Sampling Plan for Avian Influenza (LPAI H9N2) under National Animal Disease Control Programme(NADCP) - 2022

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1. Why surveillance of Low Pathogenic Avian Influenza (H9N2 subtype) is a necessity for India?

Background:

Avian influenza (AI) is a highly contagious viral disease affecting domestic poultry, pet and wild birds. Occasionally, it infects mammals including humans indicating public importance. AI is caused by influenza A virus, one of the members of *Orthomyxoviridae* family. Based on severity of disease, AI viruses (AIVs) are classified as highly pathogenic AI (HPAI) that causes severe disease and high mortality, and low pathogenic AI (LPAI) that causes asymptomatic or mild disease. Segmented Influenza A virus genome is about 13.5 Kb and encodes 12 proteins: Hemagglutinin (HA), Neuraminidase (NA), Matrix proteins (M1 and M2 ion channel), Nuclear protein (NP), Non-structural proteins (NS1 and NS2), and proteins of RNA polymerase complex (PB1, PB1-F2, PB2 and PA and PA-X). The surface glycoproteins, HA and N contribute mostly for the antigenic diversity found in AI viruses. There are 18 HA subtypes and 11 NA subtypes globally and accordingly Influenza A viruses are named based on the combinations of HA & N subtypes, e.g., H5N1 and H9N2. Genetic and antigenic diversity of influenza a viruses is mainly mediated through two mechanisms: point mutations and re-assortment. Point mutations in the genome of influenza A virus contribute to the gradual evolution of the virus leading to antigenic changes while genetic reassortment occurs when a single susceptible host cell is infected with different influenza A viruses leading to emergence of a novel subtypes.

Among the various subtypes of avian influenza viruses, H9N2 influenza A virus is endemic in poultry in multiple countries in Eurasia, where it causes economic losses due to reduced egg production or high mortality in association with other pathogens. H9N2 virus was first isolated from turkeys in the USA in 1966 (Homme and Easterday, 1970). In Asia, H9N2 virus was first reported in Guangdong province, China in 1992.

Subsequently, the H9N2 virus was detected in many Asian countries including Afghanistan, Bangladesh, Cambodia, Egypt, India, Indonesia, Iran, Iraq, Israel, Japan, Kuwait, Myanmar, Nepal, Oman, Pakistan, Saudi Arabia, South Korea, and Vietnam.

Phylogenetically, the H9N2 viruses are split into two major branches/ groups, an American branch and an Eurasian branch (Peacock et al., 2019). The Eurasian H9N2 viruses have established at least three lineages found in poultry and are based on their prototype strains, A/quail/Hong Kong/G1/1997 (G1-lineage), A/chicken/Beijing/1/94 (BJ94/ Y280/G9-lineage) and A/chicken/Hong Kong/Y439/1997 (Y439/ Korean-lineage). The G1-lineage is further split into two major sub-lineages; G1-Western and G1-Eastern. The H9N2 virus isolated in India and other SAARC member countries including Afghanistan, Bangladesh, Nepal and Pakistan belongs to G1-lineage (Western).

Human infection with H9N2 LPAI virus was first recognised in China in 1998. Since then, detection of H9N2 viruses in human has been reported sporadically with associated mild disease in most human cases and no evidence for human-to-human transmission. Since 1998 a total of 91 H9N2 human infections have been documented (PHAC, 2022).

In India, H9N2 virus was first time detected in poultry farms in the state of Haryana in 2003 (Nagarajan *et al*., 2009). The clinical signs observed in chickens were gasping, conjunctivitis with facial edema followed by drop in egg production up to 50% with 5–6% mortality reaching up to 12–15% in isolated cases. Pathotyping in intravenous pathogenicity index (0.0/3.0) and hemagglutinin (HA) cleavage site analysis (^{335}RSSR*GLF^{341}) of viruses from Delhi, Gujarat, Haryana, Odisha, Punjab and Uttar Pradesh isolated during 2003-2004 were confirmed that these viruses are low pathogenic AI. Phylogenetic analysis showed that they belong to G1-lineage (Nagarajan *et al.*, 2009, Tosh *et al.*, 2008). Subsequently, H9N2 LPAI virus was detected in poultry in the states of Gujarat (2014), Tamil Nadu (2010-11) and West Bengal (2009-11) by independent surveillance of poultry (Jakhesara et al., 2014, Pawar et al., 2012, Gowthaman et al., 2016).

In a cross sectional study conducted in live bird poultry markets (LBPM) in 4 districts (Anuppur, Rewa, Satna and Shahdol) of Madhya Pradesh, prevalence of H9N2 virus was found to be in 9.2 % (Kurmi et al., 2020). The H9N2 virus has been detected in 3.86% of fecal/cloacal samples of resident birds during winter migration season at migratory-wild-domestic bird interface across the major wetlands of Maharashtra (Sood et al., 2021).

Though H9N2 virus causes mild clinical signs in poultry, e.g. respiratory disorders, reduced egg production (reduced laying rates by 14%–75%) and decrease in body weight and mortality (10%–40%) mostly due to co-infection with bacterial and other viruses (Zhang et al., 1994, Chen et al.,, 1994), the occupational exposure to infected poultry is an important factor for AI virus transmission to humans. In 2019, a 17 month old boy from Maharashtra was reported to be infected with H9N2 virus indicating public health importance (Potdar *et al.*, 2019). The genome sequence analysis indicated that the H9N2 human isolate belong to mixed lineage of G1 and H7N3 virus. In a serological surveillance of poultry workers in the state of Maharashtra during 2010, revealed prevalence of antibodies against H9 subtype AI virus was as high as 6.2 % of the subjects (Pawar *et al*., 2012).

H9N2 virus has been recognized to reassort with other subtypes, including H5N1 and H7N9 subtypes. The H9N2 viruses were the likely donors of the six internal genes of the H5N1 viruses causing the HPAI outbreak which transmitted to humans in Hong Kong in 1997 (Guan et al., 1999), and H7N9 which emerged in humans in China since 2013 (Cui et al., 2014). In India, H5N1 highly pathogenic avian influenza was detected in February, 2006. These viruses are co-circulating with H9N2 virus. The H9N2 virus has also contributed in the evolution of HPAI H5N1 virus (clade 2.3.2.1c) by sharing internal gene

segment (Tosh et al., 2016). Therefore, surveillance of H9N2 assumes significance and the present effort is in that direction.

2. TERMS OF REFERENCE (TOR):

2.1 Protocols for sample collection, transport, testing & data analysis

The cloacal and oro-pharyngeal swabs, and sera samples collected from the poultry by officials of the State Department of Animal Husbandry should be packed properly as per the standard procedure (Annexure 1) and sent to National Institute of High Security Animal Diseases (NIHSAD), Bhopal/ RDDLs/CDDL. Timely collection of samples in the prescribed manner and packaging and quick dispatch to RDDLs/CDDL/NISHAD is of utmost importance for quick and accurate results. All the samples from a farm should be packed together so that if required, the samples can be pooled and tested. Samples from other farms / areas should be kept separate. In case of mortality, the dead birds are the sample of choice. It is imperative that the cold-chain is maintained while dispatching/ transporting the samples. The samples should be accompanied with a prescribed Proforma for referring to designated laboratories for diagnosis of AI. The details of the area from where the samples were collected, place etc. should accompany the samples. The laboratories shall not accept samples without fully filled Proforma.

- The DAHD will coordinate the samples collection through RDDLs/CDDL with the respective State DI Laboratories from poultry farms (with > 1000 birds) under State Governments, poultry farms under Central Poultry Development Organization (CPDO), poultry farms under Indian Council of Agricultural Research and also from Industry under their jurisdiction from commercial poultry farms.
- Five regions with states have been identified considering the poultry density and geographical location as follows:
- North – Haryana, Uttar Pradesh and Punjab
- Central – Madhya Pradesh
- South – Karnataka, Tamil Nadu, Andhra Pradesh and Telangana
- East – Odisha and West Bengal
- West- Maharashtra

- Oro-pharyngeal and cloacal swabs and serum sample need to be collected from every sampled bird.
- 50% of samples from each district need to be sent to ICAR-NIHSAD with a farm-wise epidemiological inquiry form which is essential for the analysis of data.

- The quality of samples collected should be monitored and the samples need to be sent within 7 days of their collection in cold chain. DO NOT FREEZE THE SWAB SAMPLES.
- It is a cross-sectional survey and hence the SAMPLES NEED TO BE COLLECTED ONLY ONCE IN A YEAR FROM EACH FARM.
- The test results carried out at RDDLs/CDDL should be shared with ICAR-NIHSAD for compilation and submission of report to DAHD.
- ICAR-NIHSAD shall send the result of samples sent by RDDLs/CDDL to the respective RDDL/CDDL in addition to DAHD and ICAR.
- Periodical analysis of the results will be carried out by ICAR-NIHSAD and the report submitted to DAHD and ICAR.

3. Two -stage sampling plan for surveillance of Avian Influenza (H9N2)

Surveillance of infectious zoonotic diseases in general and Avian Influenza (H9N2) in particular has become increasingly important for veterinarians, researchers and department. Disease surveillance in poultry population involves the detecting the presence of disease, estimating its prevalence and spatial distribution and monitoring its progression. Probability sampling is appropriate for achieving the surveillance objectives are unfamiliar among disease managers and research scientists because training for most of them is based on classical experimental design in which control, manipulation and replication are cornerstone.

Sample surveys mostly rely on probability sampling to choose sample units e.g. Small areas or individuals, for observation from population of interest. Probability sampling is most often used when the objective is to estimation of population prevalence etc., In probability sampling, well defined rule or algorithm is invoked to randomly select a sample of units for observation from the list of all possible sample units (Sampling frame) that conceptually represent the population of Interest. The selection algorithms/rule and sampling frame allow us to calculate the probability that a sampling unit is included in the sample and derive the estimators for a specific sample design. Because of the selection probabilities are known, valid statistical properties of estimators can be derived, which provide the basis for evaluating the scientific credibility of the estimates. Estimation of frequency of disease is a prerequisite to establish the disease control program, hence sampling the populations in order to estimate the disease frequency is common task for epidemiologists. In sampling, we ensure that animals/poultry are typical of the target population that the estimate of disease frequency is unbiased and precise (low standard error). Simple random sampling, systematic or stratified random samplings are the most commonly used sampling methods in which the animal is sampling unit, provides the precise estimates of disease frequency.

Two -stage sampling plan is form of epidemiological investigations requires the scientific sampling for collection of data on health problems includes serum samples in surveillance or monitoring in a specific population. In this sampling plan, the first sampling stage involves the selection of predetermined number of clusters (Districts, Blocks or villages), the clusters are mutually exclusive sub-population, most often constructed from recognized administrative boundaries with the probability proportional population size. In the second stage, animals are selected from each cluster in the filed based on random walk method, which identify the center of the cluster or another easily distinguishable feature such as main street, and selecting a random direction to walk, thus drawing the sample transect across the cluster. The use of two-stage sampling has evolved to meet surveillance or monitoring objectives for two reasons. First, list of frames of animals for randomized sample selection do not typically exist at a regional or national level, but the list frames of herds or villages can be developed and maintained more readily.

The objectives of the sampling plan of avian influenza in India

1. To provide the Sampling Scheme for estimation of total number of birds to be sampled, total number of villages (farms) to be selected, number of animals within the village/Farms to be sampled and location of villages for pre-surveillance of Avian Influenza (H9N2) in India.

The input requirements of sampling plan were (1). animal level prevalence of 10% is used as obtained from expert's /literature support (2) cluster or village level prevalence of 5% and (3) sensitivity of 90% and specificity of 90% of diagnostic tests. Two -stage stratified random sampling plan was generated at 99% confidence using in-house developed epi-calculator (https://nivedi.res.in/Nadres_v2/Epical/stratified/random_sampling.php). Whereas state and districts within each state were chosen based on population based criteria(Probability proportional to population size), blocks were randomly selected associated with number of farms/villages and samples per farm. The resolution of sampling plan restricted only on single granularity such as block, though the selection of farms/villages and sample units within each farm is based on random walk method, provided with protocol methods of selection of villages/farms and sample units within each farms. The sampling plan will provide the guidelines for selecting villages/farms within village and its location like block, district and state level information along with livestock population, number of birds to be sampled within village/Farms and proportion of poultry to be sampled in each selected village. The summary of sampling plan generated using two-stage stratified random sampling scheme is presented in Table 1 and Table 2.

Table 1: Summary of State-wise sampling plan using Two-stage stratified random sampling for Avian Influenza in India.

State	No. of the districts selected	No. of Blocks (FRAME)	Total Number of Villages/Farms (FRAME)	Total Number of villages/Farms to sample	Total Number of birds to be sampled
Andhra Pradesh	03	87	1813	123	3198
Haryana	03	07	315	16	416
Karnataka	03	13	3145	112	2912
Madhya Pradesh	03	12	1019	42	1092
Maharashtra	03	37	4137	164	4264
Odisha	03	58	6386	258	6708
Punjab	03	09	386	20	520
Tamil Nadu	03	12	1126	45	1170
Telangana	03	27	535	40	1040
Uttar Pradesh	03	15	1555	61	1586
West Bengal	03	52	3765	145	3770
Total	**33**	**329**	**24182**	**1026**	**26676**

Table 2: Summary of district wise sampling plan using Two-stage stratified random sampling for Avian Influenza in India

State Name	**District Name**	**No of Blocks to be selected**	**Total Number of Farms sampled**	**Total Number of birds to be sampled**
Andhra Pradesh	East Godavari	34	56	1456
Andhra Pradesh	Krishna	27	35	910
Andhra Pradesh	West Godavari	26	32	832
Haryana	Jind	02	05	130
Haryana	Karnal	04	09	234
Haryana	Panchkula	01	02	52
Karnataka	Bangalore Rural	04	39	1016
Karnataka	Kolar	05	53	1378
Karnataka	Koppal	04	20	520
Madhya Pradesh	Alirajpur	05	20	520
Madhya Pradesh	Bhopal	02	06	156
Madhya Pradesh	Jabalpur	05	16	416
Maharashtra	Ahmednagar	12	52	1352
Maharashtra	Nashik	13	50	1300
Maharashtra	Pune	12	62	1612
Odisha	Balangir	11	132	3432
Odisha	Ganjam	19	67	1742
Odisha	Mayurbhanj	28	59	1532
Punjab	Barnala	01	02	52
Punjab	Ludhiana	05	10	260
Punjab	Sangrur	03	08	208
Tamil Nadu	Krishnagiri	05	20	520
Tamil Nadu	Namakkal	03	13	338
Tamil Nadu	Tiruppur	04	12	312
Telangana	Rangareddi	09	16	416
Telangana	Siddipet	09	12	312
Telangana	Yadadri Bhuvanagiri	09	12	312
Uttar Pradesh	Amethi	04	12	312
Uttar Pradesh	Azamgarh	06	39	1014
Uttar Pradesh	Barabanki	05	10	260
West Bengal	24 Paraganas North	22	57	1482
West Bengal	24 Paraganas South	25	76	1976
West Bengal	Alipurduar	05	12	312
	Total	**329**	**1026**	**26676**

Please contact for any clarifications on SOP and Sampling plan issues:

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4. State wise Avian Influenza sampling plan (H9N2)

NIVEDI/AvianInfluenza/2022

Stratified Random Sampling:

Species Selected for Stratification = Total_Poultry

Number of Villages Having 1000 + (Total_Poultry) = 10711

Cluster Level Prevalence = 0.005

Sensitivity of the test used = 0.90

Specificity of the test used = 0.90

Total No of Villages (Clusters) Selected = 1022

Total No of birds to be Sampled = 26572

State Name	District Name	Block name	Total Number of Villages/Farms	Total Number of villages/ Farms to sample	Total Number of units (Poultry) to sample	Average number of samples per/village or Farm
Andhra Pradesh	East Godavari	Allavaram	14	2	52	26
Andhra Pradesh	East Godavari	Ambajipeta	13	2	52	26
Andhra Pradesh	East Godavari	Anaparthy	10	1	26	26
Andhra Pradesh	East Godavari	Atreyapuram	15	2	52	26
Andhra Pradesh	East Godavari	Chintur	71	3	78	26
Andhra Pradesh	East Godavari	Gandepalle	13	2	52	26
Andhra Pradesh	East Godavari	Gangavaram	53	3	78	26
Andhra Pradesh	East Godavari	Gokavaram	14	1	26	26
Andhra Pradesh	East Godavari	I. Polavaram	11	1	26	26
Andhra Pradesh	East Godavari	K Gangavaram	24	2	52	26
Andhra Pradesh	East Godavari	Kajuluru	25	2	52	26
Andhra Pradesh	East Godavari	Katrenikona	14	1	26	26
Andhra Pradesh	East Godavari	Kirlampudi	20	1	26	26
Andhra Pradesh	East Godavari	Korukonda	18	1	26	26

Andhra Pradesh	East Godavari	Kothapeta	10	2	52	26
Andhra Pradesh	East Godavari	Kunavaram	53	1	26	26
Andhra Pradesh	East Godavari	Malikipuram	11	1	26	26
Andhra Pradesh	East Godavari	Mamidikuduru	17	2	52	26
Andhra Pradesh	East Godavari	Mandapeta	13	1	26	26
Andhra Pradesh	East Godavari	Pedapudi	15	2	52	26
Andhra Pradesh	East Godavari	Peddapuram	20	1	26	26
Andhra Pradesh	East Godavari	Prathipadu	33	1	26	26
Andhra Pradesh	East Godavari	Rajanagaram	15	2	52	26
Andhra Pradesh	East Godavari	Rampachodavaram	76	1	26	26
Andhra Pradesh	East Godavari	Razole	13	4	104	26
Andhra Pradesh	East Godavari	Rowthulapudi	34	2	52	26
Andhra Pradesh	East Godavari	Sakhinetipalle	8	2	52	26
Andhra Pradesh	East Godavari	Samalkota	17	1	26	26
Andhra Pradesh	East Godavari	Thallarevu	13	2	52	26
Andhra Pradesh	East Godavari	Thondangi	14	2	52	26
Andhra Pradesh	East Godavari	Tuni	19	1	26	26
Andhra Pradesh	East Godavari	Uppalaguptam	14	2	52	26
Andhra Pradesh	East Godavari	Y. Ramavaram	120	1	26	26
Andhra Pradesh	East Godavari	Yeleswaram	13	1	26	26
Andhra Pradesh		**Sub-Total**	**843**	**56**	**1456**	**-**
Andhra Pradesh	krishna	A.Konduru	13	2	52	26
Andhra Pradesh	krishna	Agiripalle	21	2	52	26
Andhra Pradesh	krishna	Avanigadda	7	1	26	26
Andhra Pradesh	krishna	Bapulapadu	28	1	26	26
Andhra Pradesh	krishna	Challapalle	11	2	52	26
Andhra Pradesh	krishna	Chatrai	16	2	52	26
Andhra Pradesh	krishna	G.Konduru	24	1	26	26
Andhra Pradesh	krishna	Gannavaram	24	1	26	26
Andhra Pradesh	krishna	Gudivada	25	1	26	26
Andhra Pradesh	krishna	Kaikalur	23	2	52	26
Andhra Pradesh	krishna	Kalidindi	14	1	26	26
Andhra Pradesh	krishna	Kanchikacherla	15	1	26	26
Andhra Pradesh	krishna	Kankipadu	19	3	78	26
Andhra Pradesh	krishna	Koduru	9	1	26	26

Andhra Pradesh	krishna	Machilipatnam	27	1	26	26
Andhra Pradesh	krishna	Mopidevi	17	1	26	26
Andhra Pradesh	krishna	Movva	17	1	26	26
Andhra Pradesh	krishna	Mudinepalle	31	1	26	26
Andhra Pradesh	krishna	Musunuru	16	1	26	26
Andhra Pradesh	krishna	Mylavaram	17	1	26	26
Andhra Pradesh	krishna	Pamarru	25	1	26	26
Andhra Pradesh	krishna	Pamidimukkala	29	1	26	26
Andhra Pradesh	krishna	Pedana	29	1	26	26
Andhra Pradesh	krishna	Reddigudem	11	1	26	26
Andhra Pradesh	krishna	Tiruvuru	18	1	26	26
Andhra Pradesh	krishna	Vijayawada (Rural)	18	1	26	26
Andhra Pradesh	krishna	Vissannapet	10	2	52	26
Andhra Pradesh		**Sub-Total**	**514**	**35**	**910**	**-**
Andhra Pradesh	West Godavari	Achanta	10	2	52	26
Andhra Pradesh	West Godavari	Akividu	14	1	26	26
Andhra Pradesh	West Godavari	Bhimavaram	14	1	26	26
Andhra Pradesh	West Godavari	Chagallu	11	1	26	26
Andhra Pradesh	West Godavari	Devarapalle	13	2	52	26
Andhra Pradesh	West Godavari	Dwarakatirumala	31	3	78	26
Andhra Pradesh	West Godavari	Eluru	20	1	26	26
Andhra Pradesh	West Godavari	Jangareddigudem	19	2	52	26
Andhra Pradesh	West Godavari	Jeelugu Milli	26	1	26	26
Andhra Pradesh	West Godavari	Kamavarapukota	15	1	26	26
Andhra Pradesh	West Godavari	Koyyalagudem	18	2	52	26
Andhra Pradesh	West Godavari	Lingapalem	24	1	26	26
Andhra Pradesh	West Godavari	Mogalthur	6	1	26	26
Andhra Pradesh	West Godavari	Narasapuram	13	1	26	26
Andhra Pradesh	West Godavari	Nidadavole	21	1	26	26
Andhra Pradesh	West Godavari	Palacoderu	14	1	26	26
Andhra Pradesh	West Godavari	Pedapadu	23	1	26	26
Andhra Pradesh	West Godavari	Pedavegi	26	1	26	26
Andhra Pradesh	West Godavari	Pentapadu	20	1	26	26
Andhra Pradesh	West Godavari	Penugonda	14	1	26	26

Andhra Pradesh	West Godavari	Poduru	14	1	26	26
Andhra Pradesh	West Godavari	T.Narasapuram	22	1	26	26
Andhra Pradesh	West Godavari	Tadepalligudem	18	1	26	26
Andhra Pradesh	West Godavari	Undi	20	1	26	26
Andhra Pradesh	West Godavari	Unguturu	16	1	26	26
Andhra Pradesh	West Godavari	Veeravasaram	14	1	26	26
Andhra Pradesh		**Sub-Total**	**456**	**32**	**832**	**-**
Haryana	Jind	Narwana	50	2	52	26
Haryana	Jind	Safidon	43	3	78	26
Haryana		**Sub-Total**	**93**	**5**	**130**	**-**
Haryana	Karnal	Assandh	49	5	130	26
Haryana	Karnal	Gharaunda	36	1	26	26
Haryana	Karnal	Indri	32	1	26	26
Haryana	Karnal	Karnal	73	2	52	26
Haryana		**Sub-Total**	**190**	**9**	**234**	**-**
Haryana	Panchkula	Panchkula	32	2	52	26
Haryana		**Sub-Total**	**32**	**2**	**52**	**-**
Haryana	Bangalore Rural	Devanahalli	195	4	104	26
Haryana	Bangalore Rural	Dod Ballapur	340	15	390	26
Haryana	Bangalore Rural	Hosakote	245	14	364	26
Haryana	Bangalore Rural	Nelamangala	287	6	156	26
Haryana		**Sub-Total**	**1099**	**41**	**1066**	**-**
Haryana	kolar	Bangarapet	328	10	260	26
Haryana	kolar	Kolar	302	15	390	26
Haryana	kolar	Malur	281	12	312	26
Haryana	kolar	Mulbagal	302	9	234	26
Haryana	kolar	Srinivaspur	280	7	182	26
Haryana		**Sub-Total**	**1493**	**53**	**1378**	**-**
Haryana	Koppal	Gangawati	139	6	156	26
Haryana	Koppal	Koppal	124	8	208	26
Haryana	Koppal	Kushtagi	154	4	104	26
Haryana	Koppal	Yelbarga	136	2	52	26
Haryana		**Sub-Total**	**553**	**20**	**520**	**-**
Madhya Pradesh	ALIRAJPUR	Alirajpur	86	4	104	26
Madhya Pradesh	ALIRAJPUR	Bhavra	50	3	78	26

Madhya Pradesh	ALIRAJPUR	Jobat	148	4	104	26
Madhya Pradesh	Alirajpur	Katthiwada	119	3	78	26
Madhya Pradesh	Alirajpur	Sondwa	133	6	156	26
Madhya Pradesh		**Sub-Total**	**536**	**20**	**520**	**-**
Madhya Pradesh	Bhopal	Berasia	54	1	26	26
Madhya Pradesh	Bhopal	Huzur	107	5	130	26
Madhya Pradesh		**Sub-Total**	**161**	**6**	**156**	**-**
Madhya Pradesh	Jabalpur	Jabalpur	86	4	104	26
Madhya Pradesh	Jabalpur	Kundam	107	5	130	26
Madhya Pradesh	Jabalpur	Panagar	51	4	104	26
Madhya Pradesh	Jabalpur	Patan	19	2	52	26
Madhya Pradesh	Jabalpur	Sihora	59	1	26	26
Madhya Pradesh		**Sub-Total**	**322**	**16**	**416**	**-**
Maharashtra	Ahmednagar	Akola	186	4	104	26
Maharashtra	Ahmednagar	Karjat	116	1	26	26
Maharashtra	Ahmednagar	Kopargaon	69	4	104	26
Maharashtra	Ahmednagar	Nagar	97	6	156	26
Maharashtra	Ahmednagar	Parner	126	5	130	26
Maharashtra	Ahmednagar	Pathardi	118	8	208	26
Maharashtra	Ahmednagar	Rahta	52	1	26	26
Maharashtra	Ahmednagar	Rahuri	91	2	52	26
Maharashtra	Ahmednagar	Sangamner	155	13	338	26
Maharashtra	Ahmednagar	Shevgaon	84	2	52	26
Maharashtra	Ahmednagar	Shrigonda	112	4	104	26
Maharashtra	Ahmednagar	Shrirampur	52	2	52	26
Maharashtra		**Sub-Total**	**1258**	**52**	**1352**	**-**
Maharashtra	Nashik	Baglan	109	2	52	26
Maharashtra	Nashik	Chandvad	94	11	286	26
Maharashtra	Nashik	Dindori	120	6	156	26
Maharashtra	Nashik	Igatpuri	78	4	104	26
Maharashtra	Nashik	Kalwan	122	3	78	26
Maharashtra	Nashik	Malegaon	80	2	52	26
Maharashtra	Nashik	Nashik	58	4	104	26
Maharashtra	Nashik	Niphad	93	6	156	26
Maharashtra	Nashik	Peth	125	2	52	26

Maharashtra	Nashik	Sinnar	76	2	52	26
Maharashtra	Nashik	Surgana	182	5	130	26
Maharashtra	Nashik	Trimbakeshwar	119	1	26	26
Maharashtra	Nashik	Yevla	23	2	52	26
Maharashtra		**Sub-Total**	**1279**	**50**	**1300**	**-**
Maharashtra	Pune	Ambegaon	105	1	26	26
Maharashtra	Pune	Baramati	115	9	234	26
Maharashtra	Pune	Bhor	189	8	208	26
Maharashtra	Pune	Daund	101	7	182	26
Maharashtra	Pune	Haveli	110	1	26	26
Maharashtra	Pune	Indapur	142	9	234	26
Maharashtra	Pune	Junnar	158	3	78	26
Maharashtra	Pune	Khed	172	2	52	26
Maharashtra	Pune	Mawal	165	8	208	26
Maharashtra	Pune	Mulshi	126	1	26	26
Maharashtra	Pune	Purandhar	102	6	156	26
Maharashtra	Pune	Shirur	115	7	182	26
Maharashtra		**Sub-Total**	**1600**	**62**	**1612**	**-**
Odisha	Balangir	Balangir	242	6	156	26
Odisha	Balangir	Bangomunda	88	3	78	26
Odisha	Balangir	Belpara	102	8	208	26
Odisha	Balangir	Kantabanji	56	3	78	26
Odisha	Balangir	Loisinga	135	2	52	26
Odisha	Balangir	Patnagarh	173	4	104	26
Odisha	Balangir	Saintala	175	13	338	26
Odisha	Balangir	Sindhekela	96	4	104	26
Odisha	Balangir	Titlagarh	134	6	156	26
Odisha	Balangir	Turekela	69	4	104	26
Odisha	Balangir	Tushura	229	6	156	26
Odisha		**Sub-Total**	**1499**	**59**	**1534**	**-**
Odisha	Ganjam	Asika	62	4	104	26
Odisha	Ganjam	Bhanjanagar	103	4	104	26
Odisha	Ganjam	Brahmapur Sadar	46	3	78	26
Odisha	Ganjam	Buguda	69	1	26	26
Odisha	Ganjam	Chhatrapur	37	1	26	26

Odisha	Ganjam	Dharakote	38	5	130	26
Odisha	Ganjam	Gangapur	67	1	26	26
Odisha	Ganjam	Ganjam	16	4	104	26
Odisha	Ganjam	Golanthara	65	2	52	26
Odisha	Ganjam	Hinjili	53	3	78	26
Odisha	Ganjam	Jagannath Prasad	70	8	208	26
Odisha	Ganjam	Jarada	132	1	26	26
Odisha	Ganjam	Kabisuryanagar	64	7	182	26
Odisha	Ganjam	Khalikote	80	2	52	26
Odisha	Ganjam	Patapur	101	2	52	26
Odisha	Ganjam	Polasara	68	4	104	26
Odisha	Ganjam	Purusottampur	75	3	78	26
Odisha	Ganjam	Rambha	68	11	286	26
Odisha	Ganjam	Tarasingi	100	1	26	26
Odisha		**Sub-Total**	**1314**	**67**	**1742**	**-**
Odisha	Mayurbhanj	Badampahar	79	8	208	26
Odisha	Mayurbhanj	Bahalda	61	5	130	26
Odisha	Mayurbhanj	Baisinga	190	3	78	26
Odisha	Mayurbhanj	Bangiriposi	195	8	208	26
Odisha	Mayurbhanj	Baripada Sadar	125	7	182	26
Odisha	Mayurbhanj	Barsahi	185	8	208	26
Odisha	Mayurbhanj	Betanati	119	4	104	26
Odisha	Mayurbhanj	Bisoi	145	5	130	26
Odisha	Mayurbhanj	Chandua	114	4	104	26
Odisha	Mayurbhanj	Ghagarbeda	42	2	52	26
Odisha	Mayurbhanj	Gorumahisani	124	6	156	26
Odisha	Mayurbhanj	Jamda	64	4	104	26
Odisha	Mayurbhanj	Jashipur	237	1	26	26
Odisha	Mayurbhanj	Jharpokharia	176	3	78	26
Odisha	Mayurbhanj	Kaptipada	96	4	104	26
Odisha	Mayurbhanj	Karanjia	149	4	104	26
Odisha	Mayurbhanj	Khunta	204	2	52	26
Odisha	Mayurbhanj	Koliana	167	2	52	26
Odisha	Mayurbhanj	Muruda	113	1	26	26
Odisha	Mayurbhanj	Rairangpur	111	6	156	26

Odisha	Mayurbhanj	Rairangpur Town	43	3	78	26
Odisha	Mayurbhanj	Raruan	110	7	182	26
Odisha	Mayurbhanj	Rasagobindapur	159	1	26	26
Odisha	Mayurbhanj	Sharata	59	3	78	26
Odisha	Mayurbhanj	Suliapada	152	7	182	26
Odisha	Mayurbhanj	Thakurmunda	108	7	182	26
Odisha	Mayurbhanj	Tiring	127	13	338	26
Odisha	Mayurbhanj	Udala	119	4	104	26
Odisha		**Sub-Total**	**3573**	**132**	**3432**	**-**
Punjab	Barnala	Barnala	50	2	52	26
Punjab		**Sub-Total**	**50**	**2**	**52**	**-**
Punjab	Ludhiana	Ludhiana (East)	34	2	52	26
Punjab	Ludhiana	Ludhiana (West)	35	2	52	26
Punjab	Ludhiana	Payal	35	1	26	26
Punjab	Ludhiana	Raikot	40	3	78	26
Punjab	Ludhiana	Samrala	54	2	52	26
Punjab		**Sub-Total**	**198**	**10**	**260**	**-**
Punjab	Sangrur	Dhuri	30	2	52	26
Punjab	Sangrur	Malerkotla	36	3	78	26
Punjab	Sangrur	Sangrur	72	3	78	26
Punjab		**Sub-Total**	**138**	**8**	**208**	**-**
Tamil Nadu	Krishnagiri	Denkanikottai	88	3	78	26
Tamil Nadu	Krishnagiri	Hosur	147	7	182	26
Tamil Nadu	Krishnagiri	Krishnagiri	129	7	182	26
Tamil Nadu	Krishnagiri	Pochampalli	39	2	52	26
Tamil Nadu	Krishnagiri	Uthangarai	171	1	26	26
Tamil Nadu		**Sub-Total**	**574**	**20**	**520**	**-**
Tamil Nadu	Namakkal	Namakkal	123	6	156	26
Tamil Nadu	Namakkal	Rasipuram	92	6	156	26
Tamil Nadu	Namakkal	Tiruchengode	105	1	26	26
Tamil Nadu		**Sub-Total**	**320**	**13**	**338**	**-**
Tamil Nadu	Tiruppur	Avanashi	81	3	78	26
Tamil Nadu	Tiruppur	Dharapuram	62	5	130	26
Tamil Nadu	Tiruppur	Kangeyam	39	2	52	26
Tamil Nadu	Tiruppur	Udumalaipettai	50	2	52	26

Tamil Nadu		**Sub-Total**	**232**	**12**	**312**	**-**
Telangana	Rangareddi	Abdullapurmet	25	3	78	26
Telangana	Rangareddi	Farooqnagar	31	1	26	26
Telangana	Rangareddi	Ibrahimpatnam	21	1	26	26
Telangana	Rangareddi	Jilled chowdergudem	14	1	26	26
Telangana	Rangareddi	Kandukur	23	1	26	26
Telangana	Rangareddi	Kondurg	18	1	26	26
Telangana	Rangareddi	Kothur	11	2	52	26
Telangana	Rangareddi	Maheswaram	32	5	130	26
Telangana	Rangareddi	Shabad	21	1	26	26
Telangana		**Sub-Total**	**196**	**16**	**416**	**-**
Telangana	Siddipet	Chinnakodur	19	1	26	26
Telangana	Siddipet	Doultabad	17	1	26	26
Telangana	Siddipet	Dubbak	17	1	26	26
Telangana	Siddipet	Gajwel	22	3	78	26
Telangana	Siddipet	Koheda	15	1	26	26
Telangana	Siddipet	Kondapak	21	1	26	26
Telangana	Siddipet	Mirdoddi	16	1	26	26
Telangana	Siddipet	Siddipet	9	1	26	26
Telangana	Siddipet	Thoguta	14	2	52	26
Telangana		**Sub-Total**	**150**	**12**	**312**	**-**
Telangana	Yadadri Bhuvanagiri	Alair	14	1	26	26
Telangana	Yadadri Bhuvanagiri	Atmakur (M)	23	1	26	26
Telangana	Yadadri Bhuvanagiri	Bhongir	30	1	26	26
Telangana	Yadadri Bhuvanagiri	Bibinagar	30	2	52	26
Telangana	Yadadri Bhuvanagiri	Bommalaramaram	28	1	26	26
Telangana	Yadadri Bhuvanagiri	Mothkur	12	2	52	26
Telangana	Yadadri Bhuvanagiri	Narayanapur	14	1	26	26
Telangana	Yadadri Bhuvanagiri	Rajapet	19	2	52	26
Telangana	Yadadri Bhuvanagiri	Yadagirigutta	19	1	26	26
Telangana		**Sub-Total**	**189**	**12**	**312**	**-**
Uttar Pradesh	Amethi	Amethi	49	1	26	26
Uttar Pradesh	Amethi	Gauriganj	56	1	26	26

Uttar Pradesh	Amethi	Musafirkhana	127	4	104	26
Uttar Pradesh	Amethi	Tiloi	87	6	156	26
Uttar Pradesh		**Sub-Total**	**319**	**12**	**312**	**-**
Uttar Pradesh	Azamgarh	Azamgarh	115	14	364	26
Uttar Pradesh	Azamgarh	Lalganj	166	1	26	26
Uttar Pradesh	Azamgarh	Mehnagar	14	2	52	26
Uttar Pradesh	Azamgarh	Nizamabad	260	8	208	26
Uttar Pradesh	Azamgarh	Phulpur	190	1	26	26
Uttar Pradesh	Azamgarh	Sagri	254	13	338	26
Uttar Pradesh		**Sub-Total**	**999**	**39**	**1014**	**-**
Uttar Pradesh	Barabanki	Fatehpur	21	1	26	26
Uttar Pradesh	Barabanki	Haidergarh	68	3	78	26
Uttar Pradesh	Barabanki	Nawabganj	55	3	78	26
Uttar Pradesh	Barabanki	Ramnagar	26	1	26	26
Uttar Pradesh	Barabanki	Ramsanehighat	67	2	52	26
Uttar Pradesh		**Sub-Total**	**237**	**10**	**260**	**-**
West Bengal	24 Paraganas North	Amdanga	79	3	78	26
West Bengal	24 Paraganas North	Baduria	97	6	156	26
West Bengal	24 Paraganas North	Bagda	106	1	26	26
West Bengal	24 Paraganas North	Barasat - I	80	1	26	26
West Bengal	24 Paraganas North	Barasat - Ii	77	1	26	26
West Bengal	24 Paraganas North	Barrackpur - I	46	1	26	26
West Bengal	24 Paraganas North	Barrackpur - Ii	28	1	26	26
West Bengal	24 Paraganas North	Basirhat - I	62	2	52	26
West Bengal	24 Paraganas North	Basirhat - Ii	69	2	52	26
West Bengal	24 Paraganas North	Bongaon	148	2	52	26
West Bengal	24 Paraganas North	Deganga	85	1	26	26
West Bengal	24 Paraganas North	Gaighata	107	6	156	26
West Bengal	24 Paraganas North	Habra - I	59	1	26	26
West Bengal	24 Paraganas North	Habra - Ii	80	3	78	26
West Bengal	24 Paraganas North	Haroa	89	6	156	26
West Bengal	24 Paraganas North	Hasnabad	74	4	104	26
West Bengal	24 Paraganas North	Hingalganj	44	3	78	26
West Bengal	24 Paraganas North	Minakhan	74	2	52	26
West Bengal	24 Paraganas North	Rajarhat	36	2	52	26

West Bengal	24 Paraganas North	Sandeshkhali - I	30	1	26	26
West Bengal	24 Paraganas North	Sandeshkhali - Ii	24	3	78	26
West Bengal	24 Paraganas North	Swarupnagar	65	5	130	26
West Bengal		**Sub-Total**	**1559**	**57**	**1482**	**-**
West Bengal	24 Paraganas South	Baruipur	136	7	182	26
West Bengal	24 Paraganas South	Basanti	65	5	130	26
West Bengal	24 Paraganas South	Bhangar - I	83	3	78	26
West Bengal	24 Paraganas South	Bishnupur - I	60	1	26	26
West Bengal	24 Paraganas South	Bishnupur - Ii	88	2	52	26
West Bengal	24 Paraganas South	Budge Budge - Ii	66	2	52	26
West Bengal	24 Paraganas South	Canning - I	61	2	52	26
West Bengal	24 Paraganas South	Canning - Ii	62	2	52	26
West Bengal	24 Paraganas South	Diamond Harbour - Ii	87	2	52	26
West Bengal	24 Paraganas South	Falta	133	1	26	26
West Bengal	24 Paraganas South	Gosaba	50	5	130	26
West Bengal	24 Paraganas South	Jaynagar - I	71	1	26	26
West Bengal	24 Paraganas South	Jaynagar - Ii	48	2	52	26
West Bengal	24 Paraganas South	Kakdwip	39	2	52	26
West Bengal	24 Paraganas South	Kulpi	170	5	130	26
West Bengal	24 Paraganas South	Kultali	43	3	78	26
West Bengal	24 Paraganas South	Magrahat - I	86	2	52	26
West Bengal	24 Paraganas South	Magrahat - Ii	86	5	130	26
West Bengal	24 Paraganas South	Mandirbazar	112	5	130	26
West Bengal	24 Paraganas South	Mathurapur - I	95	2	52	26
West Bengal	24 Paraganas South	Mathurapur - Ii	27	3	78	26
West Bengal	24 Paraganas South	Namkhana	36	3	78	26
West Bengal	24 Paraganas South	Patharpratima	86	7	182	26
West Bengal	24 Paraganas South	Sagar	42	3	78	26
West Bengal	24 Paraganas South	Sonarpur	71	1	26	26
West Bengal		**Sub-Total**	**1903**	**76**	**1976**	**-**
West Bengal	Alipurduar	Alipurduar - I	57	1	26	26
West Bengal	Alipurduar	Alipurduar - Ii	80	3	78	26
West Bengal	Alipurduar	Falakata	64	3	78	26
West Bengal	Alipurduar	Kalchini	45	3	78	26

West Bengal	Alipurduar	Kumargram	57	2	52	26
West Bengal		**Sub-Total**	**303**	**12**	**312**	**-**

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