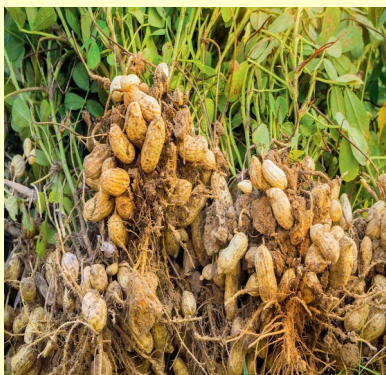# REPORT ON
IMPROVEMENT OF CROP STATISTICS
2021-22
FASLI - 1431
TAMIL NADU

**Department of Economics and Statistics,
Chennai - 600 006**

PREFACE

The Scheme for "Improvement of Crop Statistics" was launched in 1973 -74 as a joint effort of the NSO, Government of India and 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 analytical study of the results obtained as a result of the execution of the scheme during the year 2021-22.

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

Place : Chennai-6

Date : 23.11.2022

Additional Director

Department of Economics and Statistics

CONTENTS

TABLES   AREA STATISTICS

1.INTRODUCTION

1.1 GENESIS OF THE SURVEY

The official statistics on area under various crops are recorded at 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 net 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 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, iii) CES on F&V 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 state level, the execution and administration of the scheme are under the control of Commissioner, Department of Economics and Statistics, Tamil Nadu.

1.3 OBJECTIVE

The main objective of the scheme is to attempt jointly by the National Statistical Office (NSO) and the State Agricultural Statistics Authority (SASA) to undertake about sample checks over the primary field work done by VAO's 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 for National Statistical Office and the remaining 50 percent for 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 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 Tamil Nadu.

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 random basis for area supervision by applying circular systematic sampling method. A taluk or a group of continuous 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 have 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 the supervisor will be recorded in 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, first day earmarked for theoretical aspects and the next day for field training.

2. PLAN OF WORK DURING 2021-22

2.1 COVERAGE

The plan of work are as follows:

(i) Carrying out sample checks on enumeration of area done by the Village Administrative Officers in the selected villages during each season.

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

(iii) Checking the page totals of adangal (done by the Village Administrative Officers) in the sample villages at the end of each agricultural year.

2.2 PHASES

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 every year.

Phase -I   -------- July – October.

Phase -II   -------- November – January.

Phase -III   -------- February & March.

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 the three phases every year.

2.3 SUPERVISION

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 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

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. Working sheet has been provided to facilitate the page totaling of area figures.

3. ESTIMATION PROCEDURE

3.1 PREPARATION OF QUICK ESTIMATES OF "AVERAGE YIELD RATE" - PROCEDURE, TIME SCHEDULE, UTILITY ETC.

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 consists 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 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 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

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 ith Stratum,

a_{ij} =   Total area under a crop in the selected clusters of survey numbers in j[th] village of ith stratum,

S_{ij} =   Number of selected survey/serial numbers in the jth sample in the ith stratum,

H_{ij} =   Highest serial number in j[th] sample village in the ith stratum,

n_i =   Number of sample villages analysed in the ith stratum and

N_i =   Total number of revenue villages in the ith stratum.

The estimates of area thus obtained for each stratum in a district is added to get the estimate of area at district level (Y_d) and the total of 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:

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

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

On the basis of the data collected through schedule A.S-2.0, estimates of yield rates of the principal crops along with its % 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 ($\overline{Y}_{ig}$) which is a simple average of sample plot yield and is given by,

$$\overline{Y}_{ig} = \frac{\sum\limits_{j=1}^{m_i} \sum\limits_{k=1}^{n_{ij}} Y_{ijk}}{n_i}$$

Where,

$\overline{Y}_{ig}$ = 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 kth experimental plot of jth sample village in the ith district.

n_{ij} = number of experiments analysed in the jth sample village of the ith district.

n_i = number of experiments analysed in the ith district, given by: -

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

m_i = number of sample villages in which experiments are analysed in the ith district

(ii) Calculate the conversion factor to convert the yield rate of green weight in grams/plot to yield rate in kg/hec. Conversion Factor (CF) is to be worked out by making use of the driage 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/hec at district level

($\overline{y_i}$) is given by, $\quad \overline{Y}_i = Y_{ig} \times CF$

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

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

Where,

a_i = area under the crop in the ith district during the previous year.

d = no. of districts in the state.

The percentage standard error of the yield rate is given by

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

The variance of the estimated yield rate is given by

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

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

$$\lambda_i = \frac{n_i^2 - \sum_{j=1}^{mi} n_{ij}^2}{n_i(m_i - 1)}_8$$

E = mean square between villages for the state

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

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

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

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

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

The standard Error (SE) is given by, SE = and the percentage standard error of the yield rate is given by
$$\% SE(\overline{Y}) = \frac{\sqrt{V(\overline{y})}}{\overline{y}} \times 100$$

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 standard error is prepared separately for each category of a crop. The estimates for different categories at state level is then combined as under:

Let $\overline{Y}_1$ be estimated average yield rate for 1st category.

$\overline{Y}_2$ be estimated average yield rate for 2nd category.

A_1 to the area under the crop in the state for 1st category.

A_2 to the area under the crop in the state for 2nd category.

Then the combined estimate of yield rate is given by

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

And the estimate of its variance is given by

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

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

$V\left(\bar{Y}_1\right)$ = the estimate of variance of I[st] category.

$V\left(\bar{Y}_2\right)$ = the estimate of variance of IInd 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 sample respectively.

And $V_C \& V_S$ be the estimate of variance for central and state sample respectively.

Calculate

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

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 2021-22 and 2020-21 and their response in respect of the receipt of schedules were 100 % during the year 2021-22. 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 sample 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 2021-22 and 2020-21 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 updation of village maps, their availability and usability. It may be seen that maps are usable and more than 20 years old in 447 villages below 5 years old in 58 villages and below 10 years old in 1 villages below 20 years old in 14 villages planned for pooled sample.

4.4 The villages selected for the sample check on area enumeration during the year 2021-22 has 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 8 villages (1.54 %) possessed the lowest geographical area of up to 50 hectares, while 12 villages (2.31.%) had the highest geographical area extending more than 3000 hectares each. It may be seen from the table that a maximum number of 126 villages (24.23%) fell within a group of which the geographical area ranged between 1001 and 3000 hectares.

4.5 Details of the work load of the V.A.O's were measured in terms of villages in their respective jurisdiction. Average workload of VAO's in terms of survey / sub-survey numbers and geographical area for the years 2021-22 and 2020-21 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 2021-22 and 2020-21   are furnished in Table - 6. On comparison of the position of timely completion of area enumeration work during 2021-22 with that of 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 were measured in terms of number of villages allotted per V.A.O is given in Table – 7. It is observed that 94.04% of the V.A.O's had 1-5 villages in their jurisdiction. But only 5.19 % of Village Administrative Officers covering 6-10 villages range.

4.8 SUBMISSION OF TRS STATEMENTS

The details of submission of TRS statements during   the year 2021-22 and 2020-21 are presented in Table - 8. It reveals that TRS statements were submitted in time which accounts for   100% of villages in Phase-I, II and III respectively   during the year 2021-22. The corresponding figures of submission of TRS statements in time for 2020-21 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 type of errors for the years 2021-22 and 2020-21 are furnished in Table – 9. The sample checks reveal that only 53%, 60% and 54% of survey numbers of crop area reported by supervisor and Patwari tallied in Phase-I, Phase-II and Phase-III respectively for the year 2021-22 as against 53%, 54% and 46 % in the corresponding phases of the previous year.

4.10 Table-10 and Table-11 deals with 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 2021-22.

4.11   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 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 are 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	%
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				
2020-21	A.S.1.0 (Villages)	Phase - I	Central	260	260	100	0	0
			State	260	239	92	21	8
			Pooled	520	499	96	21	4
		Phase -II	Central	260	260	100	0	0
			State	260	259	100	1	0
			Pooled	520	519	100	1	0
		Phase -III	Central	260	260	100	0	0
			State	260	259	100	1	0
			Pooled	520	519	100	1	0
	A.S.1.1 (Villages)	Whole year	Central *	--	--	--	--	--
			State	260	250	96	10	4
			Pooled	260	250	96	10	4
	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 | | | |
		2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21
Phase-I	Central	260	260	260	260	260	260	0	0	0	0	260	260
	State	260	260	260	260	260	253	0	6	0	1	260	260
	Pooled	520	520	520	520	520	513	0	6	0	1	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	255	0	2	0	3	260	260
	Pooled	520	520	520	520	520	515	0	2	0	3	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			
	2021-22			
	Central	State	Pooled	Percentage to pooled sample
(I) Total No.of villages analysed	260	260	520	100
(a) 1-5	10	48	58	11.1
(b) 6-10	1	0	1	0.2
(c) 11-20	9	5	14	2.7
(d) more than 20 years	240	207	447	86
(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	260	260	520	100
(ii) unusable maps	0	0	0	0.0
(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 2021-22 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	1	1	0	0	0	0	0	0	0	0	2	0.38
51 - 100	1	1	1	0	1	0	0	0	0	0	4	0.77
101 - 200	2	5	3	2	0	0	0	0	0	0	12	2.31
201 - 400	0	8	9	2	3	0	0	0	1	0	23	4.42
401-600	0	3	15	9	3	0	0	0	0	0	30	5.77
601 - 800	0	0	12	15	2	0	1	0	0	0	30	5.77
801 - 1000	1	1	9	9	3	1	1	0	0	0	25	4.81
1001-5000	3	1	9	81	72	39	44	88	6	0	343	65.96
More than 5000	0	0	0	0	1	2	5	38	5	0	51	9.81
Information not reported	0	0	0	0	0	0	0	0	0	0	0	0.00
Total	8	20	58	118	85	42	51	126	12	0	520	100
Percentage	1.54	3.85	11.15	22.69	16.35	8.08	9.81	24.23	2.31	0.00	100.00	100.00

TABLE 5

WORKLOAD OF VILLAGE ADMINISTRATIVE OFFICERS IN THE SELECTED VILLAGES

Sample	Average number of villages alloted 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	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21
Central	2	2	1	1	2580	2628	778	766
State	2	2	1	1	2265	2347	764	780
Pooled	2	2	1	1	2422	2488	771	773

TABLE 6

TIMELINESS IN COMPLETION OF TRS AREA ENUMERATION

Year	Sample	No. of villages analysed	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
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
2020-21	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 2021-22

(Pooled Sample)

Total			TRS		
Total number of villages allotted per patwari	Frequency	Percentage	Total number of villages allotted per patwari	Frequency	Percentage
1 to 5	514	98.85	1	489	94.04
6 to10	5	0.96	2	27	5.19
11 to15	1	0.19	3	3	0.58
Above 15	0	0.00	Above 3	1	0.19
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	%
2021-22	Central	260.00	260	100.00	0	0.00	260.00	100	0.00	0	260	100.00	0	0.00
	State	260.00	260	100.00	0	0.00	260.00	100	0.00	0	260	100.00	0	0.00
	Pooled	520.00	520	100.00	0	0.00	520.00	100	0.00	0	520	100.00	0	0.00
2020-21	Central	260.00	260	100.00	0	0.00	260.00	100	0.00	0	260	100.00	0	0.00
	State	260.00	260	100.00	0	0.00	260.00	100	0.00	0	260	100.00	0	0.00
	Pooled	520.00	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	No. of villages reporting for all crop	No. of serial / survey numbers reporting crop	No error e 0	%	e 1	e 2	e 3	Total (e1 + e2+ e3)	%
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
		Pooled	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

22

TABLE 9

DIFFERENT TYPES OF ERRORS OBSERVED IN RECORDING OF AREA

Year	Season	Sample	No. of villages reporting for all crop	No. of serial / survey numbers reporting crop	No. of serial / survey numbers with error						
					No error e 0	%	Error				
							e 1	e 2	e 3	Total (e1 + e2+ e3)	%
2020-21	Phase-I	Central	541	747	345	46.18	136	28	238	402	53.82
		State	531	816	490	60.05	149	6	171	326	39.95
		Pooled	1072	1563	835	53.42	285	34	409	728	46.58
	Phase-II	Central	205	255	75	29.41	99	40	41	180	70.59
		State	333	452	308	68.14	80	5	59	144	31.86
		Pooled	538	707	383	54.17	179	45	100	324	45.83
	Phase-III	Central	100	132	29	21.97	48	32	23	103	78.03
		State	152	261	153	58.62	78	8	22	108	41.38
		Pooled	252	393	182	46.31	126	40	45	211	53.69

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 repoted by the supervisor and patwari differed

23

TABLE 10

FREQUENCY DISTRIBUTION OF ERRORS IN RECORDING IRRIGATION PARTICULARS FOR THE YEAR 2021-22

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	527	648	406	40	0	54	0	111	0	23	0	0	0	0	11	3	0	517	648
	State	544	920	550	1	0	98	2	149	0	106	0	0	0	0	7	7	0	699	920
	Pooled	1071	1568	956	41	0	152	2	260	0	129	0	0	0	0	18	10	0	1216	1568
PHASE-II	Central	213	213	110	17	0	25	0	24	0	32	0	0	0	0	1	4	0	134	213
	State	287	396	258	1	0	49	0	76	0	12	0	0	0	0	0	0	0	334	396
	Pooled	500	609	368	18	0	74	0	100	0	44	0	0	0	0	1	4	0	468	609
PHASE-III	Central	124	132	52	23	0	25	0	19	0	7	0	0	0	0	4	2	0	71	132
	State	173	209	133	0	0	58	0	6	0	5	0	0	0	0	7	0	0	139	209
	Pooled	297	341	185	23	0	83	0	25	0	12	0	0	0	0	11	2	0	210	341

TABLE 11

FREQUENCY DISTRIBUTION OF ERRORS IN RECORDING VARIETY PARTICULARS FOR THE YEAR 2021-22

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 to18)
				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	20
PHASE-I	Central	527	648	316	0	0	32	2	239	0	45	0	0	0	0	9	5	0	555	648
	State	544	920	417	2	0	100	0	283	0	104	0	0	0	0	10	4	0	700	920
	Pooled	1071	1568	733	2	0	132	2	522	0	149	0	0	0	0	19	9	0	1255	1568
PHASE-II	Central	213	213	105	24	0	26	0	22	0	31	0	0	0	0	5	0	0	127	213
	State	287	396	243	1	0	47	0	91	0	14	0	0	0	0	0	0	0	334	396
	Pooled	500	609	348	25	0	73	0	113	0	45	0	0	0	0	5	0	0	461	609
PHASE-III	Central	124	132	69	0	0	27	0	25	0	5	0	0	0	0	4	2	0	94	132
	State	173	209	120	0	0	57	0	19	0	6	0	0	0	0	6	1	0	139	209
	Pooled	297	341	189	0	0	84	0	44	0	11	0	0	0	0	10	3	0	233	341

TABLE 12

CROPWISE ESTIMATED AREA BASED ON SCHEDULE A.S.1.1

(PAGE TOTALLING OF KHASRA REGISTER - 2021-22 (State Sample)

(In ha)

Crop	As per Supervisor's check	As per V.A.O's account	Ratio of VAO's entries and that of Supervisors col.3 / col.2
1	2	3	3
Paddy	438483	435128	0.992
Jowar	79920	76088	0.952
Bajra	7350	7836	1.066
Ragi	9350	9372	1.002
Cotton	34686	34325	0.990
Sugarcane	22984	23448	1.020
Groundnut	30260	30780	1.017
Cashewnut	1484	9816	6.615