



# REPORT ON IMPROVEMENT OF CROP STATISTICS 2022-23 FASLI - 1432 TAMIL NADU



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## ***PREFACE***

The Scheme for “Improvement of Crop Statistics“ was launched in 1973 -74 as a joint effort of the National Statistics Office(NSO), Government of India and the Department of Economics and Statistics of the State Government. Improvement of Crop Statistics is one of the components of “Improvement of Agricultural Statistics”. It is implemented in Tamil Nadu as a central sector scheme. The objective of the scheme is to locate the deficiencies in the system of Crop area and yield statistics by exercising technical supervision over the primary field work. It is for suggesting remedial measures to improve the system towards achieving overall improvement of Agricultural Statistics.

The objectives, design, plan of work, estimation procedure etc are presented in this report together with an analytical study of the results obtained as a result of the execution of the scheme during the year 2022-23.

The efforts put forth by the field officials of the NSO and the Department of Economics and Statistics in data collection, tabulation, analysis and preparation of the report deserve appreciation.

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Director.

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# **1.INTRODUCTION**

## **1.1 GENESIS OF THE SURVEY**

The Official Statistics on the Area under various crops are recorded at the village level in Tamil Nadu by the Village Administrative Officers (V.A.O). But quite often the Area Statistics thus compiled are either found to be incomplete or inaccurate, the reason attributed thereto being, that the Village Administrative Officers are engaged in the preparation of Village Accounts mainly for the purpose of the collection of land revenue and other taxes at the village level. The need was, therefore, felt for an element of supervision that could be undertaken on a scientific basis over the primary work of Area enumeration done by the Village Administrative Officers. However, as the supervision of the collection of accurate Area Statistics over a vast area is a voluminous work requiring a group of work of personnel, other ways were to be attempted to correct the deficiency. With this objective, a working group on Agricultural Statistics, set up by the Governing Council of the National Statistical Office, made certain recommendations in March 1973 about the need for strengthening the supervision of field work relating to both crop-area and yield statistics. Based on those recommendations, a scheme known as 'Improvement of Crop Statistics' was first implemented in Tamil Nadu, as per G.O.Ms.No.310 (Statistics) Forests & Fisheries Department, dated: 21st March 1975 and continued thereafter. At present, the Department of Economics and Statistics is implementing this scheme in Tamil Nadu, in collaboration with the National Statistical Office, Government of India.

## **1.2 FINANCIAL ASSISTANCE AND IMPLEMENTATION**

The scheme was initially implemented as a centrally sponsored scheme fully funded by the Ministry of Agriculture and Irrigation, Government of India. From the year 1975-76, the expenditure was equally shared by the central and state governments on a 50:50 basis. Again from the year 2007-08, Government of India has fully funded this scheme. From the year 2003-04, centrally sponsored schemes, such as; i) TRS, ii) ICS have been merged and brought under one umbrella namely " Improvement of Agricultural Statistics " as its components. Implementation and monitoring of the scheme are the same. The technical guidance both for organizing the Sample Check on Area Enumeration and Supervision of Crop Cutting experiments is provided by the National Statistical Office (FOD), Government of India, Faridabad. At the state level, the Execution and Administration of the scheme are under the control of Director, Department of Economics and Statistics, Tamil Nadu.

### **1.3 OBJECTIVE**

The main objective of the scheme is to undertake sample checks over the primary field work done by VAO's jointly with the National Statistical Office (NSO) and the State Agricultural Statistics Authority (SASA) and to effect improvements in the quality of primary data in respect of both crop-area and yield estimation surveys in the State. The scheme is further expected to provide the basis for determining the precise lines on which the improvement in the crop estimation system would require to be effected.

### **1.4 COVERAGE**

Every year, 520 villages from Timely Reporting Scheme (TRS) villages for sample check on area enumeration and 1560 experiments from General Crop Estimation Survey (GCES) for supervision of crop cutting experiments are selected for this scheme. From that, 50 percent of villages and experiments are being allotted to the National Statistical Office and the remaining 50 percent to the State Agricultural Statistics Authority (SASA) for supervising area enumeration and yield estimation.

### **1.5 SURVEY DESIGN**

#### **A) SAMPLE CHECK ON AREA ENUMERATION (A.S -1.0)**

The design adopted is a multi-stage random sampling method without replacement by which two sets of non-overlapping sample villages are selected on a matching basis (i.e.) 260 villages for the National Statistical Office (FOD) staff and 260 villages for the state statistical staff in all the Districts of TamilNadu.

Under each one of the sample villages which are selected for Improvement of Crop Statistics, four clusters each consisting of five survey / sub-division numbers are selected on a random basis for area supervision by applying a circular systematic sampling method. A taluk or a group of contiguous taluks in each District constitute a stratum during each fasli year.

#### **B) SUPERVISION OF CROP CUTTING EXPERIMENTS (A.S - 2.0)**

It is mainly intended to check the quality of crop cutting experiments both at harvest and post-harvest stages. A matching sample of 780 experiments has been selected for supervision each by the state staff and the National Statistical Office staff by simple random sampling technique without replacement from the list of General Crop Estimation Survey villages.

### **C) PAGE TOTALING OF KHASRA REGISTER (A.S -1.1)**

The details of land use as per aggregation done and reported by the Village Administrative Officer to the higher authorities and as checked from adangal for the village as a whole by page totalling by the supervisor will be recorded in the A.S-1.1 schedule by the supervisor concerned.

### **1.6 TRAINING**

At the commencement of each fasli year, all the field functionaries engaged under the scheme are being imparted training for two days at the Regional level, the first day earmarked for theoretical aspects and the next day for field training.

## **2. PLAN OF WORK DURING 2022-23**

### **2.1 COVERAGE**

The plan of work is as follows:

(i) Carrying out sample checks on the Enumeration of Area done by the Village Administrative Officers in the selected villages during each season (A.S.1.0).

(ii) Exercising supervision of crop cutting experiments in a sub-sample of villages selected from the General Crop Estimation Survey villages.(A.S.2.0)

(iii) Checking the area reported by VAO by page totalling adangal in the sample villages at the end of each Agricultural Year. (A.S.1.1)

### **2.2 PHASES (A.S.1.0)**

With regard to the sample check on Area Enumeration, four clusters at five survey / sub-division numbers per cluster were selected in each of the sample villages and the particulars of land utilisations in respect of those clusters were physically verified by the supervisors during each of the following phases during the year.

Phase -I ----- April'22 – October'22.

Phase -II ----- November'22 – January'23.

Phase -III ----- February'23 & March'23.

Under this scheme, the supervisory officers were required to verify the entries made in the adangal by the Village Administrative Officers and report them in schedule A.S-1.0 along with their findings. This process is continued for all three phases during the year.

### **2.3 SUPERVISION (A.S.2.0)**

The supervision of crop cutting experiments on the principal food and non-food crops viz., Paddy – kar / kuruvai / sornavari, samba / thaladi / pishanam, navarai / kodai and Kharif, as well as Rabi crops of Jowar, Bajra, Ragi, Groundnut, Cotton, Sugarcane, Gingelly, Maize, Blackgram and Greengram were undertaken in the villages selected to carry out inspection at harvest / post harvest stages. Particulars relating to yield data and other ancillary items such as a variety of seeds, (High yielding variety or otherwise) sources of irrigation, application of manure, fertilizers and pesticides, etc. were gathered and furnished in Schedule A.S-2.0.

## **2.4 AREA CHECKING (A.S.1.1)**

Schedule A.S-1.1 is designed to study the discrepancies between the figures

- (i) as aggregated by the Patwari
- (ii) as reported by Patwari to higher authorities, and
- (iii) as checked by the supervisors in respect of the area under the crops / crop mixtures / non-crop utilisations.

The Assistant Superintendent / State Supervisor is to sum the area figures separately for each season for the crop / crop mixtures / non-crop uses page by page and attach them to the schedule. A working sheet has been provided to facilitate the page totalling of area figures.



### 3. ESTIMATION PROCEDURE

#### 3.1 PREPARATION OF QUICK ESTIMATES OF "AVERAGE YIELD RATE" - PROCEDURE, TIME SCHEDULE, UTILITY ETC.(A.S.2.0)

The primary responsibility for the collection of area and production of crops vests with the state government. The yield rates of principal crops are estimated under General Crop Estimation Surveys (GCES) through crop cutting experiments conducted by the state agencies. The crop cutting experiments consist of (i) location and marking of an experimental plot of specified size in a field selected on the basis of random sampling, (ii) harvesting and threshing of its produce, and (iii) recording the weight of the clean and dry or wet produce. The design adopted for the survey is multi-stage random sampling, community development blocks as strata, villages within a stratum as first stage units of sampling, fields within each selected village as second stage sampling units and an experimental plot of a specified shape and size as the ultimate unit of sampling.

The National Statistical Office (NSO) has the overall responsibility of assisting the states in developing suitable survey techniques for obtaining reliable and timely estimates. Under the Improvement of Crop Statistics scheme, the Central i.e., NSO staff and the SASA staff supervise the crop cutting experiments, conducted by state primary workers, in a sub-sample of GCES experiments. The schedule A.S-2.0 is used for recording the observations of the supervisory staff on crop cutting experiments. The entire filled-in central and state A.S-2.0 soft copy & hard copy of the schedules are sent to NSO (FOD), Faridabad and to Department of Economics and Statistics from the field functionaries for the analysis and estimation of yield rates.

Cut-off dates are fixed for the receipt of schedules (both area enumeration and supervision of crop cutting experiments) in respect of central as well as state samples separately. Similarly, due dates are also fixed to send the final tables to NSO (FOD), Faridabad.

#### SAMPLE CHECK ON AREA ENUMERATION (A.S.1.0)

The estimates of area will be worked out for each category of crop (i) high yielding – irrigated, (ii) high yielding – un-irrigated, (iii) local-irrigated, (iv) local - un-irrigated. The estimates of % standard error (SE) will be worked out and given for the total estimated area under the crop for the state as a whole. Stratum-wise estimates of area under each category will be obtained as under:

$$\hat{Y}_i = \frac{N_i}{n_i} \sum_{j=1}^{n_i} \left[ \frac{H_{ij} \times a_{ij}}{S_{ij}} \right]$$

Where,

- $\hat{Y}_i$  = Estimated Area under a crop in the  $i^{\text{th}}$  Stratum,  
 $a_{ij}$  = Total area under a crop in the selected clusters of survey numbers in  $j^{\text{th}}$  village of  $i^{\text{th}}$  stratum,  
 $S_{ij}$  = Number of selected survey/serial numbers in the  $j^{\text{th}}$  sample in the  $i^{\text{th}}$  stratum,  
 $H_{ij}$  = Highest serial number in  $j^{\text{th}}$  sample village in the  $i^{\text{th}}$  stratum,  
 $n_i$  = Number of sample villages analysed in the  $i^{\text{th}}$  stratum and  
 $N_i$  = Total number of revenue villages in the  $i^{\text{th}}$  stratum.

The estimates of area thus obtained for each stratum in a district are added to get the estimate of area at district level ( $Y_d$ ) and the total district level estimate gives the state level estimate of area ( $\hat{Y}$ ).

The % standard error of the estimate of area at state level is obtained as follows:

$$\% \text{ SE} = \frac{\text{S.E. of the estimate}}{\text{estimate}} \times 100$$

Where standard error is the square root of the state level variance, which is the sum of variance of the district level estimates.

### **SUPERVISION OF CROP CUTTING EXPERIMENTS (A.S.2.0)**

On the basis of the data collected through schedule A.S-2.0, estimates of yield rates of the principal crops along with their % standard error are prepared and sent to NSO. The procedure followed to obtain such estimate at state level is as follows:

(i) Calculate the yield rate for the crop at district level in terms of green weight in grams/plot ( $\bar{Y}_{ig}$ ) which is a simple average of sample plot yield and is given by,

$$\bar{Y}_{ig} = \frac{\sum_{j=1}^{m_i} \sum_{k=1}^{n_{ij}} Y_{ijk}}{n_i}$$

Where, \_

$Y_{ig}$  = average yield rate for the crop at district level in terms of green weight in grams per plot.

$Y_{ijk}$  = plot yield in gms. in the  $k^{\text{th}}$  experimental plot of  $j^{\text{th}}$  sample village in the  $i^{\text{th}}$  district.

$n_{ij}$  = number of experiments analysed in the  $j^{\text{th}}$  sample village of the  $i^{\text{th}}$  district.

$n_i$  = number of experiments analysed in the  $i^{\text{th}}$  district, given by: -

$$\sum_{j=1}^{m_i} n_{ij}$$

$m_i$  = number of sample villages in which experiments are analysed in the  $i^{\text{th}}$  district

(ii) Calculate the conversion factor to convert the yield rate of green weight in grams/plot to yield rate in kg/hect. Conversion Factor (CF) is to be worked out by making use of the drilage ratio at state level for the previous year and the plot size. For crop paddy also use the recovery ratio of rice from paddy.

(iii) The estimate of yield rate in kg/hect at district level

$$(\bar{y}_i) \text{ is given by, } \bar{Y}_i = Y_{ig} \times CF$$

The average yield rate in kg/hect at state level ( $\bar{Y}$ ), which is given by

$$\bar{Y} = \frac{\sum_{i=1}^d a_i \times \bar{Y}_i}{\sum_{i=1}^d a_i}$$

Where,

$a_i$  = area under the crop in the  $i^{\text{th}}$  district during the previous year.

$d$  = no. of districts in the state.

The percentage standard error of the yield rate is given by

$$\frac{(\text{Standard error of the estimate})}{\text{estimate}} \times 100$$

The variance of the estimated yield rate is given by

$$V(\bar{Y}) = \frac{\left\{ F \sum_{i=1}^d \frac{a_i^2}{n_i} + (E - F) \sum_{i=1}^d \frac{a_i^2 \sum_{j=1}^{m_i} n_{ij}^2}{\lambda_i n_i^2} \right\}}{\left\{ \sum_{i=1}^d a_i \right\}^2}$$

Where  $V(\bar{Y})$  = Estimated variance of the estimate of average yield at state level

$$\lambda_i = \frac{n_i^2 - \sum_{j=1}^{m_i} n_{ij}^2}{n_i(m_i - 1)}$$

E = mean square between villages for the state

$$E = \frac{\sum_{i=1}^d \left[ \sum_{j=1}^{m_i} \frac{\left( \sum_{k=1}^{n_{ij}} y_{ijk} \right)^2}{n_{ij}} - \frac{\left( \sum_{j=1}^{m_i} \sum_{k=1}^{n_{ij}} y_{ijk} \right)^2}{n_i} \right]}{\sum_{i=1}^d (m_i - 1)}$$

F = mean square of yield within villages, which is given by

$$F = \frac{\sum_{i=1}^d \left[ \sum_{j=1}^{m_i} \sum_{k=1}^{n_{ij}} Y_{ijk}^2 - \sum_{j=1}^{m_i} \frac{\left( \sum_{k=1}^{n_{ij}} Y_{ijk} \right)^2}{n_{ij}} \right]}{\sum_{i=1}^d (n_i - m_i)}$$

This variance is multiplied by  $CF^2$  to obtain the variance of the estimates in terms of kg/hect.

$$\sqrt{V(\bar{Y})}$$

The standard Error (SE) is given by,  $SE = \frac{\sqrt{V(\bar{Y})}}{n}$

and the percentage standard error of the yield rate is given by

$$\%SE(\bar{Y}) = \frac{\sqrt{V(\bar{Y})}}{\bar{y}} \times 100$$

Crops for which pre-stratification in planning of experiments under ICS has been adopted according to the corresponding pre-stratification under CES in the state, the estimates of yield rate and its percentage and standard error are prepared separately for each category of a crop. The estimates for different categories at state level are then combined as under:

Let  $\bar{Y}_1$  be estimated average yield rate for 1<sup>st</sup> category.

$\bar{Y}_2$  be estimated average yield rate for 2<sup>nd</sup> category.

$A_1$  to the area under the crop in the state for 1<sup>st</sup> category.

$A_2$  to the area under the crop in the state for 2<sup>nd</sup> category.

Then the combined estimate of yield rate is given by

$$\bar{Y}_{(1+2)} = \frac{\bar{Y}_1 A_1 + \bar{Y}_2 A_2}{A_1 + A_2}$$

The estimate of its variance is given by

$$V[(\bar{Y})_{1+2}] = P_1^2 \text{Var}(\bar{Y}_1) + P_2^2 \text{Var}(\bar{Y}_2)$$

Where  $P_1 = \frac{A_1}{A_1 + A_2}$  &  $P_2 = \frac{A_2}{A_1 + A_2}$

$V(\bar{Y}_1)$  = the estimate of variance of I<sup>st</sup> category.

$V(\bar{Y}_2)$  = the estimate of variance of II<sup>nd</sup> category.

The estimate of yield rate and its percentage standard error is prepared separately for central and state samples and these estimates are then pooled together as:

Let  $\bar{Y}_c$  &  $\bar{Y}_s$  be the estimated average yield rate for central and state samples respectively.

And  $V_c$  &  $V_s$  be the estimate of variance for central and state samples respectively.

Calculate

$$e_c = \frac{1}{V_c} \quad \text{and} \quad e_s = \frac{1}{V_s}$$

The pooled estimate of yield rate is given by

$$\bar{Y}_p = \frac{e_c \bar{Y}_c + e_s \bar{Y}_s}{e_c + e_s}$$

And an estimate of its variance is given by

$$V(\bar{Y}_p) = \frac{1}{e_c + e_s}$$

## 4. RESULTS OF THE SURVEY

### A. AREA STATISTICS

**4.1** Table - 1 shows the details of receipt of schedules as A.S.1.0 and 1.1 during the year 2022-23 and 2021-22 and their response in respect of the receipt of schedules were 100 % during the year 2022-23. It is observed that overall 100% of A.S.1.0 schedules were received within the cut off date during this year. With regard to schedule A.S.1.1, 100% of schedules for state samples were received within cut off date.

**4.2** The phase-wise total no. of schedules received with 'A' entries (entries made by the supervisor) and 'B' entries (entries made by the primary worker i.e., VAO in the village records) during the year 2022-23 and 2021-22 were analyzed in Table – 2 and found that all the schedules were received with both the entries.

**4.3** Table - 3 provides the detail regarding the updating of village maps, their availability and usability. It may be seen that maps are usable and more than 20 years old in 498 villages below 5 years old in 12 villages and below 6 to 10 years old in 2 villages below 11 to 20 years old in 8 villages planned for pooled sample.

**4.4** The villages selected for the sample check on area enumeration during the year 2022-23 have been classified according to Geographical Area and shown in Table – 4. It is observed from the table of pooled samples that out of 520 villages analyzed, only 24 villages (4.62 %) possessed the lowest Geographical area of up to 50 Hectares, while 13 villages ( 2.50.% ) had the highest geographical area extending more than 3000 hectares each. It may be seen from the table that a maximum number of 108 villages (20.77%) and 112 villages (21.54%) fell within a group in which the geographical area ranged between 201 and 400 hectares and 1001 to 3000 hectares respectively.

**4.5** The VAO's work load were measured in terms of Average no.of villages in their respective jurisdiction. Average workload of VAOs in terms of survey / sub-survey numbers and geographical area for the years 2022-23 and 2021-22 are shown in Table – 5. It is evident that the average workload of the Village Administrative Officers in terms of villages as well as survey numbers / geographical area are reasonable.

**4.6** The particulars of completion of girdawari by Village Administrative Officers for the years 2022-23 and 2021-22 are furnished in Table - 6. On comparison of the position of timely completion of area enumeration work during 2022-23 with that of the previous year, it is observed that the timely completion of area enumeration work was found to be of the order of 100% for Phase-I, Phase-II and Phase-III.

**4.7** Information on the workload of Village Administrative Officers was measured in terms of number of villages allotted per V.A.O is given in Table – 7. It is observed that 98.85% of the V.A.Os had 1-5 villages in their jurisdiction. But only 0.96 % of Village Administrative Officers covered 6-10 villages range and 0.19% of VAOs covered 11-15 villages range.

#### **4.8 SUBMISSION OF TRS STATEMENTS**

The details of submission of TRS statements during the year 2022-23 and 2021-22 are presented in Table - 8. It reveals that TRS statements were submitted on time which accounts for 100% of villages in Phase-I, II and III respectively during the year 2022-23. The corresponding figures of submission of TRS statements in time for 2021-22 were 100%, for Phase-I, Phase-II and Phase-III respectively.

#### **4.9 RECORDING OF AREA UNDER DIFFERENT CROPS IN ADANGAL**

During the course of sample check on area enumeration under various crops carried out in the selected survey / sub-division numbers in the sample villages and the corresponding entries made in the adangal maintained by the Village Administrative Officers, several errors have been noticed. The number of serial / survey numbers under different types of errors for the years 2022-23 and 2021-22 are furnished in Table – 9. The sample checks reveal that only 47.75%, 53.05% and 56.99% of survey numbers of crop area reported by supervisor and Patwari tallied in Phase-I, Phase-II and Phase-III respectively for the year 2022-23 as against 53%, 60% and 54 % in the corresponding phases of the previous year.

**4.10 & 4.11** Table-10 and Table-11 deal with the frequency distribution of errors in recording of Irrigation and Variety particulars made by Supervisor and Patwari in Phase-I, Phase-II and Phase-III for the year 2022-23.

#### **4.12 PAGE TOTALING OF KHASRA REGISTER (A.S-1.1)**

The estimated area based on the village papers as checked by the supervisors and as recorded by the Village Administrative Officers in adangal for various crops for the year as a whole are furnished in Table - 12. It may be seen that there is only a minor difference between the estimated area of different crops.

#### **5.UTILITY OF THE SCHEME**

The sample checks reveal that the field work done at primary level is intended to effect improvement in the quality of primary data in respect of both enumeration of crop area and crop estimation survey. This factor helps both Central and State Governments in planning agricultural policies and programme with accuracy.



**TABLE 1**  
**RECEIPT OF SCHEDULES**

Year	Schedules	Season	Sample	No. of villages / experiments planned	No. of villages / experiments for which schedules received			
					by cut off date	%	after cut off date	%
2022-23	A.S.1.0 (Villages)	Phase - I	Central	260	260	100	0	0
			State	260	260	100	0	0
			Pooled	520	520	100	0	0
		Phase -II	Central	260	260	100	0	0
			State	260	260	100	0	0
			Pooled	520	520	100	0	0
		Phase -III	Central	260	260	100	0	0
			State	260	260	100	0	0
			Pooled	520	520	100	0	0
	A.S.1.1 (Villages)	Whole year	Central *	--	--	--	--	--
			State	260	260	100	0	0
			Pooled	260	260	100	0	0
	A.S.2.0 (Expt)	Whole Year	Central	780	ONLINE ENTRY			
			State	780				
			Pooled	1560				
2021-22	A.S.1.0 (Villages)	Phase - I	Central	260	260	100	0	0
			State	260	260	100	0	0
			Pooled	520	520	100	0	0
		Phase -II	Central	260	260	100	0	0
			State	260	260	100	0	0
			Pooled	520	520	100	0	0
		Phase -III	Central	260	260	100	0	0
			State	260	260	100	0	0
			Pooled	520	520	100	0	0
	A.S.1.1 (Villages)	Whole year	Central *	--	--	--	--	--
			State	260	260	100	0	0
			Pooled	260	260	100	0	0
	A.S.2.0 (Expt)	Whole Year	Central	780	ONLINE ENTRY			
			State	780				
			Pooled	1560				

**Note :**

\* - The field work of A.S-1.1 Schedules has been suspended for central sample till further order as per the NSSO, Faridabad ( Lr.No:A-0013 / Workload / ICS / 2008-AS, dated:08.12.2008 )

**TABLE 2**

**RESPONSE IN SAMPLE CHECK ON ENUMERATION OF AREA**

Season	Sample	Number of villages planned		Total number of schedules received		Number of schedules analysed						Total	
						With 'A&B' entries together		With 'A&B' entries separately		With 'A' entries only			
						2022-23	2021-22	2022-23	2021-22	2022-23	2021-22		
Phase -I	Central	260	260	260	260	260	260	0	0	0	0	260	260
	State	260	260	260	260	260	260	0	0	0	0	260	260
	Pooled	520	520	520	520	520	520	0	0	0	0	520	520
Phase -II	Central	260	260	260	260	260	260	0	0	0	0	260	260
	State	260	260	260	260	260	260	0	0	0	0	260	260
	Pooled	520	520	520	520	520	520	0	0	0	0	520	520
Phase -III	Central	260	260	260	260	260	260	0	0	0	0	260	260
	State	260	260	260	260	260	260	0	0	0	0	260	260
	Pooled	520	520	520	520	520	520	0	0	0	0	520	520

A -Supervisor  
B - Patwari

**TABLE 3****INFORMATION REGARDING UPDATION OF VILLAGE MAPS AND THEIR USABILITY**

Number of years since updated	No. of villages where information available			
	2022-23			
	Central	State	Pooled	Percentage to pooled sample
(l) Total No.of villages analysed	260	260	520	100
(a) 1-5	5	7	12	2.3
(b) 6-10	1	1	2	0.4
(c) 11-20	8	0	8	1.5
(d) more than 20 years	246	252	498	95.8
(e) information not available	0	0	0	0.0
(2) Availability of maps with patwari				
(a) maps available	260	260	520	100
(i) usable maps	258	253	511	98
(ii) unusable maps	2	7	9	2.0
(b) maps not available	0	0	0	0.0

**TABLE 4**

**BI-VARIATE FREQUENCY DISTRIBUTION OF SAMPLE VILLAGES COVERED BY THE SCHEME DURING THE YEAR 2022-23 ACCORDING TO TOTAL NUMBER OF SURVEY /SUB-DIVISION NUMBERS AND GEOGRAPHICAL AREA  
(Pooled Sample)**

Class interval of Serial / Survey Numbers (code)	Class intervals of Geographical Area(ha)									Not Reported	Total	Percentage to selected villages
	up to 50	51 -100	101-200	201-400	401-600	601-800	801-1000	1001-3000	above 3000			
Upto 50	0	1	0	0	0	0	0	0	0	0	1	0.19
51 - 100	1	0	0	0	1	0	0	0	0	0	2	0.38
101 - 200	2	8	2	1	0	0	0	0	0	0	13	2.50
201 - 400	1	4	11	2	0	0	0	1	0	0	19	3.65
401-600	2	8	12	5	0	0	0	0	1	0	28	5.38
601 - 800	0	3	9	10	2	0	0	1	0	0	25	4.81
801 - 1000	2	1	7	15	2	2	1	0	1	0	31	5.96
1001-5000	14	5	12	75	82	44	34	75	8	0	349	67.12
More than 5000	2	0	1	0	6	2	3	35	3	0	52	10.00
Information not reported	0	0	0	0	0	0	0	0	0	0	0	0.00
<b>Total</b>	<b>24</b>	<b>30</b>	<b>54</b>	<b>108</b>	<b>93</b>	<b>48</b>	<b>38</b>	<b>112</b>	<b>13</b>	<b>0</b>	<b>520</b>	<b>100</b>
<b>Percentage</b>	<b>4.62</b>	<b>5.77</b>	<b>10.38</b>	<b>20.77</b>	<b>17.88</b>	<b>9.23</b>	<b>7.31</b>	<b>21.54</b>	<b>2.50</b>	<b>0.00</b>	<b>100.00</b>	<b>100.00</b>

**TABLE 5****WORKLOAD OF VILLAGE ADMINISTRATIVE OFFICERS IN THE SELECTED VILLAGES**

Sample	Average number of villages allotted per patwari				Average workload per Patwari in the selected villages in terms of			
	Total		TRS		No. of survey / sub-survey numbers		Geographical area (in hec.)	
Year	2022-23	2021-22	2022-23	2021-22	2022-23	2021-22	2022-23	2021-22
Central	2	2	1	1	2502	2580	797	778
State	2	2	1	1	2465	2265	693	764
Pooled	2	2	1	1	2484	2422	745	771

**TABLE 6**

**TIMELINESS IN COMPLETION OF TRS AREA ENUMERATION**

Year	Sample	No. of villages analysed	No. of villages where girdawari completed														
			Phase-I					Phase-II				Phase-III					
			In time	Late	Partially completed	Not yet started	Total	In time	Late	Partially completed	Not yet started	Total	In time	Late	Partially completed	Not yet started	Total
2022-23	Central	260	260	0	0	0	260	260	0	0	0	260	260	0	0	0	260
	State	260	260	0	0	0	260	260	0	0	0	260	260	0	0	0	260
	Pooled	520	520	0	0	0	520	520	0	0	0	520	520	0	0	0	520
2021-22	Central	260	260	0	0	0	260	260	0	0	0	260	260	0	0	0	260
	State	260	260	0	0	0	260	260	0	0	0	260	260	0	0	0	260
	Pooled	520	520	0	0	0	520	520	0	0	0	520	520	0	0	0	520

**TABLE 7****FREQUENCY DISTRIBUTION OF PATWARI OF THE SELECTED VILLAGES ACCORDING TO TOTAL NUMBER OF VILLAGES ALLOTTED FOR THE YEAR 2022-23****(Pooled Sample)**

Total number of villages allotted per Patwari	Total		Total number of villages allotted per Patwari	TRS	
	Frequency	Percentage		Frequency	Percentage
1 to 5	514	98.85	1	485	93.27
6 to10	5	0.96	2	30	5.77
11 to15	1	0.19	3	5	0.96
Above 15	0	0.00	Above 3	0	0.00
Information not available	0	0.00	Information not available	0	0.00
Total	520	100.00	Total	520	100.00

**TABLE 8**

**COMPLETION OF TRS STATEMENT BY PATWARI**

Year	Sample	Total no. of villages analysed	Phase-I				Phase-II				Phase-III			
			In time	%	Late	%	In time	%	Late	%	In time	%	Late	%
2022-23	Central	260	260	100.00	0	0.00	260.00	100	0.00	0	260	100.00	0	0.00
	State	260	260	100.00	0	0.00	260.00	100	0.00	0	260	100.00	0	0.00
	Pooled	520	520	100.00	0	0.00	520.00	100	0.00	0	520	100.00	0	0.00
2021-22	Central	260	260	100.00	0	0.00	260.00	100	0.00	0	260	100.00	0	0.00
	State	260	260	100.00	0	0.00	260.00	100	0.00	0	260	100.00	0	0.00
	Pooled	520	520	100.00	0	0.00	520.00	100	0.00	0	520	100.00	0	0.00



**TABLE 9**

**DIFFERENT TYPES OF ERRORS OBSERVED IN RECORDING OF AREA**

Year	Season	Sample	Total No. of villages reporting in all crop	Total No. of serial / survey numbers reporting crop	No. of serial / survey numbers with error								
					No error e 0	%	Error					Total (e1 + e2+ e3)	%
							e 1	e 2	e 3				
2022-23	Phase-I	Central	508	513	235	45.81	67	4	207	278	54.19		
		State	546	909	444	48.84	261	6	198	465	51.16		
		Pooled	1054	1422	679	47.75	328	10	405	743	52.25		
	Phase-II	Central	252	274	128	46.72	86	7	53	146	53.28		
		State	264	348	202	58.05	75	11	60	146	41.95		
		Pooled	516	622	330	53.05	161	18	113	292	46.95		
	Phase-III	Central	133	144	72	50.00	43	6	23	72	50.00		
		State	170	221	136	61.54	53	3	29	85	38.46		
		Pooled	303	365	208	56.99	96	9	52	157	43.01		

e 1: where the supervisor reported the crop but patwari did not report  
e 2: where the supervisor did not report the crop but the patwari report it  
e 3: where the area under the crop reported by the supervisor and patwari differed

**TABLE 9**

**DIFFERENT TYPES OF ERRORS OBSERVED IN RECORDING OF AREA**

Year	Season	Sample	Total No. of villages reporting in all crop	Total No. of serial / survey numbers reporting crop	No. of serial / survey numbers with error								
					No error e 0	%	Error					Total (e1 + e2+ e3)	%
							e 1	e 2	e 3				
2021-22	Phase-I	Central	527	648	327	50.46	77	14	230	321	49.54		
		State	544	920	506	55.00	204	14	196	414	45.00		
			1071	1568	833	53.13	281	28	426	735	46.88		
	Phase-II	Central	213	213	115	53.99	57	5	36	98	46.01		
		State	287	396	248	62.63	61	0	87	148	37.37		
		Pooled	500	609	363	59.61	118	5	123	246	40.39		
	Phase-III	Central	124	132	65	49.24	32	6	29	67	50.76		
		State	173	209	119	56.94	63	7	20	90	43.06		
		Pooled	297	341	184	53.96	95	13	49	157	46.04		

Cont...

e 1: where the supervisor reported the crop but patwari did not report  
 e 2: where the supervisor did not report the crop but the patwari report it  
 e 3 : where the area under the crop reported by the supervisor and patwari differed

**TABLE 10**

**FREQUENCY DISTRIBUTION OF ERRORS IN RECORDING IRRIGATION PARTICULARS FOR THE YEAR 2022-23**

SEASON	SAMPLE	No. of Villages reporting crop	No. of Survey nos. reporting crop	SUPERVISOR HAS ENTERED IN SURVEY NUMBERS															Total (4+9+14)	Total (4 to 18)
				Irrigated only				Un Irrigated only				I and UI both				NR the crop				
				Patwari has entered				Patwari has entered				Patwari has entered				Patwari has entered				
				I	UI	UI & I	NR the crop	I	UI	UI & I	NR the crop	I	UI	UI & I	NR the crop	I	UI	UI & I		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
PHASE-I	Central	508	513	280	7	0	27	2	153	0	40	0	0	0	0	4	0	0	433	513
	State	546	909	508	3	0	164	2	129	0	97	0	0	0	0	5	1	0	637	909
	Pooled	1054	1422	788	10	0	191	4	282	0	137	0	0	0	0	9	1	0	1070	1422
PHASE-II	Central	252	274	142	11	0	46	1	27	0	40	0	0	0	0	2	5	0	169	274
	State	264	348	224	2	0	59	0	36	0	16	0	0	0	0	9	2	0	260	348
	Pooled	516	622	366	13	0	105	1	63	0	56	0	0	0	0	11	7	0	429	622
PHASE-III	Central	133	144	82	8	0	36	0	5	0	7	0	0	0	0	5	1	0	87	144
	State	170	221	141	0	0	39	0	24	0	14	0	0	0	0	3	0	0	165	221
	Pooled	303	365	223	8	0	75	0	29	0	21	0	0	0	0	8	1	0	252	365

**TABLE 11**  
**FREQUENCY DISTRIBUTION OF ERRORS IN RECORDING VARIETY PARTICULARS FOR THE YEAR 2022-23**

SEASON	SAMPLE	No. of Villages reporting crop	No. of Survey nos. reporting crop	SUPERVISOR HAS ENTERED IN SURVEY NUMBERS															Total (4+9+14)
				HIGH YEILD only				LOCAL only				HY and LOCAL both				NR the crop			
				Patwari has entered				Patwari has entered				Patwari has entered				Patwari has entered			
				HY	L	HY&L	NR the crop	HY	L	HY&L	NR the crop	HY	L	HY&L	NR the crop	HY	L	HY&L	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
PHASE-I	Central	508	513	280	5	0	23	4	153	0	44	0	0	0	0	2	2	0	433
	State	546	909	420	6	0	164	1	215	0	97	0	0	0	0	1	5	0	635
	Pooled	1054	1422	700	11	0	187	5	368	0	141	0	0	0	0	3	7	0	1068
PHASE-II	Central	252	274	142	5	0	53	1	33	0	33	0	0	0	0	2	5	0	175
	State	264	348	182	1	0	56	2	77	0	19	0	0	0	0	7	4	0	259
	Pooled	516	622	324	6	0	109	3	110	0	52	0	0	0	0	9	9	0	434
PHASE-III	Central	133	144	81	6	0	32	0	8	0	11	0	0	0	0	6	0	0	89
	State	170	221	120	0	0	41	0	45	0	12	0	0	0	0	3	0	0	165
	Pooled	303	365	201	6	0	73	0	53	0	23	0	0	0	0	9	0	0	254

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Total  
(4 to 18)

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**20**

513

909

1422

274

348

622

144

221

365

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**TABLE 12**  
**CROPWISE ESTIMATED AREA BASED ON SCHEDULE A.S.1.1**  
**(PAGE TALLING OF KHASRA REGISTER - 2022-23 (State Sample))**

(In ha)			
Crop	As per Supervisor's check	As per V.A.Os Account	Ratio of VAOs entries and that of Supervisors col.3 / col.2
1	2	3	3
Paddy	356827	356171	1.00
Jowar	84830	82520	0.97
Bajra	10220	10066	0.98
Ragi	12116	11788	0.97
Cotton	23767	24416	1.03
Sugarcane	36046	36367	1.01
Groundnut	62756	60325	0.96
Cashewnut	20046	20112	1.00

Others	596192	609215	1.02
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