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# Information network for animal productivity & health: A tool for animal disease management

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**Abstract**
Information Network for Animal Productivity and Health (INAPH)-Animal Health Module is being implemented in Kolhapur Milk union, Kolhapur, Maharashtra State since 2016-17 focusing on capturing animal treatment activity carried out by veterinarians in union's milk shed area. This module primarily facilitates data capture, analysis and decision making of an animal's treatment which delivers a helping hand to plan for disease management, animal wellness, prevention and control, productivity enhancement and traceability.

**Keywords:** animal health software, INAPH, medicine, animal disease

## Introduction

Livestock health plays a significant role in Indian dairy Industry as poor health adversely affects the productivity of the animals. Even though various Central and State institutions and, the cooperative sector play important roles in routine treatment, prophylactic vaccination, epidemiological investigation, disease control, extension etc., there is still a need for introduction of improved system of documentation and reporting of animal diseases in India. Lack of proper information precludes the policy makers to formulate effective programmes. Most of the disease reporting is still undertaken manually, leading to protracted delay in implementation of effective control measures, resulting huge economic losses to the farmers.

The Information Network for Animal Productivity and Health (INAPH) software has been developed and implemented in the field by NDDB since the year 2012 to address the above issues. The INAPH system helps in recording activities on individual bovines pertaining to health, breeding, nutrition including milk recording, thus making it a holistic information system. The animal nutrition module contains the ration balancing software which provides the least cost balanced ration formulation to the farmers, based on the animal profile and available feed resources with the farmer. The animal health module records various parameters related to vaccination, deworming, treatment, outbreak management etc., whereas the breeding module records parameters on artificial insemination, pregnancy diagnosis, calving, calf registration etc. The milk recording module is used in various Progeny Testing/ Pedigree Selection projects to estimate the lactation yield of the animals and to calculate the breeding values of the bulls based on the production performance of their daughters.

Currently INAPH system is being used for implementation of central sector schemes *viz.* National Animal Disease Central Programme (NADCP)[1], Nationwide Artificial Insemination Programme (NAIP)[2] as well as Rashtriya Gokul Mission (RGM)[3] programmes considering INAPH as a national database.

## Materials and Methods

Health module of INAPH is used for capturing interventions on individual animals[4] as each animal is uniquely identified by a 12-digit ear tag. The software has been in use in the field for around a decade and is found to be useful in documenting the activities being carried out in animal health. Its unique analytical reports enable the users and policy makers to monitor, assess, analyse and make informed decisions.

The animal health module of INAPH mainly deals with animal vaccination, treatment, deworming and outbreak reporting which were discussed in detail elsewhere[4]. The vaccination component of INAPH has been widely used in NADCP to capture FMD vaccination data throughout India.

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Another important component of INAPH is the functionality of animal treatment and treatment follow-up with a medicine inventory that is being used in the Kolhapur Milk Union since 2016-17.

In the present study, use of animal health module, especially the treatment functionalities have been discussed. *Kolhapur* Zilla Sahakari Dudh Utpadak Sangh Ltd, commonly known as "Gokul" is a milk union in Kolhapur district, State Maharashtra, India. The milk union has an average milk procurement of 1.1 million litres per day. "Gokul" has a well-organized team for providing veterinary support services consisting of 68 veterinarians, 42 livestock supervisors (LSS) and, 46 assistants cum drivers. The veterinary services are provided through 31 centers which operates 46 veterinary routes. In the route system, veterinarians travel daily in a scheduled route and farmers bring their animals for obtaining veterinary services to a pre-determined nearby location or at the village co-operative society. In addition to above, there is also a call based veterinary emergency service system wherein the veterinarian attends to cases when they are called by a farmer.

As per livestock census, Kolhapur district has a total of 0.85 million cattle and buffaloes. The union veterinarians regularly attend to conditions like mastitis, indigestion, reproductive issues etc., but due to the absence of a proper online recording system, it was quite cumbersome to predict the prevalence of a particular ailment or, anticipate the medicine requirement. A need was therefore felt to capture the treatment details and type of medicines provided to these animals so that easy managerial decisions could be taken for future planning on disease prevention and management. With this aim, an inventory-based treatment module of INAPH was deployed in Kolhapur Milk Union since 2016-17. All the animals brought for treatment were uniquely identified with ear-tagging, registered in INAPH with owner details, subsequently disease symptoms and treatment details are captured. The animal owner can also get an e-prescription through INAPH animal health module along with medicine administration details.



**Fig 1:** A treatment camp at Kolhapur Milk Union

INAPH is equipped with a well-defined Management Information System (MIS) through which various reports could be generated pertaining to animal health module including the treatment functionality. These reports cover the details of (i) vaccination (ii) disease occurrences (iii) treatments provided (iv) medicine inventory (v) treatment charges (vi) distribution of diseases etc.

**Results and Discussions:**
During the present study, INAPH health module had been used extensively and data were analyzed through MIS which are discussed in this article.

Initially INAPH was deployed in 195 villages in this milk union during 2016-17 and captured 854 transactions. The total treatment cases entered were 602 with 181 cases related to the digestive system, followed by udder related conditions (125

nos.). In the subsequent years, the total transactions crossed around 200,000 per year and till August 2021, a total of 10,49,780 transactions have been recorded. Presently the union is covering around 1150 villages in Kolhapur district.

Some of the transactions were not related to animal diseases such as services provided by the veterinarians for pregnancy diagnosis, artificial insemination, issuing health and post-mortem certificates, calf care activities etc. All these transactions are captured as the "total transactions".
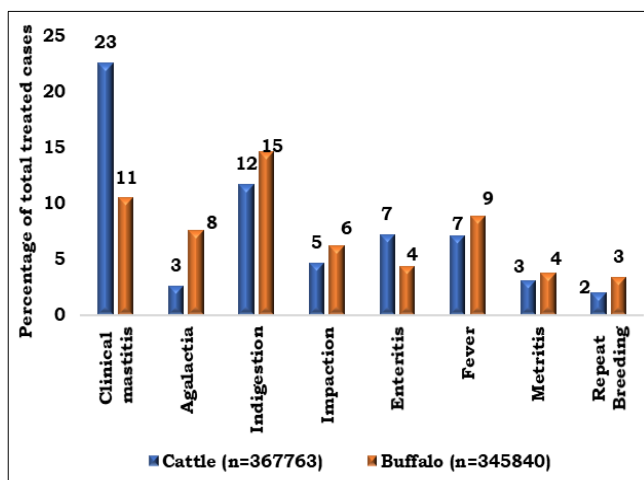
However, the "total treated cases" refer to transactions captured in INAPH only for treatment of animals. The percentages of "total treated cases" were 62, 73, 68, 68 and 73 of the total transactions captured in INAPH during the year 2017-18, 2018-19, 2019-20, 2020-21 and 2021-22 (till Aug) respectively, which are depicted in Fig.2.
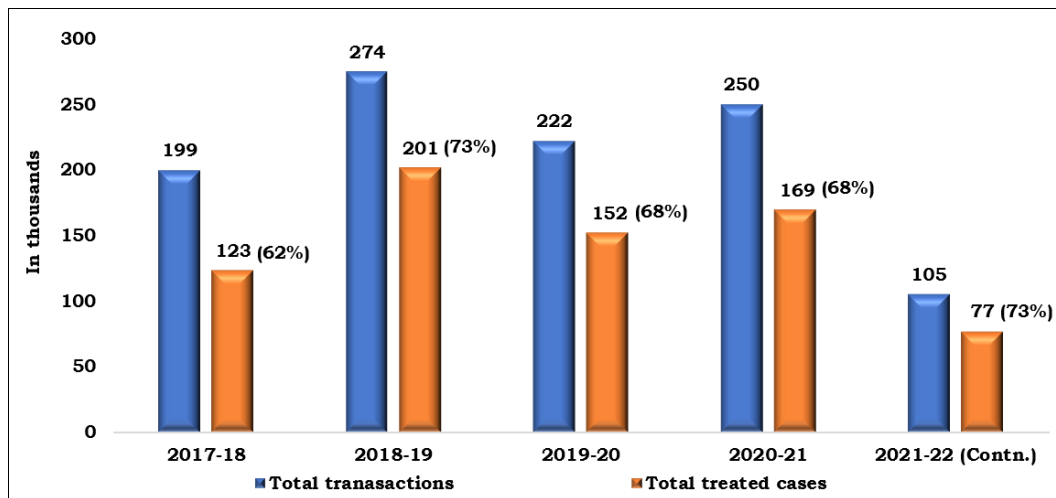
**Fig 2:** Animal treatment entries captured in INAPH and total transactions during the period 2017-18 to 2021-22 in Kolhapur Milk Union
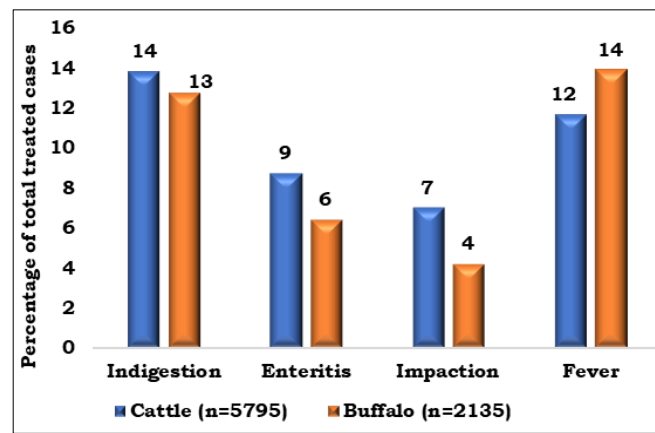
Under Indian conditions, smallholder livestock farming is followed. In the current study it was recorded that around 10% of owners who brought their animals for treatment were woman. Around 98% of total entries in INAPH in the present study were female animals even though male cattle and buffaloes are used for draft purpose in many parts of the country. Around 60% cases recorded in female animals were clinical mastitis, agalactia, indigestion, impaction, enteritis, fever, metritis and repeat breeding. The species wise details of ailments covered in the animal health module are depicted in Fig. 3.

Out of these "total treated cases", clinical mastitis was found to be highest during the period under study. The cases of agalactia were also found to be one of the commonly occurring ailments. Cases related to digestive system like indigestion, enteritis and impaction contributed a major portion of the ailments recorded. Pyrexia was also recorded among commonly occurring ailments for which farmers contact the veterinarians. Cases related to reproductive system, such as metritis and repeat breeding were also quite significant during these years. The details of the above ailments have been provided in Fig. 3.



**Fig 4:** Distribution of common ailments in cattle and buffaloes (in male) in Kolhapur Milk Union during 2017-18 to 2021-22

On analysis of data, it was observed that highest percentage of animals brought to the veterinarian for treatment were above 8 years of age, followed by 5 to 8 years age group which suggest that older animals are more affected with health problems than young ones (Fig- 5).
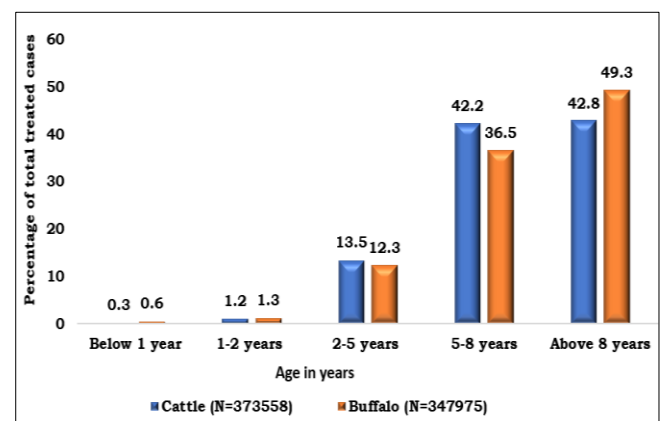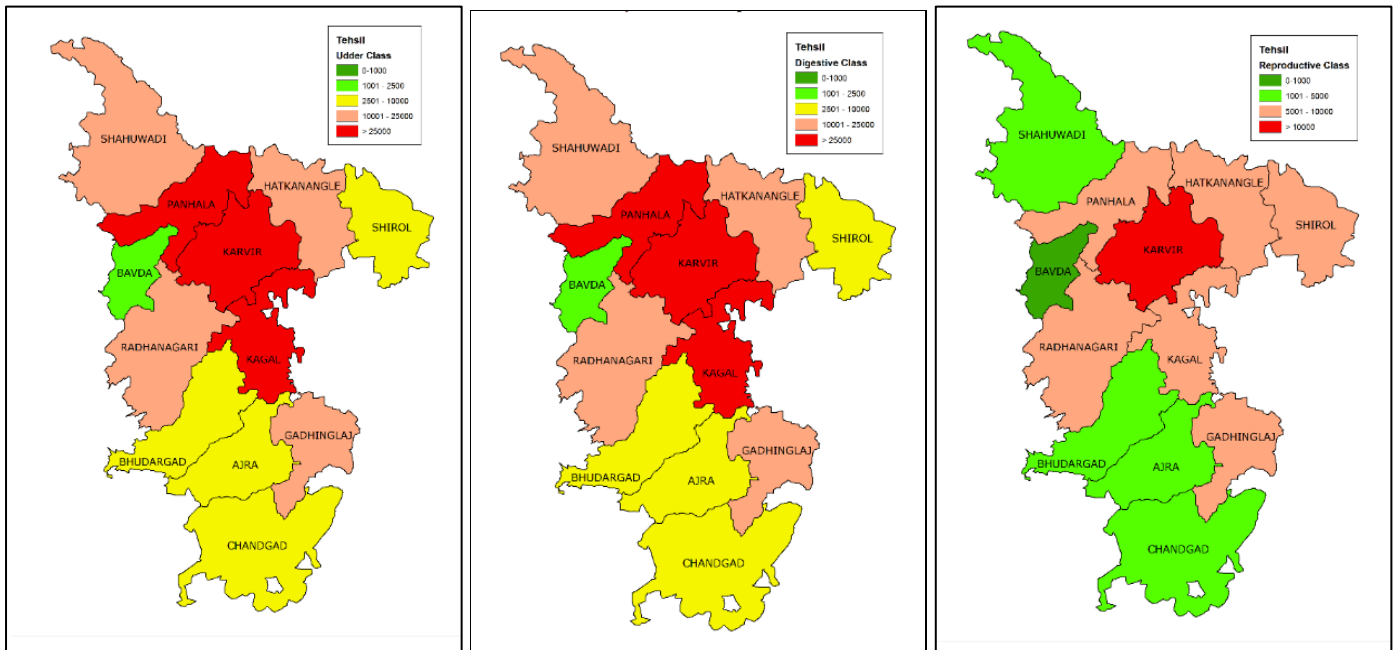


**Fig 3:** Distribution of common ailments in cattle and buffaloes (in female) in Kolhapur Milk Union during 2017-18 to 2021-22

Similarly, in male cattle and buffaloes, cases related to indigestion, impaction, enteritis and fever alone comprised of around 40% of total cases. The species wise details of the animals are depicted in Fig. 4.



**Fig 5:** Age-wise distribution of animals treated in Kolhapur Milk Union during 2017-18 to 2021-22

In the present study, attempts have been made to understand the tehsil wise distribution of classes of ailments in the project area integrated with GIS so as to evolve suitable proactive disease control and prevention strategies (Fig. 6).

**Fig 6:** Tehsil-wise distribution of udder, digestive and reproductive systems related ailments in cattle and buffaloes in Kolhapur Milk union during 2017-18 to 2021-22

## Conclusion
The INAPH health module has emerged as a valuable tool that enables animal health personnel, especially the veterinarians, to record the interventions carried out on the animal in an effective and systematic manner. This can also help the policy makers to monitor, assess, analyse and make informed decisions which would contribute in improving the health and productivity of dairy animals. Animal identification in INAPH through unique ear tag numbers for each animal and recording every transaction provides traceability of animal and animal products. On the basis of the encouraging results in implementation in Kolhapur Milk Union, it is being considered to expand its use to other states.

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