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Popular Article

## New Management Techniques in Poultry Farming for Profitable Production

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### Introduction

India is the third-largest producer of eggs and chicken meat in the world. India produces 6% of the world's eggs, 3% of the world's meat, and around 5.65% of the world's eggs overall. Due to its rapid growth, the poultry industry has attracted a great deal of interest. Important sources of affordable protein for human consumption include eggs and poultry meat. Smart poultry management methods must be used to boost productivity while lowering costs and resource use since by 2050, the world's demand for chicken meat and eggs will have increased by about 40% and over 50% respectively (Chatterjee and Rajkumar, 2015)

### Biggest challenges to Indian poultry industry

These include

1. Emerging and re-emerging diseases of poultry
2. Potential environmental risks including disposing of dead birds and managing poultry waste.
3. Insufficient connections between industry and research and development organizations poultry farming issues High feed costs, a lot of birds, a high death rate, poor management techniques, inadequate ventilation, and a lack of government support.



## **New technologies to poultry production**

These technologies focus on smart poultry housing environment, precision feeding system, real time monitoring and automatic system etc.

### **Smart poultry housing management**

Poultry are sensitive to external environment and slight change in the ambient surrounding may affect the health and thereby affecting production level. A well-equipped housing environment can facilitate flock welfare and increase the production such as meat and egg within a short period of time.

### **Precision feeding systems**

At the University of Alberta, a brand-new precision feeding (PF) system was developed. PLF technology can have a significant impact on productivity in the field of feeding, which is a crucial component of growing poultry. New technology can improve poultry feeding, whether it's maintaining ideal bird weight or achieving accurate feed conversion rates. It is feasible for birds to eat more frequently than once per day with the PF system while still retaining a high level of flock uniformity. This is done by limiting meal size and feeding bout duration. Farms that manage feed consumption see significant variations in body weight and a decline in the productivity of high-quality broiler chicks. Sensor technology may potentially be advantageous for laying hens (Zuidhof *et al.*, 2017).

### **Environmental monitoring systems**

The change is persistent in the mean of climate parameters viz., temperature, rainfall, humidity and soil moisture (Alade and Adamola 2013). Environment is affected by ventilation rate, humidity and gas concentrations, including carbon dioxide and ammonia litter quality. It has been demonstrated that multi-sensor systems capable of monitoring temperature, air velocity, and differential pressure in grill houses can accurately evaluate the performance of the barn ventilation system. Another promising tool for monitoring and maintaining the atmosphere of poultry houses is robotics. By encouraging bird movement, these robots could improve bird health and activity levels. By enabling remote environmental monitoring, such robots improve biosecurity.

### **Evaporative cooling systems (EVAPs)**

One of the intelligent indoor equipment systems used to regulate and modify the atmosphere properly for poultry houses is evaporative cooling systems (EVAPs). The primary characteristics of



EVAPs are a water-cooling fan-pad, a fan-controller, an optional vent box, and a curtain controller. These features are utilised to change the air volume flow for adjusting temperature and humidity in environments, as well as controlling light intensity.

### **Commercial robotics in poultry production**

Robotics is one of the most useful uses of digital technology in the poultry sector. The French company Octopus Robots creates fully autonomous robots to monitor laying hens and control sickness and infection in poultry facilities. According to Tibot, a French robotics company, robots can keep hens moving, which have further health benefits, and deter them from laying eggs on the ground. Robotic systems used for scooping up floor eggs are referred to as harvesting robots.

### **Use of sensing or automation technologies**

Egg production activity of laying hens in cage-free housing systems has been remotely monitored utilising a unique wireless body-mounted accelerometer sensor. The highly automated equipment used to gather and sort eggs for layer chickens is an excellent illustration of contemporary poultry handling. There are certain technologies that are specific to the grill industry, such as precision weighing systems, which are crucial analysis tools for the commercial success of the grill industry.

### **Wireless sensor networks (WSNs)**

Use of multi-functional wireless sensor networks (WSNs) is one of the most promising methodologies with global deployability. In addition to lowering the cost of overall operation, wireless connectivity and coverage have lowered the cost of extremely expensive wiring-based connections and implausible access to environments. The production performance characteristics of poultry, including egg laying time, egg weight, and feed intake, are being evaluated using portable monitoring devices (Astill *et al.*, 2020).

### **Internet based smart sensing poultry farm**

Kevin Ashton was the first to use the Internet of Things (IoT) in the global food supply chain, specifically in the poultry business. Wi-Fi is the most frequently used wireless technology, and it increases the connectivity options for the Internet of Things. To remotely monitor a chicken farm, all sensor information must be collected and sent to the internet. Internet of things (IoT) farm networks can be created thanks to the Internet connectivity of the devices that will be used in smart poultry management systems. These technologies enable connectivity between agricultural



equipment, sensors, and devices and will automate a number of farm processes. The possibility for connection between sensors and equipment used in the poultry sector is the key benefit of the Internet of Things (IoT) used on the far (Astill *et al.*, 2020).

### **Bio-security in poultry farm**

The FAO and OIE (World Organization for Animal Health) define bio-security as the implementation of measures to reduce the risk of the introduction and spread of disease agents. Bio-security is an important management steps to be followed strictly in poultry far (FAO, 2007).

### **Conclusion**

Housing for poultry is crucial to ensuring high levels of output. Utilising modern technology for intelligent chicken housing can improve flock health. It could be expensive to implement advanced equipment and technology to manage a chicken farm. To improve productivity, housing and agricultural issues need to be scientifically investigated.

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