated and un-irrigated categories of paddy. If the selected village is not sown with the experimental crop/category of crop in at least two survey, the village will then be substituted with the crop growing village. For instance, if a village is selected for carrying out experiments on irrigated paddy then, the village must have at least two survey numbers growing irrigated paddy.

Selection of Survey/Sub-division Number and Field: The selection of a field will be done in three distinct stages:

- I. Selection of Survey Number;
- II. Selection of a sub-division number within a survey number; and
- III. Selection of a field within a survey or sub-division number.

Selection of Survey Number:

For each selected village two random numbers are assigned for selection of two survey numbers for the conduct of two experiments (one random number for each experiment in the village). The highest survey number in the village may be higher, equivalent or lower than the random number assigned. Procedure for selection of survey number is as follows:

- If the assigned random number is lower than or equivalent to the highest survey number, then the survey number corresponding to the random number will have to be selected.
- If the random number is higher than the highest survey number in the village, then the survey number corresponding to the remainder obtained by dividing the random number by the highest survey number shall be selected.
- If the remainder is zero, select the highest survey number.
- If both the random numbers lead to the selection of the same survey number, the survey number so obtained will be selected for the first experiment and the next higher survey number will be selected for the next experiment.
- If the selected survey number does not grow the required crop, select the next higher survey number growing the experimental crop.

- If in the process the highest survey number is reached without obtaining field with the crop, then continue with the survey number one and proceed until you get a survey number with the required crop.

Example: Suppose Kesavaram Village is selected for conducting crop cutting experiments on Paddy.

| Village Selected | Crop | Random numbers assigned | |
|------------------|-------|-------------------------|---------|
| Kesavaram | Paddy | Expt-I | Expt-II |
| | | 1165 | 0281 |

Suppose the highest survey number in the village is 350, the random number assigned for the 1st experiment is 1165 and since this number is higher than the highest survey number i.e., 350, the Random number is to be divided by the highest survey number for arriving at the remainder. The remainder is 115. The experiment-I, will be conducted in the survey number 115. If it does not contain the experimental crop, next higher survey number i.e., 116 will be selected for conduct of crop cutting experiments. If that too does not contain the experimental crop, the process will be repeated till a survey number growing the crop is obtained. If in this process, the highest survey number i.e. 350 is reached then the process of selection will be started from survey number 1 and so on, till the survey number with experimental crop is located.

The random number assigned for the second experiment is 0281. Since it is lower than the highest Survey Number, the Survey No. 281 is selected. If the survey number 281 does not contain the required crop the next higher survey number is to be selected and the process is repeated as stated earlier.

When the selected village is partly or wholly un-surveyed, the paimash or patta numbers are selected using the random numbers assigned as before. When the Paimash/Patta numbers are also not available, then the names of the owners of the fields are numbered serially or arranged in the alphabetical order, assign serial numbers starting from one for selection.

Selection of Sub-division Number:

If the selected survey number is further sub-divided into sub-divisions, one sub-division number will have to be selected from out of these sub-division numbers. If the selected survey number is numerically smaller than the number of sub-divisions in it, then the same sub-division number will be selected for the conduct of experiment. If on the other hand,

the survey number is higher than the number of sub-divisions in it, the survey number has to be divided by the number of sub-divisions in it and the sub-division number corresponding to the remainder will have to be selected for experimentation. If the remainder is zero then, the highest sub-division number will have to be selected. If the selected sub-division number is not sown with the required crop then the next higher sub-division number sown with the crop is to be selected. The process shall be repeated till experimental crop is located.

Example1: Suppose the selected survey number is 116 and there are 6 sub-divisions in it viz., 116/1, 116/2-A, 116/2-B, 116/3, 116/4 and 116/5. Since the selected survey number i.e., 116 is greater than the number of sub-divisions in it i.e. 6, then 116 will be divided by 6 and the remainder is obtained as 2. The sub-division corresponding to the remainder i.e., 116/2-A in the example is selected for the conduct of experiment. If this sub-division is not sown with the experimental crop the next higher sub-division number sown with the experimental crop is selected.

Example 2: Suppose the selected survey number is 2 and there are three sub-divisions in it viz., 2/1, 2/2, 2/3. The sub-division number 2/2 is selected for conducting the experiments. If it is not sown with the crop, the next higher sub-division number raising the crop is selected for experimentation.

Amalgamation and merger: If the selected survey / sub-division number is amalgamated with its adjacent survey/sub division number and if there is no clear demarcation between the two numbers, the entire field consisting of the selected survey number and amalgamated survey number should be taken for conducting the experiment irrespective of the fact whether such amalgamation is recorded or not in the village records.

If the two experiments happen to fall in the same amalgamated number, then the highest survey number growing the experimental crop is selected for second experiment.

Selection of Field:

A field for the purpose of crop cutting experiments is defined as a distinct patch or a portion of land grown with the crop under experimentation which has no bunds within it and which is demarcated on all its sides by means of crop or crops different from the one grown in the patch. The differences in the variety or strain in the same category of crop or the experimental crop with different constituent crops sown in the mixture therein or an abrupt change in the direction of rows will, for this purpose, be deemed to constitute a different field.

A field growing experimental crop as mixture with other crops will also be considered for experimentation provided the area under the experimental crop should not be less than 10 per cent of the cropped area in the field.

If the selected survey/sub-division number contains more than one field growing the experimental crop:

- The field nearest to the **South-West** corner of the survey/sub-division number is to be selected.
- If two or more fields growing the experimental crop are equidistant from the **South-West** corner, then select the field which is southern most.
- If the selected field cannot accommodate the experimental plot, the selected field should be rejected and the field to its right will have to be selected, and if that too does not accommodate the plot, the process will be repeated by proceeding in the **anticlock-wise** direction till a field which can accommodate the experimental plot is selected.
- If none of the fields in the selected survey/sub-division number is big enough to accommodate the plot, then the survey/sub-division number should be rejected and the next higher survey/sub-division number should be taken for selection of the field.

Precautions to be taken at the time of field selection:

The following precautions are to be taken at the time of selection of survey number and field.

- i) If the crop is raised for the purpose of fodder or seed and is entered accordingly in the Adangal/Pahani, then the survey number should be rejected for conducting the experiments and, a fresh field be selected according to the procedure mentioned above.
- ii) If the crop has not germinated or it has failed and its area is not recorded, then the survey number should be rejected for experiment. If on the other hand, the area is booked in the Adangal/Pahani then, the experiment should be conducted in the same field and the yield should be recorded as Zero, if there is no yield.
- iii) Also if the crop in the selected field is dried up or has withered away, poor growth subsequent to the booking of crop either due to drought or for any other reason, the experiment has to be conducted in the same field and if there is no yield the yield should be recorded as zero.
- iv) If the experimental crop has withered away and another crop has been raised in the same field during the same season and the area of the crop raised subsequently is booked then the selected survey number in which the experimental crop first grown should be rejected and another number growing the experimental crop will be selected by following the prescribed procedure.

- v) Where part of a field has been grazed away by cattle and the experimental plot falls in the grazed part of the field the yield obtained from the experimental plot whatever it be should be recorded. If there is no yield, it should be recorded as Zero.
- vi) No substitution is necessary because of prior harvest of crop by cultivators without intimation or late visit by primary workers. The experiment has to be treated as **lost** if a part or whole of the selected field has been harvested.

Location of experimental Plot:

In each selected field an experimental plot of specified size will be located at random. The position of the experimental plot within a field is determined by means of a pair of random numbers, one for length and the other for breadth. For conduct of CC experiments two specified sizes of **square plots** are being adopted.

The plot size to be adopted for different Food and Non-Food crops is as follows:

| Sl. No. | Name of the Crop | Dimension of the plot |
|---------|------------------|--|
| 1 | Paddy | 5 meters (X) 5 meters Diagonal – 7.07 meters (approximately 7 meters and 07 centimeters) |
| 2 | Jowar | |
| 3 | Bajra | |
| 4 | Ragi | |
| 5 | Maize | |
| 6 | Groundnut | |
| 7 | Tobacco | |
| 8 | Sugarcane | |
| 9 | Korra | |
| 10 | Greengram | |
| 11 | Chillies | |
| 12 | Mesta | |
| 13 | Horsegram | |
| 14 | Blackgram | |
| 15 | Bengalgram | |
| 16 | Sunflower | |
| 17 | Soyabean | 10 meters (X) 10 meters Diagonal – 14.14 meters (approximately 14 meters and 14 centimeters) |
| 18 | Redgram | |
| 19 | Castor | |
| 20 | Sesamum | |
| 21 | Cotton | |

After selection of the field, the South-West corner of the field is to be located. If the field is of irregular shape and the sides are not exactly North-South and East-West, in such circumstances convert the field to either square or rectangle by drawing imaginary lines, so as to give shape to the selected field. Then, the corner which is approximately South-West may be taken as starting point. If you stand at this point facing north, then the selected field should be in front of you and to your right side.

After location of South-West corner the measurements length (along the longer side) and the breadth (along the smaller side) of the field are taken in steps from the South-West corner.

Location of Plot:

The following procedure should be adopted in locating the experimental plot for the crops not sown in rows, one side or both sides:

After measuring length and breadth of the selected field in steps, if the plot size is 5M X 5M, 7 steps each from length and breadth are to be deducted to ensure that the whole plot is accommodated within the selected field (7 steps are approximately equivalent to 5 M). If the plot size is 10Mx10M, then the number of steps to be deducted from both length and breadth is 13. A pair of random numbers, one for the length and the other for the breadth, which are less than or equal to the net number of steps obtained after deducting 7 steps from the total number of steps for length and breadth, by consulting the random columns assigned to the Mandal for determining the South-West corner of the experimental plot are chosen.

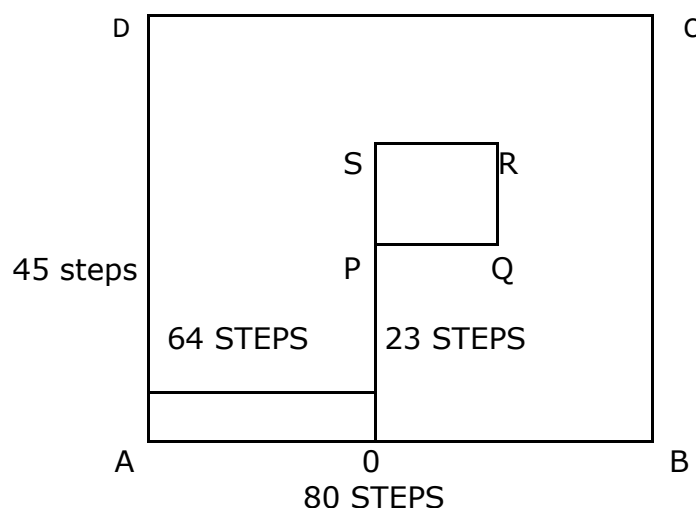
Example: Suppose the length and breadth of the field is as follows:

| Measurements | Length in Steps | Breadth in Steps |
|---|------------------------|-------------------------|
| Measurement of the selected field | 80 | 45 |
| Deduct | 7 | 7 |
| Net number of steps after deducting 7 steps | 73 | 38 |

Then a random number not greater than 73 is to be selected by referring a two digit column assigned to the Mandal (since 73 is two digit number). Suppose the assigned column is 4, the first number of the column which is less than or equal to 73 is 64. Select this random step number for length. Similarly another random number which is less than or equal to 38 from the same column i.e., column 4 is selected by reading down below 64. The number not greater than 38 occurring after 64 is 23. Select this random step number for breadth.

The pair of random numbers selected for locating the plot is therefore (64, 23). If another pair of two digit random numbers is to be selected for any other purpose, the numbers appearing below 23 from the same column will be chosen by following the same procedure. If the assigned column is exhausted, the next column on the right will have to be referred. If the experimental plot based on the selected pair of numbers i.e. (64, 23) falls wholly or partly outside the field owing to the irregular shape of the field, the random numbers should be rejected and another pair of random numbers should be selected so that the plot may fall wholly within the field.

Marking of the Plot: This should be done on the date of harvest with the help of random numbers selected. The South-West corner of the plot will first be fixed. For instance, if the pair is 64 and 23, walk from the South-West corner of the field 64 steps. From this point walk into the field in a direction perpendicular to the length 23 steps. Fix a peg here. This will be the S.W. corner of the plot. From this point proceed along the length of the field (parallel to length) and fix a peg at a distance of 5M. This will be the second corner of the plot. Using the tape proceed along the direction perpendicular to the base line away from the starting point of the field. Fix a peg at a distance or 5M from the peg. This will be the third corner of the plot provided the distance of the diagonal between the first peg and this point is 7.07 meters approximately. Determine the fourth corner of the plot at a distance of 5M from the starting point in a direction perpendicular to the base line. Check up the diagonal between the 2nd and 4th to see whether it is 7.07 meters (approximately). Measure the distance between 3rd and 4th pegs and see that it is 5 meters. The position of the experimental plot in the field will be as follows:



ABCD is the field
 AB= CD= 80 steps
 BC= AD= 45 steps

A is the S.W corner of the field
AO = 64 steps
OP = 23 steps
P is the S.W corner of the plot
PQRS is the experimental plot
PR = 7.07 M
QS = 7.07 M

Crops sown in rows:

1. Sown in one direction:

The crops sown in one direction generally are:

1.Redgram 2. Sugarcane 3. Castor 4. Cotton, 5.Tobacco

The above crops are generally sown in distinct (separate) rows. In such cases the following procedure should be adopted.

Location of the plot:

Starting from the South-West corner of the field the total number of rows in the field will be counted first and conventionally this side will be identified as breadth and the other side as the length of the field. In case of the fields of regular shape in rectangle or square, the length of the outlying row from the S.W. corner is measured in steps. However, if the field is irregular enclose the field in a minimum rectangle and measure the length of the longest row in steps. In order to ensure that the selected field contains wholly the selected plot from the total number of rows deduct the average number of rows contained in 5 M (in the case of Sugarcane and Tobacco for which the dimensions of the plot are 5Mx5M) or 10M length (in the case of Castor, Redgram and Cotton for which the dimension of the plot are 10M x 10M). The average number of rows contained in 5M will be deducted before selecting random row for fixation of experimental plot, arrived at by taking 3 observations in the selected field at three different places. Further in order to ensure that the last row is not omitted from inclusion in the universe a random number less than or equal to the number arrived at by adding one to the net number of rows obtained after deducting average number of rows contained in 5 M from the total number of rows is selected.

This random number determines the random row which will be the first row to be included in the plot from the South-West corner. The random numbers **0 or 00 or 000** should be **rejected**.

Subtract 7 steps (for Sugarcane and Tobacco) and 13 steps (for Redgram, Castor and Cotton) from the length of the outlying row, or the longest row in the case of an irregular field and select a number equal to or less than this remainder. This will be the random step number.

From the starting point of the random row, measure a distance in steps along the row equal to the random step number and fix a peg in the inter space between the selected row and the preceding row. This will be the South-West corner of the plot.

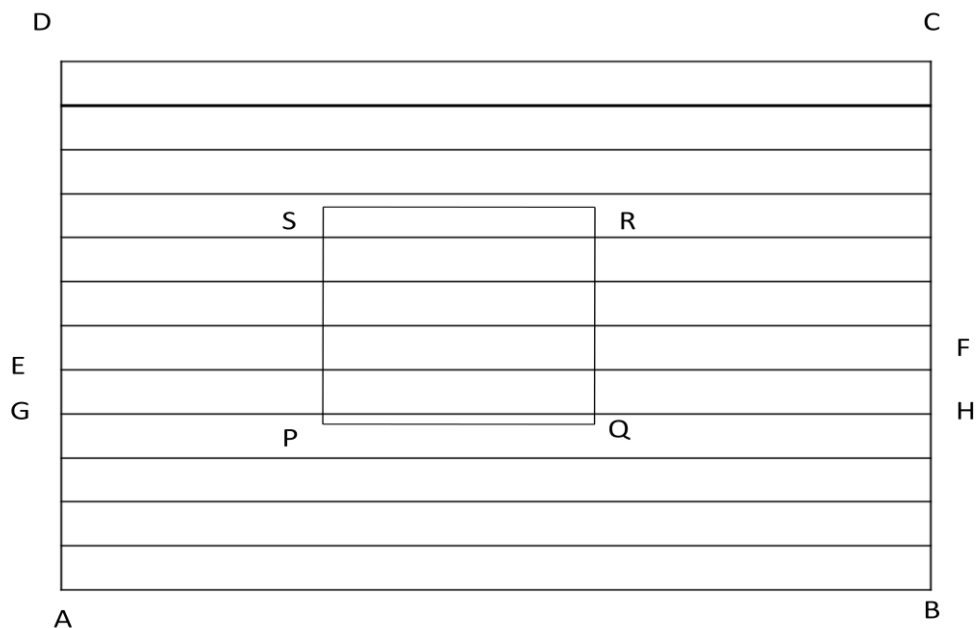
Marking of the Plot: This may be done on the date of harvesting. From the starting point of the experimental plot measure a distance of 5M (for Sugarcane and Tobacco) 10M (for Castor, Redgram and Cotton) along the random row away from the starting point and fix a second peg in the inter-space. From this peg proceed in the direction perpendicular to the row and count the number of rows contained in a distance of 5M (for Sugarcane and Tobacco) and 10M (for Castor, Redgram and Cotton) which were determined earlier. Fix the third peg at the center of the inter-spacing between the last row selected and the succeeding row. Then proceed from this peg along the inter-spacing and towards the starting point of the field and measure a distance of 5M for Sugarcane and Tobacco, 10M for Redgram, Castor and Cotton and fix a peg at this point which will be the fourth corner of the plot. Count the number of rows in between the 1st and 4th pegs and ensure that it is equal to the number of rows between the second and third pegs.

Example: Suppose the experimental crop is Sugarcane and the total number of rows in the selected field is 65. Suppose on an average 6 rows are accommodated in 5M. (This is determined by taking 3 observations at 3 different places in the selected field itself). The remainder after deducting 6 from 65 is 59. In order to ensure that last row does not get excluded from selection, add one to 59, which will make 60. Select a random number not greater than 60 by consulting the assigned column.

If the assigned column is two for selecting two digit number randomly then 22 which is the 1st in that column and which is less than 60, is selected. The 22nd row, starting from the S.W. corner of the field is the required random row or the first row that gets included into the experimental plot. Suppose the longest row is 115 steps. Deduct 7 steps from it and the remaining length is 108. Since this is a three digit number, the three digit random number columns will have to be consulted for selection of random number for fixation of South-West corner of the experimental plot. Suppose the assigned column is 1. The first number in this column not greater than 108 is 010. To locate the S.W. corner of the plot start from the South-West of the field and walk up to the 22nd row. Again starting from the mid-point, in the inter-spacing between the 21st and 22nd rows, walk in the direction along the row and stop at a distance of 10 steps and fix a tall peg at the mid-point. This will be the starting point of the experimental plot.

If the plot does not fall wholly within the selected field, reject the first pair of random row and step numbers and select another pair of random numbers.

From the starting point of the experimental plot measure a distance of 5M along the random row away from the starting point and fix a second peg in the inter-space. From this peg proceed in a direction perpendicular to the rows and count the number of rows contained in a distance of 5M (i.e. 6 rows in this example). If the point falls in the inter-spacing between two rows, adjust the point at the center of the inter-spacing and fix up a peg at this point. Then proceed from this peg along the inter-spacing and towards the starting point of the field and measure a distance of 5 metres along the inter-spacing and fix up a peg at this point which will be the fourth corner of the plot. Count the number of rows in between the 1st and 4th pegs which should be equal to the number of rows between the second and third pegs. The position of the experimental plot in the field will be as follows:



ABCD is the field. A is the South-West corner of the field. Starting from A count the number of rows along AD-EF is the 22nd random row selected. GH is the proceeding row i.e., 21st row. P is the South-West corner of the plot. PQ-RS-5M. But the sides PS and QR may not be exactly equal to 5M. The actual length of PS and QR and the diagonals PR and QS may be measured and noted. PQRS is the plot selected.

The four sides of the plot so marked as also the diagonal through the S.W. corner should be measured and the actual dimensions recorded in the relevant columns of Form-II and a rough sketch of the same be appended.

2. Crops sown in rows in both directions:

When the crop is sown in rows in both the directions the procedure to be followed is slightly different from the procedure indicated above for Redgram, Sugarcane, etc. Tobacco crop is sown in rows in both directions along the length and the breadth.

The total number of rows on the length side as well as on the breadth has to be taken into account. Count the total number of rows along the longer side and then along the shorter side. Deduct the average number of rows falling in a distance of 5Mts. from the length side and 5Mts. from the breadth side. To include the last row in the sample, the next higher number than the reduced number of rows along the length should be taken into account for selecting the random row. Similarly for the breadth side, select a random number equal to or less than the enhanced number for the length and also for the breadth. The random numbers 0, 00, 000 should be rejected.

From the South-West corner of the field, walk along the length of the field and step at the mid-point of the inter-space between the selected random row (length) and the previous row. From this point walk into the field between the rows so as to reach the mid-point of the inter-spacing between the selected random row (breadth) and the previous rows. This point determines the South-West corner of the plot. From this point walk along the length side between the inter-spacing in a direction parallel to the length and away from the South-West corner point of the plot so as to include the average number of rows contained in 5 mts. along the length. This will be the second point. From this point proceed into the field along the breadth so as to include the average number of rows contained in 5 mts. and fix a peg at this point being the third point. Then proceed from this point along the inter-spacing on the length side towards South-West corner including the average number of rows falling in 5 mts. and fix a peg at this point which will be the fourth point of the experimental plot.

CROP MIXTURES

Proportion of constituent crops in a crop mixture:

Crops like Redgram, Jowar, Bajra, Maize, Groundnut, Cotton, Sesamum etc., are often sown in mixture along with other crops. Complete information regarding the crop mixtures should be given in Block 9 of Form I and item 2.3 of Form II. This information should be furnished completely as any omission in this regard will otherwise lead to rejection of experiments.

Mixed crops may broadly be classified into two categories:

- (i) Fields in which the constituent crops are sown in separate rows.
- (ii) Fields in which constituent crops are sown otherwise than in separate rows.

When the crop under experimentation is sown in separate rows:

In case of constituent crops sown in separate rows, particulars should be given in Form-I and Form-II at appropriate columns.

For the purpose of estimating the proportion of the experimental crop in the field two types of information are necessary. Firstly, the position as observed in the field should be known. The average number of rows of each crop falling in a distance of 5 Meters or 10 Meters (depending on the plot size) should be reported in Form I while the actual number of rows falling in the experimental plot should be reported in Form II. Since the distance between the rows may not uniformly be the same in the field, three measurements at different places should be taken and average distance is to be arrived at and furnished in Form-I. For instance, if Redgram and Groundnut are sown mixed in separate rows in the selected field the average number of rows of each crop contained in a distance of 10 Meters should be worked out as shown below:

| Reading | Distance | Redgram Rows | Groundnut Rows |
|-------------------------|----------|--------------|----------------|
| 1 st Reading | 10M | 6 | 34 |
| 2 nd Reading | 10M | 4 | 36 |
| 3 rd Reading | 10M | 5 | 35 |
| Total for 3 Readings | 30M | 15 | 105 |
| Average | 10M | 5 | 35 |

The second type of information refers to the normal distance required between two rows of experimental crop for raising it as pure crop. This information should be furnished without omission as without it, it will not be possible to estimate the proportions. Even if the concerned cultivator is not in the habit of raising pure crops, the general practice in the Village or in the Mandal/District should be reported. The relevant particulars should be reported in Form-I and Form-II.

When the experimental crop is sown otherwise than in separate rows:

In the second category of crop mixtures, the experimental crop is sown mixed with the other crops in the field. The experimental crop may be sown in mixed rows i.e. with two or more crops sown within a row or otherwise. In this case, particulars should be given in Form-I and Form-II at appropriate columns.

For the purpose of estimating the proportions of the experimental crop in

the field, two types of information, viz., (i) the position, as observed in the field, and (ii) the position with regard to pure crop should invariably be furnished.

Quantity of seed of different crops actually sown in the field should be given crop-wise in terms of Kgs. per acre against item 9.3 (b) (i) of Form I and 2.6 (b) (i) of Form II. For instance, if 2 Kgs. of Redgram and 70 Kgs. of Groundnut seed are sown in mixture in a field of about 2 acres, the seed sown per acre should be reported as 1 Kg. of Redgram and 35 kgs. of Groundnut seed.

The second type of information refers to the seed requirements for raising as pure crops. This information should be furnished without omission as in the absence of it, it will not be possible to estimate the proportion of the crops in the mixture. Even if the cultivator is not in the habit of raising pure crops, the general practice in the village of the Mandal/District should be reported. These particulars have to be furnished in Form I and Form II.

Method of Harvesting:

Harvesting of the plot will be done when the crop is fully mature and at stage commonly adopted in the locality. The harvesting date should have been fixed on the date of selection of the field in consultation with the cultivator. There might however, be change in the date, which in every case must be ascertained in advance, the approximate harvest date. The harvest should not on any account be missed. The field worker should not also attempt to alter the date to suit his convenience. He should not fix a date on which the crop is either under-ripe or over-ripe. Further, it is essential not to allow any portion of the selected field to be harvested until the crop in the experimental plot is harvested. He should ensure that the experimental plot is clearly demarcated in advance and 4 corners of the plot area fixed with pegs correctly, and a string connecting these pegs all around the plot is tied. The string must be stretched tight and plants along each side examined. The procedure to be followed in regard to the harvesting operations on different crops is briefly indicated below.

Paddy:

In case of Paddy while marking the plot inside the field, due care should be taken to see that there is minimum trampling and loss of plant or produce. In respect of plants which lie on the line formed by the string, the plants which have more than half the number of tillers lying outside the plot will be excluded from the plot and all plants which have half or more of these tillers inside the plot formed by the string will be included. Care should be taken to gather all harvested plants lying within the marked plot and no ear-head is left in the field and all of them are taken to a convenient threshing floor and are spread on a piece of cloth, gunny or mat.

These can be dispensed with if a clean paved floor without crevices be available. After drying for a few hours the grains should carefully be threshed by beating against a hard block or by treading beneath a cloth or hessian. All the grains should then be collected and winnowed carefully. Care should be taken to see that there is no loss in the produce at different stages of harvesting, at the time of carrying from the field to the threshing ground, threshing , winnowing, cleaning and weighing. Particular care should be taken to see that the grains are separated from all ear-heads and the grain so obtained is free from chaff and other foreign matter. The cleaned produce thus obtained should then be weighed to the nearest deca-gram and the results be recorded in Form II.

Milletts (Jowar, Bajra, Maize, Korra and Ragi):

Harvesting should be done by cutting the cobs or ear-heads only and not the whole plant as in the case of Paddy, taking care to see that not more than 5 Cms. Stalk remain with each cob. When the cobs or ear-heads are not uniformly mature it will be necessary to harvest the same a second time and also a third time as well following the local practice. This supplemental harvest should never be skipped and care should be taken that the plot does not get harvested by the ryot. The number of cobs and their weight should be recorded in Form II. For Ragi and Korra the number of ear-heads need not be counted in view of the workload involved. In case of Maize, the cobs should be counted and weighed after removing the sheaths over the cobs.

Groundnut:

In the case of bunch type, harvesting is done by pulling up the plants located within the plot and when the soil is hard hand hoes are used and the pods are collected. In the case of spreading type the plants located within the experimental plot will be dug up or a guntaka (blade harrow) is used for lift of vines easily. Care should be taken to collect all pods left behind. In the case of spreading variety all pods lying within the marked boundary of the plot irrespective of the fact whether a part or whole of the plants lie within or outside the marked boundary of the plot will be considered as experimental produce. In the case of bunch variety the pods of all plants lying within the boundary of the plot will be considered as experimental produce irrespective of the fact whether some of the pods of these plants lie outside the marked boundary of the plot. The pods will then be separated from the plants and the earth sticking to the collected pods will be removed by gently rubbing them against each other, the cleaned pods thus obtained will be weighed and the weights will be recorded in Form II.

Redgram, Sesamum, Soyabean, Horsegram, Blackgram, Greengram and Bengalgram:

Harvesting of these crops should be done when they are just ripe. Over ripening should be avoided to prevent splitting of the capsules (especially sesamum) containing the seed. In case of Redgram and Sesamum the stems should be the criterion for inclusion or exclusion of the plants along the string enclosing the experimental plot. In case of the plants standing exactly on the border line, the plants having more than half of the branches within the experimental plot, should be included in the plot, and those which have more than half of the branches outside, should be excluded. After demarcation of the plants included in the plot, the plants are generally cut at the base or pulled up as a whole and tied in bundles, numbered carefully and then stocked on a mat or gunny bag or hessian cloth for drying. However, local practice in harvesting should be adopted. In case of Sesamum crop the harvested plants are stocked upright on a gunny bag or mat for at least 5 days. When all the capsules dry up completely, the dried plants are invested shaking then thoroughly to shed the seed. The plants may also be spread on a cloth or bag or on a floor and beaten with sticks. The seed is then cleared from the extraneous matter and weighed. The weight is recorded in Form II. There is no need to send Form III for Sesamum.

When Green gram is harvested by cutting the plants at the base or pulled out, they should be tied up in bundles and kept for drying for 4 to 5 days. When they are fully dried up, they should be threshed on a clean floor or on a hessian cloth. The threshing operations should be done as per local practice. However, it should be ensured that no grains are left over. The weight of processed cleaned and dried seed should be recorded in Form II under 5.4(d). There is no need to send Form III in such type of harvesting.

In some areas Greengram is harvested in two to three pickings. The harvested produce will be in the form of capsules which should be weighed and kept for drying duly marking identity particulars of the plot and picking number. Picking should preferably be done in the morning hours to avoid splitting up of the capsules. Care should be taken to see that the plot markings are not disturbed throughout all the pickings. In case of pickings the results should be furnished in Form II under relevant columns as in the case of Castor.

Castor:

Harvesting is commenced when capsules begin to ripe. The harvested produce is in the form of capsules at the picking time. The plot should be marked till all the pickings are made at suitable intervals according to the local practice.

Care should be taken that the pegs and the rope are not disturbed but even if the rope is removed, it should be refastened, to mark the plot at the time of the next picking. The capsules should be gathered before shedding. The weight of un-dried capsules obtained from each picking should be recorded in the appropriate columns of Form II.

Cotton:

Cotton is harvested in 3 to 5 pickings taken out at suitable intervals of 7 to 10 days. Out of the total pickings gathered, the middle pickings are usually the heaviest and important. It should be ensured that the pegs at 4 corners of the plot remain fixed in their position throughout the picking season and that during each picking the boundary of the plot is clearly demarcated by means of a rope. It is better if the pickings are done in the early hours to ensure clean pickings free from broken leaves and twigs. The produce of each picking should be weighed after allowing about an hour for drying of Kapas and recorded in the relevant column of Form II. A final single weighment of the Kapas gathered from all the pickings is also to be made at the time of final picking so as to serve as a cross check. The produce will then be returned to the cultivation.

Sugarcane:

Harvest the cane within the boundary of the plot according to the local practice. If the boundary line of the plot cuts across a clump only those canes whose bases lie within the plot should be included in the harvest of the plot. Remove the unripe top of the cane covered with leaves and strip the canes before making weighment as per the local practice. Weigh the produce to the nearest half K.G. with the help of the spring balance after duly testing the accuracy of the balance.

Operations for estimating the cane to Jaggery ratio will be carried out by the field worker for the two plots in the first village of the list assigned to him if facilities for crushing the cane, preparation of Jaggery etc., are available. In case, they are not available in the first village, the next village in serial order should be selected for this purpose. These experiments should be carried out with the cane harvested from the selected fields in the village. The quantity of cane to be taken for conducting these operations may be about 1 to 2 quintals. The exact quantity may be adjusted as to get one or two full pans of juice. All the operations should be done according to the local practice. Record the results in Form III. The cane or Jaggery should be returned to the cultivator after the weighments are made.

Tobacco:

The method of harvest, curing and processing differ widely and depend on the type of tobacco grown and the use to which it is put. This has to be carried out in accordance with the local practice depending on the variety grown in the selected field.

In the case of Virginia Tobacco, ripened leaves of uniform maturity are picked. The ripening of the leaves commences from bottom to top and leaves are harvested in stages beginning from the cool hours of the day either in the morning or evening. Two to four leaves are picked at a time and harvest is completed in 6 to 8 with an interval of few days for each picking depending on the growth of the crop.

In the case of Country Tobacco, harvest is completed by cutting the whole plant and subsequently cutting the leaves with a little stalk. The whole harvest is completed usually in one or two stages.

The produce from the experimental plot should be cured in the same way adopted by the ryot for curing the rest of the harvested produce both in the case of Virginia and Natu varieties. The number of leaves picked for each picking should be counted carefully and recorded in the appropriate columns of Form II and III. The leaves should be kept separately without allowing them to be mixed with the rest of the produce of the ryots kept for curing and cultivator may be allowed to cure the leaf in the same way in which he cures the rest of the produce in the field. The weighing of cured leaves for each picking will be done by the primary worker and recorded in Form III and the final weight of the cured leaf for all the pickings will be the total of all the weights. The cured produce should be returned to the cultivator after recording the weight.

Chillies:

If the Chillies crop is grown in both the seasons, Kharif and Rabi in a selected village, the experiments are to be conducted on the crop of that season during which the crop is predominantly grown. It may however be stated here that the Chillies crop intended for dry Chillies is generally transplanted during the months of September-October every year except in case of late sowings.

Since the purpose of conducting these experiments is to workout estimates of average yield per hectare of dried Chillies all the pickings from the experimental plot should be allowed to ripen to obtain the green to dry ratio. It may so happen that a few pickings from the field are disposed off by the ryots as green Chillies, due to remunerative prices and the subsequent pickings are allowed to ripen to obtain the dry Chillies.

But care should be taken to see that all the pickings from the plot selected for crop cutting experiment are allowed to ripen to obtain dry Chillies. In short "Green" Chillies should not be allowed to be picked from the selected plot for disposal as Green Chillies.

All the pickings in the selected plot are to be attended to as per local practices, and on the days decided upon in advance with the cultivator's consent. The weight of Chillies (un-dried weight) has to be taken at each picking and recorded in Form II under item 5.4(i) for all pickings.

Mesta:

The correct stage of harvesting of this crop is indicated by the brown colour of leaves and withering thereof. The harvesting is done by pulling up the plants located within the experimental plot. Since the end product of Mesta is the fibre, which is to be extracted after rotting the sticks after harvest, certain practical problems are encountered in the field. The rotting has to be done in community tanks, where safety of the crop cutting sample is a difficult problem. There will be a time lag of 4 days between actual harvest and bundling of the sticks and again the sticks have to be half steeped for 4 days, then fully steeped for 10 to 12 days. All these operations require repeated visits and constant watch of the particular sample which is rather difficult. Hence the following procedure is adopted.

All the plants harvested from experimental plot (5x5 metres) are tied into bundles of convenient size and weighed immediately and the green weight of the total produce from the unit area is recorded. A sample of 15 Kgs. produce is to be weighed from each of the bundles and heaped separately. All the plants of this 15 Kgs. sample are stripped of all leaves immediately and weighed. This weight should be recorded as stripped weight. No drriage operations are required for Mesta.

Sunflower:

The flowers from the harvested plot are collected and the seed is extracted immediately and the primary worker should report the weight of this seed in Form II.

NOTE: The weight of the flowers should not be reported in Form II. Weight of the seed only be reported.

Recording of Yield data:

1. The cleaned produce should be weighed to the nearest decagram and the results should be recorded in form II.
2. In case of Paddy, weight of the undried grain from the plot should be weighed.
3. For Jowar, Bajra, Ragi, Maize, Korra crops, weight of the undried cobs should be obtained from the plot.
4. Redgram, Blackgram, Greengram, Horsegram, Sesamum, Soyabean- weight of dried seed after threshing.
5. Groundnut - weight of undried pods from the plot.
6. Castor – weight of capsules for all pickings.
7. Sugarcane – weight of cane from the plot.
8. Chillies – weight of fresh chillies from each picking.
9. Mesta – number of stacks or bundles and weight of stripped plants.
10. Tobacco – number and weight of green leaves for Tobacco (Virginia) for each picking. In case of Tobacco (Natu) number and weight of green leaves.
11. Sunflower: Extracted seed should be weighted.

DRIAGE

Immediately after the harvest is over, record the weight of the harvested produce, un-dried grain in the case of Paddy, un-dried cobs in the case of Jowar, Bajra, Ragi, Korra and Maize, un-dried pods of Groundnut weight of capsules of 1st and 2nd pickings for Castor, and weight of Kapas for 1st and 2nd pickings of Cotton in Form II. In case of Tobacco the number and weight of leaves picked in each picking are recorded in the appropriate columns of Form II and III.

A minimum of 15% of experiments or minimum of 5 Villages to be planned for driage experiments for each crop in each selected district for estimation of district driage ratio. Driage experiments should be allotted to statistical agency only.

Driage experiments are conducted in the first village allotted to the primary worker of each crop. For the purpose of driage experiments, only a limited quantity of 1 kg. for Paddy and 2 kgs. for Jowar, Bajra, Ragi and Maize is taken. No. of cobs taken for driage should also be noted. In the case of Groundnut, a sample of 2 kgs. un-dried pods is taken for conducting the driage experiments and again out of the dried pods 1 kg. is taken for conducting the experiments to obtain the dried pods to kernel ratio.

On Castor and Chillies crops $\frac{1}{2}$ kg. of capsules in each picking is taken for conducting the driage experiments. When the produce from the experimental plot is less than the prescribed quantity, the entire produce is to be taken. The primary worker should take the limited produce to his headquarters and conduct the driage experiments.

Store the harvested produce in a small bag, label both inside and outside the bag and seal it. In the case of the harvested produce which is in the form of un-dried grain say Paddy the bag should be exposed to the sun every day for about a week, till the grain is thoroughly dried and a constant weight is obtained. In the case of millets, expose the bag daily to the sun for two or three weeks till the cobs are dry enough for easy threshing. At the end of the period open the bag and checkup the number of cobs. Separate the grain from cobs by threshing and see that all grain is removed from cobs without any loss of grain the process. The threshing can be most conveniently done by spreading out the ear-heads on a clean paved floor, spreading a cloth or hessian over it and treading on it or beating it with the stick. When the produce is in small quantity crushing by hands is also feasible. Dry the grain in the sun by spreading it thinly on a hessian cloth for about 4 hours till it is completely dry, weigh the dried grain correct to gram and record the results in Form III. The produce is then returned to the cultivator.

Redgram, Blackgram, Seesamum, Bengalgram and Horsegram:

Store the bundles carefully and allow them to dry for 4 or 5 days. After completely dried up the dried plants should be threshed on a clean floor or hessian and the dried grain removed and cleaned. Record the result of weighment in Form II. The produce is then returned to the cultivator. If the harvesting of Greengram is done in pickings the procedure adopted for driage of Castor should be followed.

Groundnut:

Store the Groundnut pods in a bag tied loose, seal the bag and label it with proper identification slip. The bag should be exposed to the sun daily for about 15 days till the pods are thoroughly dried. Weigh the dried pods and note the weight in Form III. Only one kg. of dried pods may be taken for shelling to find out pods to kernal ratio. Shelling should be done according to local practices. If the total dried produce obtained is less than one kg. the total produce should be shelled. Record the results in Form III. The produce is then returned to the cultivator.

Maize :

Two K.Gs of harvested cobs should be taken for Driage Experiment and dried till constant weight is reached. After the cobs are dried the seeds should be separated from the cobs and the dried seeds should only be taken for weighment.

Castor (when harvested in pickings):

Stores the capsules prescribed for conducting the driage experiment i.e., ½ kg. in a bag tied loose, seal the bag and label it with proper identification slip. The bag should be exposed to the sun for 4 to 5 days and the capsules are beaten to remove the seeds. The seeds are then cleaned and weighed and the weight recorded in Form III. When the produce from the second picking is ready, the bag is emptied and the produce of the 1st picking is kept separately and safely. The produce from the second picking is then stored in the bag and the process is repeated. The quantity of seed obtained in the second picking is then weighed and added to the first picking produce. The same procedure is repeated till all the pickings are completed and the results are recorded in Form III. The total weight of the seed obtained in several pickings will be the yield from the experimental plot. A final single weighment of the seed obtained in different pickings is also made on the final day by way of cross check. The produce will then be returned to the cultivator.

Chillies:

For driage operation, ½ kg. of fresh produce from each picking in the selected plot should be allowed to dry until it attains constant weight. If the produce in a picking is less than ½ kg., the entire produce should be taken for driage. The results of driage of each picking should be given under item 3.2 in Form III. A final weight of dried Chillies from all the pickings should be taken and checked with the picking-wise driage results. Then the produce should be returned to the cultivator.

Sunflower:

½ kg. of seed or the entire seed (if it is less than ½ kg). should be taken in a bag tied loose, seal the bag with a label for identification. The bag should be exposed to sun for 4 to 5 days till constant weight is reached. This weight should be reported in Form-III.

The driage experiment should be conducted in the first allotted village to each primary worker in each season. The details of results that are to be reached by the primary workers in Form-II and Form-III on different food and non-food crops are detailed below:

| Sl. No | Crop | Form – II | Limited Quantity to be taken for driage | Form - III |
|--------|---|---|--|---|
| 1 | 2 | 3 | 4 | 5 |
| 1. | Paddy | Weight of the undried grain from the plot. | 1 kg. | Weight of dried grain in respect of the 1 kg. for the 1 st village assigned to a Primary worker. |
| 2. | Jowar | Weight of the undried cobs obtained from the plot. | 2 kg. | Weight of dried grain in respect of the 2 kgs. for the 1 st village assigned to a Primary Worker. |
| 3. | Bajra | - do - | - do - | - do - |
| 4. | Ragi | - do - | - do - | - do - |
| 5. | Maize | - do - | - do - | - do - |
| 6. | Redgram, Blackgram, Greengram, Horsegram, Soyabean, Seasmum, Bengalgram | Weight of dried seed after threshing. | No driage | No need to submit Form III. |
| 7. | Groundnut | Weight of un-dried pods from the plot. | 2 kgs. for wet to dried pods ratio, 1 kg. dried pods for pods to Kernal ratio. | (i) Weight of dried pods in respect of the 2 kgs. (ii) Weight of Kernals in respect of 1 kg. of dried pods. |
| 8. | Castor | Weight of Capsules for all pickings. | ½ kg. in each picking or whole produce if it is less than ½ kg. | Weight of Capsules and weight of dried seed for all the pickings. |
| 9. | Sugarcane | Weight of stripped cane from the plot. | Does not arise. | Weight of cane taken for preparation of Gur and the weight of Gur obtained for the first two fields assigned to a Primary Worker. |
| 10. | Cotton | Weight of Cotton(Kapas for all pickings) | Does not arise. | Need not furnish Form-III |
| 11. | Tobacco | Number and weight of green leaves for Tobacco (Virginia) for all pickings. Number and weight of green leaves for Tobacco(Natu). | Entire produce of plot to be taken for curing. | Number and weight of the green leaves well as cured as leaves for all pickings of Tobacco(Virginia). Weight of cured leaves for Tobacco (Natu). |

| Sl. No | Crop | Form – II | Limited Quantity to be taken for driage | Form - III |
|--------|-----------|---|---|--|
| 1 | 2 | 3 | 4 | 5 |
| 12. | Korra | Weight of undried Cobs/earheads. | 2 kgs. | Weight of dried grain in respect of limited weight. |
| 13. | Chillies | Weight of fresh Chillies obtained from the all pickings. | 1/2 kg. from each picking. | The weight of produce (1/2 kg.) taken for driage in respect of all pickings is to be noted under (3.2) along with the results of driage. |
| 14. | Mesta | No. of stacks or bundles and weight of stripped plants from a sample of 15 kgs. of the produce from each of the bundle. | No driage operation. | Furnishing of Form-III not necessary. |
| 15. | Sunflower | Weight of the undried seed from the plot. | ½ kg. | Net Weight arrived from the ½ kg. seed taken for driage. |

Estimation of Kapas to Lint Ratio of Cotton Crop:

The objective of these of experiments is to estimate the kapas to Lint Ratio in the Major Cotton growing districts of Andhra Pradesh. These ratios will be used to work out the average yield and the total production in terms of lint for each major cotton growing district and for the State as a whole.

Procedure:

Kapas to Lint ratio experiments are to be conducted in all the major crop growing districts where the ginning factories are located. These experiments will be conducted on all varieties of Cotton (Kapas), ginned in the selected factory. One heap of each variety will be selected and 100 Kgs. of Cotton (Kapas) will be picked from each of the selected heap as per the procedure given below:

Selection of heap:

In the selected factory a heap of Cotton from among the heaps of each variety of Cotton has to be selected at random. This should be done by marking the first heap to the right hand side of the entrance of the factory premises as No.1 and marking the other heaps serially in the anti-clockwise direction Experiments should be conducted on all the varieties of cotton in each selected factory.

Selection of sample:

The random heap is to be selected by selecting a random number less than or equal to the total number of heaps of that particular variety. The strings should be run over the selected heap, one from the East to West and the other from North to South. A third string is then passed round the waist of the heap (approximately between the top and the bottom). This third string should intersect the other two strings at right angles at four points in the East, West, North and South directions. Number those points from the Eastern point in the clock-wise direction i.e. Southern, Western and Northern points. One of these four points would be chosen at random by referring to the appropriate column in the random number list given. Mark this selected point, then un-tie threads and proceed to draw a quantity of Cotton from around this point roughly weighing 100 Kgs.

The field worker should ensure that it is ginned in his presence on the same day and after ginning the Cotton, lint is weighed in his presence. Both the weights should be recorded and submitted to the Directorate on the same day in the proforma enclosed. The Cotton (Lint) should be returned to the Factory.

Necessary material required like thread etc., should be obtained from the factory authorities.

2. RESPONSIBILITIES OF VARIOUS OFFICERS UNDER CROP ESTIMATION SURVEYS

I. The Primary Worker will:

1. Attend the training class arranged for imparting training at the District/Mandal Headquarters;
2. Receive the list of sample villages selected for conducting the crop cutting experiments along with other details from the concerned Chief Planning Officer, through the Mandal Development Officer/Mandal Revenue Officer;
3. Obtain the required number of Forms I, II and III as per the number of experiments assigned to him;
4. Visit the selected villages about 15 days after the completion of sowings of the crop and select the survey numbers and the fields in which the crop cutting experiments are to be conducted with the help of Village Assistant;
5. In case the selected village does not grow the crop in at least 2 survey numbers, select the substitute village bearing the next higher code number (census) and intimate the details to the concerned Chief Planning Officer for approval and the Bureau for information;
6. Collect all the data required in Form I from the concerned ryots and submit Form I to the Chief Planning Officer at least one month prior to the harvest of the crop;
7. Visit the selected village again just before the harvest and fix the date of harvest of the crop in the selected field in consultation with the ryot;
8. Intimate the date of harvest to the Chief Planning Officer and the concerned supervising officer, sufficiently in advance;
9. Obtain the necessary equipment one day before the date of harvest from the Mandal Statistician (if it is not supplied to him) and carry the same to the field. In no case non-standard local equipment should be used;
10. Visit the selected village on the date of harvest early in the morning and mark the plot in the selected field as per the prescribed procedure;
11. Engage the required labour and conduct harvesting and processing of the produce;
12. Post the yield data cards in the nearest post office of the selected village to the Bureau. Keep the produce taken for drying in safe custody at his Headquarters to conduct the drying operations after taking the green weight of the produce;
13. The drying operations should continue till the difference between the weight of the dried produce in successive weighments is insignificant;

14. Record the weight of each picking in the case of cotton, tobacco, chillies and castor;
15. Despatch Form-II immediately after the harvest (first 2 pickings in the case of cotton, tobacco, chillies and castor) and Form-III after drriage operation (after last picking in the case of cotton, tobacco, chillies and castor);
16. Reply promptly to the ckeck slips issued to him after scrutiny of the returns by Chief Planning Officer's Office or Bureau;
17. The successful completion of the prescribed number of experiments is an integral part of his duties and as such reported pre-occupation with other items of work cannot be accepted as a reason for non-conduct of experiments. In the event of transfer or availment of leave during the harvesting period the primary workers should keep the Chief Planning Officer and Assistant Director (Agri.) MDO/MRO informed of the fact so that alternate arrangements could be made to avoid loss of experiments;
18. The Mandal Statistician is made responsible for the watching of progress of receipt of forms in respect of the experiments entrusted to the Village Development Extention Officers and the Agricultural Extension Officers and Revenue Inspectors at Mandal level.

II. The Chief Planning Officer will:

1. Receive the Mandal-wise sample size for each experimental crop from the bureau, select the villages randomly and allot them to the concerned field worker viz., Statistician/A.O./V.D.O./R.I. through the controlling officer;
2. Conduct the refresher course of training to the Primary agency;
3. Fix up the last dates for submission of forms by the primary workers and intimate the same to the primary workers at the time of training;
4. Submit a report on the training within one week after the date of completion of training to the Bureau;
5. Supply the requisite number of forms, instruction booklets and random number books to the primary staff;
6. Arrange for the supply of equipment;
7. Inspect the equipment supplied and arrange for the replacement of the equipment, if necessary;
8. Check up the substitution of villages;
9. Scrutinise the schedules of the crop cutting experiments received from the primary workers;

10. Prepare a fortnightly review on the progress of receipt of returns from the field staff and remind the defaulting primary field staff through the Mandal Development Officer/Mandal Revenue Officer/ Assistant Directors of Agriculture/ Joint Director of Agriculture;
11. Review the details of inspection done by the departmental officers every fortnight;
12. Submit a monthly progress report on the receipt of returns from the primary workers and also inspection done during the month;
13. Arrange for getting the harvest dates/changes in the dates of harvest in the selected villages sufficiently in advance and communicate the same to the concerned supervising officer;
14. Supervise all the experiments entrusted to him for the harvest Stage Inspection and also the experiments other than the harvest Stage Inspection at different stages;
15. Submit the details of non-response in the prescribed proforma;
16. Ensure that every experiment is allotted to one of the members of the primary staff and make alternate arrangements, whenever any person proceeds on leave or is transferred;
17. Allocate the experiments to the Statisticians taking into account their workload;
18. Obtain the dates of harvest of all the experiments;
19. Collect all the filled-in schedules;
20. Submit all the inspection reports;
21. Arrange for the conduct of the driage experiments at District Headquarters in respect of the villages entrusted to them; and
22. Prepare a note on the progress supervision and quality of returns for reviewing the same by the Collector in the co-ordination committee meetings and Revenue Officers Conferences from time to time.

III. The Supervising Officer will:

1. Receive the list of villages in which he has to supervise the conduct of experiments.
2. Attend refresher training camps arranged for the primary workers.
3. Obtain the date of harvest in the plots selected for the conduct of experiments from the concerned primary agency.
4. Visit the village on the date of harvest early before the harvest is commenced.

5. Check the following:
 - (a) Correctness of the selection of the survey/sub-division number and the field.
 - (b) Identification of the survey number and location of the plot for harvest.
 - (c) Dimensions of the plot, i.e., length, breadth and diagonals of the plot.
 - (d) Whether all the border plants are carefully separated by using a string; and
 - (e) Whether the produce is weighed properly.
6. Supervise the number of experiment allotted to him at harvest stage.
7. Fill up the inspection report.
8. Mandal Revenue Officers will issue necessary instructions to the Village Assistants to ensure their presence in the village with necessary village records and maps on the dates of visit by primary worker as well as supervisory officer to facilitate selection and verification of fields.
9. Ensure the conduct of all experiments and timely submission of forms by the primary staff, and
10. Initiate disciplinary action against defaulting primary workers.

Apart from attending to the above duties, the Deputy Directors/ Assistant Directors of Agriculture/ Mandal Revenue Officers/ Mandal Development Officers/ Tobacco Extension Officers/ Cotton and Sugarcane Development Superintendents of Agriculture Department will help the Chief Planning Officer in the successful organisation of the surveys by reviewing the progress of work in the samples allotted to their subordinates from time to time.

3. CROP INSURANCE IN TELANGANA

Crop insurance is primarily a technique to safeguard the interest of the farmers and to protect them against the element of risk and to mitigate the losses incurred by the farmers on account of natural calamities and stabilization of farm income and also to safeguard the interest of financial institutions. The insurance will be provided to cover yield loss due to following non-preventable risks:

- a. Natural Fire and Lightning
- b. Storm, Hailstorm, Cyclone, Typhoon, Tempest, Hurricane, Tornado etc.
- c. Flood, Inundation and Landslide.
- d. Drought, Dry spells.
- e. Pests/ Diseases etc.

In India Crop Insurance Scheme for the first time was introduced during 1972 in limited pockets of the country covering limited crops. This was optional for both states and as well as farmers. This was implemented on "Individual approach".

Taking the demand for the scheme into consideration, the Government of India felt the need to make it compulsory in respect of loanee farmers in all the states. Taking the perspective in view in 1976 a committee was constituted under the Chairmanship of Professor Dandekar to go into details and modalities to make "Crop Insurance" more effective and useful to the farmers. The recommendations of the committee were taken by the Government of India and the existing crop insurance scheme was revised and a farmer friendly Comprehensive Crop Insurance Scheme (CCIS) was introduced with effect from Kharif 1985. The combined AP State Govt has opted for the scheme and implemented during Kharif 1985 and continued till 1999-2000.

This scheme proposed to cover the following:

1. Only loanee farmers were covered
2. Insured amount is crop loan taken by the farmer
3. Compensation restricted to Rs. 10,000 per farmer.
4. Area approach
5. Yield Index

4. NATIONAL CROP INSURANCE PROGRAM (NCIP)

The Government of India vide its letters No.13015/02/2012-Credit-II, Dt:18.12.2013 & 04.02.2014 of Ministry of Agriculture Department of A&C., Government of India, New Delhi, communicated its decision to roll back NAIS, a component of Crop Insurance Scheme and in its place proposed to implement MNAIS in all states from Rabi 2013-14 under NCIP. In erstwhile Andhra Pradesh the Government of India was informed that this change over from NAIS to MNAIS would be taken up from Kharif 2014.

The components of NCIP would be as follows.

1. Modified National Agricultural Insurance Scheme
2. Weather Based Crop Insurance Scheme
3. Coconut Palm Insurance Scheme

The Government of India, vide its Memo. No.196/Agri II(1)/2014-1 dated 21-06-2014 requested the states to give their option for implementing either restructured NCIP or continue with NAIS. During Kharif 2015, the SLCCCI decided to implement NAIS in all districts of Telangana except Hyderabad.

In NAIS, the units are constituted taking 'mandal as a unit' with a minimum area of 2000 hectares under insured crop and 'village as a unit' under village insurance scheme with a minimum area of 100 hectares in a unit.

National Agriculture Insurance Scheme:

This scheme was introduced in the country in the year 1999-2000 replacing CCIS. In the combined state of AP this scheme was introduced in the year 2000-2001 and being continued. This scheme basically on the same principle as that of CCIS with regards risk coverage and yield index. However, under the scheme, unlike CCIS, farmers growing notified crops and not taking loans from financial institutions can also opt for coverage by paying prescribed premiums.

Crops covered:

KHARIF

- 1.Rice 2.Jowar 3.Bajra 4.Maize 5.Blackgram 6.Greengram 7.Redgram
- 8.Groundnut(I) 9.Groundnut(UI) 10.Castor 11.Sunflower 12.Soyabean
- 13.Sugarcane(P) 14. Sugarcane(R) 15. Cotton(I) 16.Cotton(UI)
- 17.Chillies(I) 18. Chillies(UI) 19. Baanana(Fruit) 20. Turmeric

RABI

- 1.Rice 2.Jowar(UI) 3.Maize 4.Greengram 5.Blackgram 6.Bengalgram
- 7.Groundnut 8. Sunflower 9. Red chillies 10. Onion

Insurance Unit:

An Insurance Unit for all the insurance crops covered under NAIS will be notified in each season based on area approach. The constitution of units are of three categories viz., a) Mandal, b) Group of Mandals and c) Entire District.

Constitution of units:

Mandal: A mandal having a minimum cropped area of 2000 hectares is constituted as an independent unit for the crop.

Group of Mandal: If the area under a crop is less than 2000 hectares in a mandal, then a group of contiguous mandals that contain minimum area prescribed will be constituted as one unit.

Entire District: If the area under a crop in the entire district is between 2000 hectares and 5000 hectares, then entire district is constituted as one unit.

In all the cases, previous three years average area is considered as area under a crop for constitution of units to ensure that the crop is stabilized and to avoid non-fulfillment of insurance units.

Sample Size:**Mandal as a Unit:**

In case of a mandal constituted as an independent unit, a minimum of 10 crop cutting experiments are required to be conducted for settlement of insurance claims, if any. But 12 crop cutting experiments (6 villages) are planned, to cover the loss of experiments, if any.

Group of mandals as a Unit:

In case of group of mandals constituted as an insurance unit, a minimum of 16 crop cutting experiments are required to be conducted for settlement of claims. But 18 crop cutting experiments (9 villages) are planned.

District as a Unit:

In case of District as an insurance unit, 24 crop cutting experiments are required for settlement of claims. As against, 26 crop cutting experiments (13 villages) are planned.

Threshold Yield – Indemnity Level:

The threshold yield (TY) or Guaranteed yield for an insurance unit shall be the moving average based on past three years average yield in case of Rice and Wheat and five years average yield in case of other crops, multiplied by level of indemnity.

Three levels of indemnity viz., 90%, 80% & 60% corresponding to low risk, medium risk and high risk to institutions are available for all crops based on Coefficient Variation (CV) in yield of past 10 years data. They are different for different seasons even for same crop for Kharif and Rabi seasons. The indemnity levels for the Kharif 2011 and Rabi 2011-12 are as follows:

INDEMNITY LEVELS

| Sl.No | Crop | Season | |
|-------|-----------|--------|------|
| | | Kharif | Rabi |
| 1 | Rice | 80 | 90 |
| 2 | Jowar | 60 | - |
| 3 | Bajra | 60 | - |
| 4 | Maize | 60 | 80 |
| 5 | Blackgram | 60 | 60 |
| 6 | Greengram | 60 | 80 |
| 7 | Redgram | 60 | |

| Sl.No | Crop | Season | |
|-------|---------------------|--------|------|
| | | Kharif | Rabi |
| 8 | Groundnut (IR) | 60 | 80 |
| 9 | Groundnut (UN-IR) | 60 | |
| 10 | Castor | 60 | - |
| 11 | Soyabean | 80 | - |
| 12 | Sugarcane (P) | 90 | |
| 13 | Sugarcane ® | 90 | - |
| 14 | Cotton (IR) | 60 | - |
| 15 | Cotton (UN-IR) | 60 | |
| 16 | Redchillies (IR) | 60 | 80 |
| 17 | Redchillies (UN-IR) | 60 | |
| 18 | Banana (Fruit) | 60 | - |
| 19 | Turmeric | 80 | |
| 20 | Tomato | 60 | |
| 21 | Jowar (UI) | - | 60 |
| 22 | Bengal gram | - | 80 |
| 23 | Onion | - | 80 |
| 24 | Sunflower | 60 | 80 |

Level of Insurance:

Loanee Farmers:

1. Compulsory : Crop loan availed
2. Optional : Value of threshold yield
3. Additional : 150% of threshold yield

Non- loanee Farmers (Optional):

1. Value of threshold yield
2. 150% of threshold yield

Fulfillment of units/clubbing of units:

In any case, if required number of crop cutting experiments are not conducted in an insurance unit, then as per geographical contiguity, neighbouring unit results are clubbed and furnished to Agriculture Insurance Company of India Limited. An un-fulfilled unit should be clubbed with fulfilled unit which is geographically contiguous, to protect the interests of the un-fulfilled unit farmers.

Method of Compensation:

If the actual yield (AY) per hectare of the insured crop for the insurance unit (on the basis of requisite number of crop cutting experiments) in the season, falls short of the specified threshold yield (TY), all the insured farmers growing that crop in the insurance unit are deemed to have suffered shortfall in their yield and are eligible for compensation.

"Compensation" is calculated using the following formula.

$$\frac{\text{Shortfall in yield}}{\text{farmer Threshold yield}} \times \text{Sum insured by the}$$

Shortfall in yield = Threshold yield – Actual yield of the insurance unit

Threshold yield = Moving average yields of last 3/5 years x level of indemnity
(Note: Rice & Wheat – 3 years, other crops – 5 years)

Example:

If a farmer takes a crop loan of Rs.10,000/- for raising paddy crop from a Bank, then premium will be deducted from the loan as per the existing rates.

Suppose the unit yield for last 3 years is 1350 K/H, 1250 K/H, 1450 K/H.
Suppose loan taken – Rs.10,000/-

3 years average yield is 4050

$$\frac{\text{-----}}{3} = 1350 \text{ K/H}$$

The indemnity level for paddy crop is 80%. Therefore, the threshold yield = $1350 \times 0.8 = 1080 \text{ Kg/Hect.}$

Suppose, the current average yield of that unit is 980 Kg/Hect.
Then compensation will be calculated as follows

$$\begin{array}{r} = \text{TY}-\text{AY} \\ \text{-----} \times \text{sum insured} \\ \text{TY} \\ 1080 \\ -980 \quad 100 \\ \text{-----} \\ \text{-----} \\ = \quad \text{-----} = 9.26\% \\ 1080 \quad 1080 \end{array}$$

Yield loss = 9.26%

Then all insured farmers in that unit will get 9.26% compensation for the loan taken. In this case, the farmer will get a compensation of Rs.926/- (Rs.10,000/- x 9.26%).

5. Village Insurance Scheme

To make this scheme more farmer friendly a major change has been brought in the scheme reducing homogeneous unit area from mandal to village, and named as Village Insurance Scheme. During kharif 2005-06 it was introduced in the combined state on pilot basis in 5 districts, viz., Karimnagar, Mahboobnagar, Prakasham, Kadapa and Ananthapoor . Later on it was extended to 22 districts. At present it is being implemented in 09 districts taking one predominant crop during Kharif season only. The notified districts and crops are given below:

| District | Crop |
|--------------|----------|
| Rangareddy | Maize |
| Mahabubnagar | Maize |
| Medak | Maize |
| Nizamabad | Maize |
| Nalgonda | Rice |
| Warangal | Rice |
| Khammam | Rice |
| Karimnagar | Rice |
| Adilabad | Soyabean |

CONSTITUTION OF INSURANCE UNITS (I/U):

A village with an area of minimum 100 hectares under the selected crop, is notified as an Independent Insurance unit.

If the area of the selected crop in a village is less than 100 hectares, then, contiguous villages should be grouped together to form an insurance unit. while doing this, the Geographical contiguity should be taken in to account with in the boundary of a mandal, which means a village in one mandal should not be grouped with another village of other mandal. If the area of the selected crop of a mandal is less than 100 hectares, then, contiguous mandals should be grouped to together form an insurance unit.

NUMBER OF CROP CUTTING EXPERIMENTS TO BE CONDUCTED:

- | | |
|-------------------------------------|----------------|
| 1. Single village | 4 experiments |
| 2. 2-5 villages | 4 experiments |
| 3. More than 5 villages/Mandal..... | 10 experiments |
| 4. Group of Mandals/District..... | 16 experiments |

Management

- To cater the needs for implementation of the scheme, State Level Coordination Committee on Crop Insurance (SLCCCI) and State Level Technical Committee (SLTC) are constituted at State Level.
- SLCCCI chaired by the Special Chief Secretary/Principal Secretary to Government, Agricultural & Cooperation Department is the administrative committee to take decisions on both technical and financial matters. The Commissioner & Director of Agriculture is the convener and the Director, DE&S, Commissioner of Horticulture, Cane Commissioner, Chief Regional Manager, Agricultural Insurance Company of India Limited, Hyderabad are the members.
- SLTC is chaired by the Commissioner & Director of Agriculture and the Director, DE&S, Commissioner of Horticulture, Cane Commissioner, Chief Regional Manager, Agricultural Insurance Company of India Limited, Hyderabad are the members to recommend and refer all the technical matters to SLCCCI.
- Similarly, District Level Monitoring Committees are constituted with District Collector as Chairman and Joint Director of Agriculture, Assistant Director of Horticulture, Chief Planning Officer are the members in all the districts to monitor the implementation of the scheme.
- At Mandal level the Monitoring Committees are constituted with Tahsildar as Chairman and Agriculture Officer, Horticulture Officer, Mandal Revenue Inspector, Representative from the Bank and AIC as Members.

Manpower for conduct of CCEs:

- Primary workers for conduct of crop cutting experiments are the Agricultural Extension Officers of Agriculture Department and wherever AEOs are not available in required number, Primary Workers are engaged purely on temporary basis for the specified period.
- At Mandal level where ASO positions are vacant, Contract Supervisors are appointed purely on temporary basis for the specified period.
- The work of primary workers is supervised by the Assistant Statistical Officer and Contract Supervisors stationed at Mandal level.
- Divisional Deputy Statistical Officer shall coordinate the work of Assistant Statistical Officers/contract supervisors and primary workers in all the mandals of the Revenue Division.

Data Flow:

- Required number of crop cutting experiments is being conducted by the primary workers at village level and furnish schedules to the ASO/ Contract Supervisor at mandal level.
- The ASO/Contract Supervisors scrutinize the schedules and send to the Deputy Statistical Officer working at Revenue Divisional level for computerization.
- The Divisional Deputy Statistical Officer transmits the yield and area data, both in soft and hard copies, to Chief Planning Officer at district level.
- The Chief Planning Officer, in turn, scrutinizes the data at random and furnish the entire data to the Directorate of Economics and Statistics.
- Directorate of Economics and Statistics duly ensuring the consistency, furnish the insurance unit wise yield and area data to the Commissioner of Agriculture and Agricultural Insurance Company of India Limited following the dates prescribed by the SLCCCI.

6. Modified National Agriculture Insurance Scheme

This is the new scheme formulated by the Government of India modifying existing NAIS by extending risk coverage to make NAIS more farmer friendly.

Salient Feature:

- Insurance unit for major crops is village panchayat or other equivalent unit.
- In case of prevented/failed sowing, claims upto 25 percent of the sum insured is payable while insurance cover for subsequent period gets terminated.
- Post harvest losses caused by cyclonic rains are assessed at farm level for the crop harvested and left in 'cut and spread' condition upto a period of two weeks.
- Individual farm level assessment of losses in case of localized calamities like hailstorm and landslide.
- On-account payment up to 25 percent of likely claim as advance for providing immediate relief to farmers in case of severe calamities.
- Threshold yield based on average yield of past seven years, excluding upto two years of declared natural calamities.
- Minimum indemnity level of 70 percent, instead of 60 percent as in NAIS.
- In a district NAIS and MNAIS are mutually exclusive.

Comparison of NAIS and MNAIS

| PARAMETER | NAIS | MNAIS |
|--|--|--|
| 1. Threshold yield | Moving average of yield of proceeding 3 years for rice and wheat 5 years for other crops | Moving average of yield of preceding 7 years excluding two declared calamity years |
| 2. Indemnity levels (in %) | 60,80,90 | 70,80,90 |
| 3. Risk coverage a) Mid season adversaties b) Prevented/failed sowing c) Post harvest losses d) Localised calamities | Not covered Not covered Not covered Not covered | Covered Covered Covered Covered Immediate on |
| 4. Settlement of claims | Based on yield index which takes time | account payment upto 25% of sum insured. |
| 5. Seasonality discipline | Different for loanee and non loanee | Uniform |
| 6. Implementing agencies | AIC | Private insurance companies with AIC |

The same crops being covered under NAIS shall also be covered under MNAIS in above 4 districts. The work procedure in the field is same as NAIS.

7. Weather Based Crop Insurance Scheme

Weather Based Crop Insurance aims to mitigate the hardship of the insured farmers against the likelihood of financial loss on account of anticipated crop loss resulting from incidence of adverse conditions of weather parameters like rainfall, temperature, frost, humidity etc.

Unlike NAIS this is not yield guarantee scheme.

This was introduced during 2009 and being continued.

During Kharif 2015 the following crops to be covered in the districts given below.

| <u>Crop:</u> | <u>District</u> |
|---------------------|--|
| Chillies | – Warangal & Khammam |
| Cotton | – Khammam, Warangal & Adilabad |
| Mango | – Rangareddy, Khammam, Vizianagaram & Warangal |
| Batavia | – Nalgonda |
| Oilpalm | – Khammam |

Implementing agencies: The following agencies are involved in implementation of crop insurance scheme in the state.

1. Agriculture Department
2. Directorate of Economics and Statistics
3. Agricultural Insurance Company of India Limited.

8. INSTRUCTIONS ON GENERAL SUPERVISION

1. The supervising Officers should be in touch with the primary workers during peak harvest period. General Supervision schedule is to be filled at harvest stage only. The supervisor along with primary worker to be present at the time of harvest and check whether primary worker is conducted the experiment as per methodology in all aspects. If any deficiencies are noticed, the supervisor should correct the primary worker by providing necessary guidance on the spot itself so that the experiment is conducted in a proper way.
2. When Supervisor is unable to supervise the experiment at harvest stage for any reason, then the experiment should be supervised at Post harvest Stage.
3. An experiment is considered as lost if the primary worker did not conduct the experiment at all and for such lost experiments supervisor has to fill-in all relevant blocks and items of the schedule, as filled-up at the post harvest stage. Reasons for lapses are to be furnished.
4. If any of the supervisory staff are on leave, the Chief Planning Officer has to make alternative arrangements, so that no crop cutting Experiment is missed which is allotted for supervision.
5. The General Supervision Schedule should be dispatched along with form II's only. Otherwise they **will be treated as supervisory loss**.
6. In any case, if supervision is not conducted, concerned officer (Supervisor) has to explain the reasons, in writing, for non conduct of supervision of the experiment to this Office, along with plan of action for post harvest supervision.
7. It is observed from the supervision reports are received that supervision is done by the primary worker only. This should be avoided as supervision is conducted to rectify the mistakes done in conduct of CC experiments by primary worker & Any lapses in this regard will be viewed seriously.
8. All columns must be filled-in invariably as per the instructions issued. The schedule should be properly scrutinised at Chief Planning Officer's Office and if any mistakes noticed, they should be rectified.
9. The Divisional Deputy Statistical Officers/Deputy Statistical Officers of Chief Planning office should attend the meeting of Agricultural Extension Officers arranged by the Assistant Director (Agriculture) of the division and review the progress of General supervision allotted to Agricultural Agency and collect the General Supervision forms.

10. The Chief Planning Officer should review the receipt position of General Supervision forms at District level meeting of ASO's and Divl. Dy.S.O's for effective monitoring of the scheme and to achieve more percentage of supervision at district level.
11. Percentage of villages to be allotted among supervising officers for conduct of General Supervision from total villages selected for Supervision is given below

| S. No | Supervisor | % of villages allotted for General Supervision 2014-15 from total villages selected for Supervision |
|-----------------------------------|---|---|
| 1) STATISTICAL DEPARTMENT | | |
| 1 | Chief Planning Officer/Joint Director | 2 |
| 2 | Deputy Director | 3 |
| 3 | Assistant Directors | 10 |
| 4 | Statistical Officers | 5 |
| 5 | Deputy Statistical Officers(CPO's office) | 15 |
| 6 | Divisional Deputy Statistical Officers | 15 |
| 2) AGRICULTURAL DEPARTMENT | | |
| 1 | District Joint Directors of Agriculture | 5 |
| 2 | District Deputy Directors of Agriculture | 5 |
| 3 | Mandal Agricultural Officer/ Sub divisional Assistant Director of Agriculture | 20 |
| 4 | Computer/Statistical Assistants in the districts in Agricultural Dept., | 20 |
| Total | | 100 |

9. GUIDELINES FOR ENGAGEMENT OF ONE SPECIAL OFFICER IN A DISTRICT

A. ENGAGEMENT OF SPECIAL OFFICER IN THE DISTRICT

1. Special Officer shall be engaged in all the (9) districts except Hyderabad from the retired personnel belonging to Directorate of Economics and Statistics in the cadre of Deputy Director/Asst. Director/Statistical Officer/Deputy Statistical Officer exclusively to look after the NAIS and to assist the Chief Planning Officer in implementation of the scheme. The Maximum age limit is 65 years only.
2. **An amount of Rs.14,000/- per month** including mobility charges (conveyance for attending supervision of CCEs/meetings) shall be paid as remuneration **from the date of engagement for a period of six months or as per subsequent orders issued by the Directorate.** This remuneration shall be paid on monthly basis through online transfer or by way of crossed cheque only.
3. Preference may be given to the persons having computer knowledge for easy accessibility to the data entry software of NAIS supplied by DE&S.
4. He/she shall be engaged on purely temporary basis and his/her services will be discontinued at any time without giving prior notice.

B. The duties/responsibilities of the Special Officer

- 1) He/she has to monitor the receipt position of forms in respect of all crop cutting experiments planned under NAIS Kharif 2015 in coordination with the concerned DySO working in Chief Planning Officer's Office.
- 2) He/she has to attend pre-harvest/harvest/post-harvest stage supervision of CCEs particularly, where ASO post is vacant and a detailed feed back is to be given to the Chief Planning Officer. It is to be ensured entire produce is properly shed and correct measurement is taken.
- 3) Prescribed inspection reports shall be sent to the Directorate along with a copy of approved tour diary of the Special Officer.
- 4) He/she has to supervise at least 1% of experiments allotted to AEOs either at harvest stage or at post harvest stage in respect of all the AEOs engaged under the scheme in the district.

- 5) He /She has to conduct scrutiny of at least 25% of the filled in forms received from Divl. DySOs after scrutiny at their level.
- 6) He/she has to monitor status of data entry of Form-I and Form-II and uploading of plot yields through online within 48 hours after conducting experiments using the services of DEO in case of VIS.
- 7) After entry of Form-1 & Form-2 data, he/she has to verify the data entered with respect to hard copies for all the experiments and he/she held responsible for any data entry mistakes noticed.

10. GUIDELINES FOR ENGAGEMENT OF PART TIME SUPERVISORS IN ASO VACANT MANDALS

A. COMMITTEE (SELECTION PROCEDURE):

1. Engagement of Part time Supervisors should be undertaken by the Committee consisting of the District Collector as Chairman, Chief Planning Officer as the Member-Convener and the Joint Director of Agriculture as Member.
2. The Collector may authorise the Joint Collector/ Additional Joint Collector as his representative during the selection process of the Part time supervisors under implementation of the scheme.
3. Formal **press note** in local newspapers shall be issued about implementation of NAIS in the district during Kharif 2015 and also the coverage of crops through the **District Public Relations Officer** for coverage in all local news papers/ Electronic media.
4. Subject to availability of the qualified personnel, reservation to Scheduled Castes/Tribes/Backward Classes may be observed in the district as per the rules in vogue to the extent possible.
5. **10% candidates** shall be additionally selected as **reserve candidates** more than the total requirement to fulfill the forth coming dropouts among selected candidates in each district. **Reserve candidates shall not be eligible for payment of any remuneration until, unless they are assigned to duty under the scheme.**
6. The selection process of the Part time Supervisors shall be completed on or before 1st July, 2015. **The list of selected Part time Supervisors, duly approved by the District Collector, should be furnished to DE&S** along with date of joining immediately, after their joining for release of funds.

B. QUALIFICATIONS (ELIGIBILITY CRITERIA):

Candidates with a minimum qualification of Graduation in **Statistics/ Mathematics/ Economics/ Commerce** are eligible for selection as Part time Supervisors.

- Priority may be given to Retired non-gazetted Officers, **not exceeding 65 years of age** with graduation in any discipline belonging to Revenue/Agriculture/Statistics Department.

- The **persons engaged during previous years** under the scheme shall be given preference for engagement during current year, subject to production of 'Satisfactory Certificate' obtained from the Chief Planning Officer.
- He/She **should not be physically challenged** in any aspect and should have good health to attend the field work.
- Native candidates or atleast candidates belonging to neighbouring mandals may be given preference for engagement of part time supervisors so as to enable them to supervise the field work very effectively.

Exceptions

- If Graduates with the stipulated subjects are not available for the post of Part time Supervisor in any mandal, the Committee may consider graduate of any other discipline.
- As a special case in remote and agency areas, at least minimum of Intermediate passed candidate may be engaged as Part time Supervisor under **unavoidable circumstances** only.

C. REMUNERATION:

1. The Part time Supervisors shall be paid @ Rs.11,000/- per month including mobility charges (field visits for supervision of experiments, conveyance for attending meetings at CPO Office etc.,) for a period **of six months or as per subsequent orders issued by the Directorate.**
2. Monthly remuneration shall be paid through **online to the respective Bank Account** of the Part time Supervisor or through **crossed cheque** only.
3. Before making payment to the Part time Supervisors, the CPO shall obtain a 'Certificate' from the concerned Incharge Mandal ASO confirming the work of Part time Supervisors.

D. DUTIES OF PART TIME SUPERVISORS:

1. He/She has to attend 6-days intensive training program proposed to be organized at district head quarters on all subjects particularly conduct of CC experiments, scrutiny of Form-I and Form-II and Agricultural Statistics.

2. He/She should attend all the meetings/training classes as and when organized by the Chief Planning Officer and has to discharge duties as per the job chart of the ASO apart from the exclusive Job Chart (Annexure I) under the Scheme. Further, he/she has to attend all the assignments as entrusted by the Chief Planning Officer from time to time.
3. He/She has to be available in the mandal allotted and has to coordinate with all the Part time primary workers, AEOs and Incharge ASO very closely for conduct of Crop Cutting experiments without any loss.
4. He/She has to guide/supervise all PWs(Part time Primary Workers and AEOs) in conduct of all CC experiments under the scheme right from the selection of the fields/plots to harvest of the experimental plots. Further, he/she has to scrutinise the filled in Form I & Form II and handover the schedules to the Incharge ASO/Divl. Dy.S.O. for further scrutiny at their level and onward transmission to Chief Planning Officer.
5. In case of **no area** of notified crop in the planned village he/she has to substitute the village for conduct of CCE in consultation with CPO's Office.
6. He/She has to work under the control of Incharge Assistant Statistical Officer and Divl. Dy.S.O.

E. GENERAL INSTRUCTIONS:

1. Along with intimation letter (Annexure-II), the CPO has to issue Work Order enlisting their duties/responsibilities to be attended to the selected Part time Supervisors under implementation of the scheme.
2. The Divl. Dy.S.O. and Incharge ASO are solely responsible for extracting all statistical item of work from the Part time Supervisors by making frequent visits to the mandal allotted to the Part time supervisor.
3. In case of any Asst. Statistical Officer proceeded on long leave exceeding 30 days between 1st July, 2015 to 31st December, 2015, CPOs are permitted to keep neighboring ASO on FAC and also engage Part time Supervisors from the reserve list in such leave vacancies without waiting for permission from Directorate of Economics and Statistics. However, details of such engagement of Part time Supervisors shall be **furnished within 15 days** along with copy of leave sanction orders.
4. At the time of making **final payment** to Part time Supervisors / Part time Primary Workers, the Divisional Dy.S.O./A.S.O. should ensure that all **kit bags given to them is returned** with all contents intact.

Annexure I

JOB CHART OF PART TIME SUPERVISOR UNDER NAIS

1. The engaged Part time supervisor should immediately report to the duty before the Tahsildar, Mandal Revenue Office of the allotted mandal after receiving intimation letter.
2. He/She has to organise mandal level training class to all the AEOs and Part time Primary workers as per the schedule communicated by Chief Planning Officer.
3. He/She has to visit all the villages selected for CC experiments and experimental fields along with the PWs (AEO/ PPW) concerned and ensure that the selection of Survey/ sub division number is done correctly and experimental field/plot is marked accurately as per the procedure.
4. To confirm the dates of harvests atleast 2/3 visits to all the experimental plots are to be made by the Part time Supervisor prior to the harvest of the plot.
5. It is the responsibility of the Part time Supervisor to see that no experiment is lost and **he/she will be held responsible for any loss of experiment.**
6. He/She has to inform the yields of the CC experiments on the same day of harvest over phone to the concerned Divl. Dy.S.O/ Incharge ASO/ Chief Planning Officer's office.
7. He/She has to closely monitor the work of PPWs/AEOs w.r.t filling up the form-1 & form-2 and scrutinise the filled-in forms before submitting to the Incharge ASO/Divl.DySO.
8. He/She has to attend supervision of all harvesting experimental plots in his jurisdiction.
9. It is the responsibility of the Part time Supervisor to forward the filled in forms to the concerned Incharge ASO/Divl.DySO immediately after conduct of experiment for onward submission to the CPO for the data entry.
10. In addition to the above, he/she has to discharge all the duties as mentioned in the Job Chart prescribed for ASOs.

11. GUIDELINES FOR ENGAGEMENT OF PART TIME PRIMARY WORKERS

A. SELECTION PROCEDURE:

1. Engagement of Part time Primary workers should be undertaken by the Committee consisting of the Tahsildar as Chairman, Asst. Statistical Officer as the Member-Convener and the representative of Chief Planning Officer's Office and Agriculture department (A.O.) as Members.
2. The Chief Planning Officer may authorize the Deputy Director/Assistant Director/SO/DySO/Divl. DySO as his representative during the selection process of the Part time primary workers in the mandals.
3. **Primary workers** for this Project will be **the A.E.Os** of Agriculture department and **the persons** (Part time Primary Workers) **engaged purely on Part time basis.**
4. The Tahsildar should ensure number of A.E.O.s available in the Mandal for engagement as Primary workers under VIS. Only after engaging all the A.E.O.s in the mandal, the net requirement of Part time primary workers shall be arrived at and intimated to the Chief Planning Office immediately.
5. Reservation to Scheduled Castes/Tribes/Backward Classes shall be observed in the mandal as per the Rules in vogue and subject to the availability.
6. The selection process of Part time primary workers shall be completed according to the crop seasonality existing in the mandals.
7. The list of provisionally selected candidates as Part time Primary workers shall be obtained from all the Mandals and submitted to the Chairman of District Level Monitoring Committee of the scheme, i.e., District Collector for approval.
8. The approved list of Part time Primary Workers with their date of engagement shall be furnished to the DE&S for release of funds.

B. QUALIFICATIONS (ELIGIBILITY CRITERIA):

1. Candidates with minimum qualification of Intermediate and in the age group of 20-40 years are eligible for engagement as Part time Primary workers.
2. Candidates should be native of that mandal so as to enable them to attend to the field work very effectively.
3. He/she **should not be physically challenged** in any aspect and should have good health to attend the field work.
4. Preference shall be given to the persons worked earlier under the scheme subject to production of 'Satisfactory Certificate' obtained from the Concerned ASO. First they may be identified and then balance may be engaged.

Exceptions

5. As a special case in remote and agency areas, at least minimum of SSC passed candidate may be engaged as Part time Primary Workers under **unavoidable circumstances** only.

C. REMUNERATION:

1. The Part time Primary Workers shall be paid @ Rs.4000/- per month including mobility charges i.e Visits to sample village for the conduct of experiments and to attend training classes for not exceeding **four months in case of Paddy, Maize and Soyabean crops** or as per subsequent orders issued by the Directorate.
2. Monthly remuneration shall be paid through **online to the respective Bank Account** of the Part time Primary Workers or through **crossed cheque**.
3. Before making payment to the Part time Primary Workers, the Chief Planning Officer shall obtain a 'Certificate' from the concerned ASO/ Part time Supervisor confirming the work of Part time Primary Workers.

D. DUTIES OF PART TIME PRIMARY WORKERS:

1. He/she has to attend training program organized at mandal headquarters on conduct of CC experiments and filling up of Form-1 & Form-2.
2. He/she has to maintain rapport with the farmers (actual cultivators) of the selected fields by obtaining their contact numbers for successful conduct of all the CC experiments without any loss under his/her jurisdiction.
3. Date of engagement of Part time Primary Workers shall be considered for payment of remuneration basing on the recommendations of the Asst. Statistical Officers/Part time Supervisors concerned and as per **the crop seasonality** existing in the Mandal.
4. Except, in case of units constituted with group of mandals, single Insurance Unit shall be allotted to single Primary worker(Parttime worker/AEO).
5. Each Part time Primary Worker is kept in charge of four Insurance Units/16 experiments within jurisdiction of one mandal, except in case of units constituted with **more than 5 villages or entire mandal as unit or group of mandals as Unit**. Around 16 experiments are to be entrusted to each Part time Primary Worker in the contiguous Insurance Units.
6. In case of units constituted with more than 5 villages, each Part time Primary Worker is kept in charge of maximum of two Insurance Units/20 experiments within jurisdiction of one mandal, if the regular ASO is working in that mandal.
7. In case of mandal constituted with only 2 units with more than 5 villages and where the ASO post is vacant, then the Part time supervisor has to conduct all the Crop Cutting Experiments planned in that mandal under the supervision of the concerned in-charge ASO. **Part time Workers shall not be engaged in these cases.**

8. In case of entire mandal is formed as one Insurance Unit and one Primary Worker shall be kept in-charge of that Insurance Unit (Mandal), if the regular ASO is working in that mandal.
9. In case of entire mandal is formed as one Insurance Unit and where the ASO post is vacant, then the Part time supervisor has to conduct all the Crop Cutting Experiments planned in that mandal under the supervision of the concerned in-charge ASO. **Part time Workers shall not be engaged in these cases.**
10. If group of mandals are formed as one Insurance Unit and in the mandals where regular ASO is working, Part time primary workers may be engaged to conduct all the Crop Cutting Experiments planned in that mandal.
11. If group of mandals are formed as one Insurance Unit and in the mandals where the ASO post is vacant, Part time supervisor has to conduct all the Crop Cutting Experiments planned in that mandal under the supervision of the concerned in-charge ASO. **Part time Workers shall not be engaged in these cases.**
12. Intimation of inspecting officers.

E. GENERAL INSTRUCTIONS:

1. Proper training should be imparted to the selected Part time Primary Workers at Mandal level in conduct of CC experiments, filling up of Forms and Substitution of villages etc., so as to avoid loss of experiments.
2. During the course of the training, the calculation of gross and net yields should be explained in detail in case of mixed crops (Particularly in case of Soybean and Maize crops).
3. Field training may also be imparted to all the Part time Primary Workers at mandal level so as to enable them for proper identification of Survey/ Sub divisions, fields and plots.

4. The CPO has to issue Work Order relating to the details of experiments allotted under the scheme along with relevant codes to the selected Part time Primary Worker.
5. The ASOs/ Part time Supervisors are solely responsible for extracting stipulated item of work from the Part time Primary Workers in their jurisdiction by making frequent visits.
6. At the time of relieving the Primary worker at the end of season, regular/Incharge ASO of the mandal should ensure that the kit bags are returned with all the contents intact.

12. GUIDELINES FOR ENGAGEMENT OF DATA ENTRY OPERATOR IN DISTRICTS DURING KHARIF 2015 UNDER NAIS

A. PURPOSE

Under 'Village made as Insurance Unit' Scheme, the Hard copies of Form 1 and Form 2 are not being obtained from the districts and so their soft copies are to be verified for consistency in the data before finalising the insurance estimates. In order to monitor the progress of field work, the Chief Planning Officer is instructed to ensure uploading all the plot yields through online immediately, after conduct of CC experiments. Apart from the regular duties, the quantum of computerisation work could not be attended by the regular Dy.S.O. alone, and as such the Data Entry Operators are being engaged.

B. PROCEDURE

The qualified Data Entry Operators shall be engaged through the local reputed Outsourcing agencies as per guidelines of the Government.

C. REQUIREMENT

1. One data entry operator for a period of **11 months** can be engaged at **district head quarters** (Chief Planning Officer's Office).
2. The services of DEO shall be utilized for data entry of CC forms and validation of NAIS/GCES data including Agriculture Statistics related works apart from uploading the plot yields daily under VIS.
3. To avoid delay in transmitting the soft copy of Form-1, Form-2, Village wise area etc., to DE&S, exclusive DEO arrangements have been done at district level for 11 months.

D. REMUNERATION

- a. Remuneration @ Rs12,954/- per month to the DEO includes
 1. Remuneration of Rs.9,500/- after deducting DEO's contribution to PF(12%) and ESI
 2. Employer's Share of PF- Rs.1293/- and ESI – Rs.451/-
 3. 3% of Rs. 9500/- i.e., Rs.285/- as commission to Outsourcing Agency as applicable
 4. Service tax @12.36% i.e., Rs.1425/- on 1, 2 and 3 above as applicable.
- b. Remuneration shall be paid by way of online transfer to his account or by way of Crossed Cheque only.

E. RESPONSIBILITIES

- a. The data entry work done by the operator shall be cross checked with respect to hard copies by the Deputy Director/ Assistant Director/ Special officer/Dy.S.O.(NAIS/GCES) and see that data entered is error free.
- b. DEO has to work under the control of Chief Planning Officer/Special Officer/concerned Dy.S.Os of both NAIS and Crop Estimation Surveys.

13. GUIDELINES ON HIRING OF PRIVATE VEHICLES DURING KHARIF 2015 UNDER NAIS

A. PURPOSE

In view of large number of experiments are being planned under Village Insurance Scheme, it is found that a vehicle at district level is necessary exclusively for organizing close and effective supervision of CCEs under NAIS, General Crop Estimation survey and Additional Crop Cutting Experiments. Accordingly, the funds are allocated in financial implications of the scheme to all the implementing districts.

B. PROCEDURE

- 1) As per the financial implications approved by the SLCCCI, the Chief Planning Officers are permitted to engage one hired vehicle for a period of **One Year** exclusively under NAIS.
- 2) Procedures for hiring of vehicles shall be followed as per instructions issued by the Government.
- 3) Engagement of vehicle for more than the prescribed duration i.e., 12 months shall not be allowed in the districts.
- 4) The private vehicles, which are registered **as a Taxi** can only be hired under the scheme. Vehicles registered under other than the taxi shall not be engaged under this scheme to avoid any audit objection and in remittance of Income Tax.

C. HIRING CHARGES

- 1) Vehicle hiring charges shall be paid @ Rs.24,000/- per month including petrol, driver batta and maintenance charges in all the districts (except Rangareddy and Hyderabad) up to 2,500 kms per month.
- 2) With regards to Rangareddy district and Hyderabad Rs.25,000/- per month including petrol, driver batta and maintenance charges shall be paid up to 2,500 kms per month.
- 3) Payment of vehicle hiring charges shall be made on monthly basis through account payee cheque only after deducting 2% TDS.
- 4) Ensure that log books shall be maintained for the vehicle engaged under the scheme and no payment shall be made without updating the log book.

- 5) No separate vehicle maintenance charges including fuel are allowed at any circumstances.

D. GENERAL INSTRUCTIONS

- 1) Chief Planning Officer is instructed to ensure that maximum number of experiments are supervised covering all the mandals in the district during the season and it is expected to utilize the NAIS vehicle for close monitoring of Harvest of experiments by involving all his subordinate officers also. On observing the supervision of last year, it is not satisfactory and meagre 8% at State Level was reported.
- 2) Details of Vehicles Engaged under the scheme shall be furnished to the Directorate in the following proforma.

| Sl. No. | Vehicle Regn. No. | Name of the Vehicle owner | Date of engagement of vehicle | Whether the vehicle is engaged in terms of Guidelines issued (Yes/No) |
|---------|-------------------|---------------------------|-------------------------------|---|
| 1 | 2 | 3 | 4 | 5 |

- 3) TA claim (DA only) of the Officers who performed journey in the hired vehicle shall be honored only on production of log book copy and submission of tour dairy and supervision of report in the prescribed format.
- 4) Log book shall be maintained properly and a copy of the log book shall be kept in Chief Planning Officer's Office for presenting before the inspecting officers of Directorate of Economics and Statistics and LF Audit Officers.

14. YIELD ESTIMATION SURVEY ON FRUITS AND VEGETABLE CROPS

Objective:

1 In view of the growing commercial importance and consequential additions to the area every year, the government of India has proposed in 1982-83 to conduct yield estimation surveys on some important fruits and vegetables crops. For this purpose (14) fruits and vegetables and (4) plantation crops have been identified because of its importance at National level and the States have been advised to choose crops important to their States and carry-out crop yield surveys on those crops only.

2 In view of their commercial importance, it was proposed to take up the survey on the following (9) crops in Andhra Pradesh, since 1982-83 as a central sector plan scheme with 100% Central Assistance.

- | | | |
|--------------|------------|-------------|
| 1. Mango | 4. Banana | 7. Onion |
| 2. Coconut | 5. Batavia | 8. Tomato |
| 3. Cashewnut | 6. Lemon | 9. Turmeric |

The scheme was extended to (3) more crops viz., Bhendi (Kharif), Brinjal (Kharif) and Guava since 1996-97.

Crops Covered:

- i) Fruit crops: 1.Mango 2. Cashewnut 3. Coconut 4. Lemon 5. Batavia 6. Banana and 7. Guava
- ii) Vegetable crops: 1. Tomato (Kharif & Rabi), 2. Onion (Kharif & Rabi), 3. Brinjal (kharif) and 4. Bhendi (Kharif).
- iii) Minor crops : 1. Turmeric

Sampling Procedure:

Garden crops: (1. Mango 2. Cashewnut 3. Coconut 4. Lemon 5. Batavia 6. Banana and 7. Guava)

3 A **Multistage Stratified Random Sampling** design with Group of Mandals in the district as Strata, the villages within the stratum as first stage units, the gardens in the selected villages as secondary unit of sampling and the selected trees (key tree and other required number of trees) in the selected garden as the ultimate unit of sampling has been adopted for carrying out yield estimation experiments.

Vegetable crops: (1. Tomato (Kharif & Rabi), 2. Onion (Kharif & Rabi),
3. Brinjal (kharif) and 4. Bhendi (Kharif) 5. Turmeric)

4 A **Multistage Stratified Random Sampling** with the Mandal as the stratum, villages within the stratum as first stage units, the field in the selected village as the secondary unit of sampling and the plot of the specified size within the field as the ultimate unit of sampling has been adopted for carrying out crop cutting experiments.

Planning:

State Level Planning:

6 At State Level, based on the percentage of standard error obtained for a crop during the previous year, the plan size will be decided.

District Level Planning:

7 The experiments will be allotted to the districts based on proportionate area available under the selected crops. The districts will be divided into two homogeneous strata and the experiments will be allotted to each strata based on proportionate area. However a minimum of two villages are to be planned in each Stratum / Mandal.

Primary Workers:

8 For conducting yield estimation survey the field staff is drawn from Statistical and Horticulture departments. The Asst. Statistical Officers of the Statistical department and the Horticulture Officers of the Horticulture Department will share the experiments on 80:20 ratios.

Method of selection:

Selection of villages (Schedule 0.0):

9 At district level, taking into account the census areas of previous year under the selected crop, the villages would be selected from each strata on

Probability Proportional to Size (PPS) sampling method. List of selected villages will be communicated by the Chief Planning Officer to the primary workers for selection of gardens.

Selection of Gardens (Schedule 1.0):

10 In the selected village the primary worker has to select two gardens in each village. For this purpose, he has to prepare a list of all gardens in the village and give serial numbers to the fruit bearing gardens only and

with the help of random numbers [columns to be consulted will be given by the Chief Planning Officer] two gardens should be selected. If the number of gardens in a village is more than 200, in the selected village, the primary worker should list out the orchards, from such list of gardens, only 200 gardens should be selected by using **"Circular Systematic Random Sampling Method"** and then 2 gardens are to be selected randomly and will be furnished in the prescribed format. In the preparation of frame for selection of 2 Gardens the points to be observed are:

1. Enlist all gardens but give serial number to fruit bearing gardens separately.
2. If a garden is extended to 2 survey numbers and cannot be distinctly seen in the field enlist that garden under 1st survey number.
3. In case of fruit bearing garden the bearing area at least should be 10%.
4. Continues serial number should be given to the gardens having sub division number.

Selection of trees (Schedule 1.1) : (for Mango, Cashewnut, Coconut, Lemon, Batavia and Guava Crop)

11 After selecting (2) gardens in the village, **one Key tree** and **two other trees** in each garden are to be selected randomly, as follows.

Garden in which trees are in rows :

12 The total number of rows in the garden is to be counted. Out of these rows, a row may be selected randomly with the help of a random number which is equal to or less than the total No. of rows. Again in the selected row the number of bearing trees should be counted and a random number may be selected equal to or less than the no. of bearing trees in the selected row. Thus the tree number which is equal to the random number is called "key tree". After selection of key tree, two more trees are to be selected which are nearer to the key tree. These two trees along with the key tree formed the cluster of trees for which the yields are to be recorded.

Gardens where trees are not in rows:

13 In such cases the length and breadth of the garden from the south-west corner should be measured in steps. 13 steps from length and 13 steps from breadth should be deducted. With the help of random numbers a center point may be fixed. Three trees, which are nearest to this center point, should be selected.

Selection of trees in Banana Gardens:

14 For crop cutting experiments on Banana in each garden **10 trees** are to be selected @ 5 trees in each row. Gardens having less than two rows or having less than 10 trees in two rows should be rejected and another garden selected in its place. The total number of rows in the garden should be counted and from this figure one row may be deducted so as to ensure that the last row is not omitted from the inclusion in the universe. With the help of random number booklet (from the assigned col.) a random number less than or equal to the number of rows (figure arrived after deducting one row) should be selected. In this row the number of trees should be counted and from this figure four trees may be deducted. A random number equal or less than this figure may be selected and the tree number, which conforms to this random number, is the **key tree**. Four trees more to the right side of this **key tree** may be selected. From this row next to the random row (higher row number) five trees parallel to the first five trees should be selected.

Selection of plot for vegetable crops and Turmeric :

15 The selection procedure for conducting of crop cutting experiments for vegetable crops and turmeric is similar to the crop cutting experiments conducted for food & non-food crops.

Selection of Gardens ,Trees , Plot Size and its diagonal

16 The selection of gardens and trees for Fruit crops and Plot size and its diagonal for Vegetable crops are given below for ready reference:-

Fruit Crops

| Sl. No | Crop | Selection of gardens | Selection of Trees for each garden | Remarks |
|--------|--|----------------------|--|--|
| 1 | Mango Cashewnut Coconut Lemon Batavia Guava | 2 | Key Tree and two other trees (Total 3 trees) | <u>A. If trees are in Rows</u> After selection of Key Tree, two more trees are to be selected which are nearer to the Key tree. <u>B.If trees are not in Rows</u> Measure Length and Breadth from south west corner in steps and deduct 13 steps from Length and Breadth. Central point may be fixed with the help of random numbers and select three trees which are nearest to the central point. |

| Sl. No | Crop | Selection of gardens | Selection of Trees for each garden | Remarks |
|--------|--------|----------------------|--|--|
| 2 | Banana | 2 | Key tree + 4 trees and corresponding 5 trees in next higher row. (Total 10 trees) | After selecting the Key Tree, Four trees to the right side of the Key tree may be selected and select 5 trees parallel to the random row from next higher row. |

Vegetable Crops

| Sl.No | Crop | Plot size | Diagonal | Steps to be deducted |
|-------|---|-------------|----------|--|
| 1 | Tomato Brinjal Bhendi Turmeric | 5Mts X 5Mts | 7.07 Mts | 7 steps to be deducted From length and breadth of the selected field |
| 2 | Onion | 2Mts X 2Mts | 2.83 Mts | 3 steps to be deducted from length and breadth of the selected field |

Recording of Yield data:

Harvesting / Counting and Weighing (Schedule 1.2):

17 Harvesting of fruit crops will be done in pickings. The yields are recorded separately for each picking for each tree by primary worker. The result of yield should be recorded in schedule 1.2 picking wise.

Procedure for counting of Mangoes, Cashewnut, Lemon, Batavia and Guava:

18 From the heap of total produce obtained in that picking the total number of fruits at a time (one hand) will be counted. While counting so, now and then, one hand (5 fruits) may be kept aside up to 10 hands i.e. 50 fruits. Sample of these 50 fruits should be weighed in kgs/grams correctly. In every picking this method should be adopted. In schedule 1.2 the total number of fruits obtained in that picking and the weight of 50 sample fruits should be recorded. If the fruits are less than 50, then all the fruits to be weighed and recorded in the schedule.

For Coconut crop:

19 For Coconut no weighment is necessary. Only the number obtained in each picking should be reported. Picking wise yield details for all pickings from June to May should be furnished in the schedule 1.2 by the primary worker.

For Banana crop :

20 In case of Banana crop the weight of 'Gela' bunch and also the weight of stem approximately should be given and also number of Bananas in each bunch (Gela) should be recorded.

For Vegetable Crops:

21 In case of Vegetable Crops, the produce obtained at the time of Harvest either at one time or from all the pickings (in case of picking crops) should be recorded in Form-II as in the case of Food & Non-food Crops.

Driage:

22 For Turmeric, driage experiments should be conducted by taking 2 kg of green weight from the total produce. This 2 kg should be boiled as per local procedure and net yield should be furnished in form III.

15. YIELD ESTIMATES BY ORAL ENQUIRY METHOD (NON-C.C. EXPERIMENTS)

Objective:

The yield estimates for the crops which are not covered under Crop Estimation Surveys (Food & Non-Food Crops and Fruits & Vegetable Crops), will be obtained through Oral Enquiry Method. For this purpose, the crops which are predominantly cultivated in different districts are selected for enquiring the yield from the farmers.

The following crops are covered for estimating the yield by this method.

KHARIF SEASON:

| Sl.No | Crop | Sl.No | Crop | Sl.No | Crop |
|--------------|----------------------|--------------|-----------------------|--------------|----------------|
| 1 | SAMAI | 23 | VELAGA | 45 | PUMPKIN |
| 2 | VARUGU | 24 | GANGI REGU | 46 | ASHA GOURD |
| 3 | ARUKULU | 25 | CUSTARD APPLE | 47 | PALM OIL |
| 4 | VOODALU | 26 | JACK FRUIT | 48 | JATROPA |
| 5 | COWGRAM | 27 | BLACK BERRY | 49 | GANUGA |
| 6 | RAJMABEENS | 28 | CARROT | 50 | COCOA |
| 7 | ANUMULU | 29 | TOPIOCA | 51 | VENILA |
| 8 | ARECUNUTS | 30 | YAM | 52 | SOAP NUTS |
| 9 | PEPPER | 31 | CUCUMBER | 53 | BETEL LEAVES |
| 10 | TAMARAND | 32 | BITTER GOURD | 54 | COFFEE |
| 11 | GINGER | 33 | SNAKE GOURD | 55 | ANNOA (JAFTRA) |
| 12 | VAMU (AJWAN) | 34 | BEENS | 56 | KALABANDA |
| 13 | CURRY LEAF | 35 | GREEN PLANTAIN | 57 | ASWAGANDI |
| 14 | KOTHIMEERA | 36 | ANAPA | 58 | ROSE |
| 15 | ORANGE&CITRUS FRUITS | 37 | GOKARA | 59 | MALLI |
| 16 | USIRI | 38 | GREEN LEAF VEGETABLES | 60 | SAMPANGI |
| 17 | REGU | 39 | PEAS | 61 | LILLY |
| 18 | GRAPES | 40 | BOTTLE GOURD | 62 | KAGADA |
| 19 | PAPAYYA | 41 | DRUM STICK | 63 | CHANDINI |
| 20 | SAPOTA | 42 | DONDA | 64 | CHAMANTHI |
| 21 | POMOGRANATE | 43 | BEERA (Ridge gourd) | 65 | BANTHI |
| 22 | ANJURA | 44 | GREEN CHILLIES | 66 | KANAKAMBRAM |
| | | | | 67 | GREEN BEANS |

RABI SEASON:

| Sl. No. | Crop | Sl. No | Crop | Sl. No | Crop |
|---------|-------------|--------|------------------|--------|--------------|
| 1 | WHEAT | 13 | CHAMAGADDA | 25 | ANUMULU |
| 2 | VARAGU | 14 | SWEET POTATO | 26 | CARROT |
| 3 | COWGRAM | 15 | GREEN LEAF VEG. | 27 | YAM |
| 4 | RAJMABEENS | 16 | CABBAGE | 28 | CUCUMBER |
| 5 | YERRAPAPPU | 17 | CALIFLOWER | 29 | BITTER GOURD |
| 6 | CORIANDER | 18 | GREEN CHILLIES | 30 | BEENS |
| 7 | GARLIC | 19 | SAFFLOWER | 31 | GOKARA |
| 8 | WATER MELON | 20 | RAPE & MUSTARD | 32 | BOTTLE GOURD |
| 9 | MUSK MELON | 21 | LIN SEED | 33 | DONDA |
| 10 | POTATO | 22 | NIGER SEED | 34 | RIDGE GOURD |
| 11 | RADISH | 23 | NO AREA | 35 | BANTHI |
| 12 | BEET ROOT | 24 | MARUVAM/ DAVANAM | 36 | ASTEL |

Selection Procedure:**At State Level**

- Select top two or three Districts in the state based on the highest area of the selected crop during the previous year.

At District Level

- Select top two or three Mandals in the district based on the highest area of the selected crop during the previous year.

At Mandal Level

- Select top two or three villages based on the highest area of the selected crop.
- In each selected village, (2) farmers from marginal & small category, two farmers from medium & large category are selected randomly. If farmers are not available in any category, select the farmers from other categories. In any case, the number of farmers should be four for each village.
- On oral enquiry, the information regarding area and production of the crop is obtained from the selected farmers. Based on the above information, the average yield of that village is to be arrived.
- At mandal level, the average yields are worked out on simple average basis but the district average yield is estimated by weighted average method taking mandal-wise areas as weights.

- Obtain the price of the produce of selected crop from the nearest market centre or where the cultivator will usually sell the produce.
- The mandal report should be sent to the CPO in Annexure-II along with Annexure-IA & IB. The Register to be maintained at Mandal level is given in Annexure-IA and IB
- The District report to be sent to Directorate in Annexure-III-A and B.

Non-cc crops:

ANNEXURE-IA

A. Crop wise Selection of Villages in the Mandal

| Season | Crop | Sl. No | Name of the selected Mandal | Area in Hectares | Sl. No | Village selected | Area in Hectares |
|--------|------|--------|-----------------------------|------------------|--------|------------------|------------------|
| | | 1 | | | 1 | | |
| | | | | | 2 | | |
| | | 2 | | | 1 | | |
| | | | | | 2 | | |

ANNEXURE-IB

B. Method for Calculation of Average yield for the Village

| Sl. No | Name of the Cultivators | Category | Area (in hectares) | Production | Yield Kgs/Hect |
|--------|-------------------------|--------------|--------------------|------------|----------------|
| 1 | 2 | 3 | 4 | 5 | 6=(5/4) |
| | | | | | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| | | Total | | | |

Village average yield=
$$\frac{\text{Total Yield}}{4}$$

The Average yield of the Village is clearly explained as under:-

The yield rate for the village is obtained by averaging the yield rates reported by the 4 selected cultivators.

If C1, C2, C3, C4 are the cultivators and P1, P2, P3, P4 are their produce and a1, a2, a3, a4 are the areas respectively under the crop, then the average yield for the village is equal to

$$Y = \frac{1}{4} \left\{ \frac{P1}{a1} + \frac{P2}{a2} + \frac{P3}{a3} + \frac{P4}{a4} \right\}$$

After obtaining the yield rates for all the selected villages in the mandal in the above manner, then the average yield for the mandal is worked out as follows.

If V1, V2 are the villages selected from selected mandal and their average yields are Y1, Y2, then the mandal average yield is given by the simple average yield in the following manner.

$$\text{Mandal average yield} = \frac{Y1 + Y2}{2}$$

The district average yield is obtained by weighted average method by taking mandal-wise cropped areas as weights.

$$\text{District average yield} = \frac{MA1Y1 + MA2Y2}{MA1 + MA2}$$

Where Y1, Y2 are the mandal average yields and MA1 and MA2 are the mandal areas of the selected crop.

ANNEXURE-II
COLLECTION OF YIELD AND PRICE DETAILS UNDER
Non-cc method

| Name of the Mandal : | | | | Name of the Season: | | | |
|----------------------|----------------------------|------------------|-----------------------------|----------------------------|----------------------------|---------------|---------|
| Sl. No | Name of the Crop/Commodity | Selected Village | Area under the crop (in Ha) | Average Yield (Kgs per Ha) | Unit (Kg/ Quintal/ Number) | Price (in Rs) | Remarks |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Signature of the Tahasildar

ANNEXURE-III A
COLLECTION OF YIELD DETAILS
UNDER NON.C.C method

Name of the Season:

Name of
the District:

| Sl. No | Name of the Crop | Selected Mandal Name | Mandal Area under the crop (in Ha.) | Mandal Average Yield (Kgs /Hect.) | Production kgs | Remarks |
|-----------|------------------------|----------------------------|---|--|-------------------|---------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | | | | | | |

Signature of the Chief Planning Officer

ANNEXURE-III B
COLLECTION OF PRICE DETAILS
UNDER NON.C.C METOOD

Name of the District :

Name of the Season:

| Sl. No | Name of the Crop/ Commodity | Selected Mandal Name | Selected Village Name | Unit (Kg/ Quintal/ Number) | Price (in Rs) | Remarks |
|-----------|-----------------------------------|----------------------------|-----------------------------|----------------------------------|------------------|---------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | | | | | | |

Signature of the Chief Planning Officer