**Title**: Poultry Management System

**SDG**:

Life on Land (SDG 15): Poultry management can have implications for land use and biodiversity, especially if it involves sustainable land management practices

Zero Hunger (SDG 2): This goal aims to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture.

Responsible Consumption and Production (SDG 12): This goal emphasizes the need to ensure sustainable consumption and production patterns. Poultry management projects that incorporate sustainable practices, such as efficient resource use and waste reduction, align with SDG 12.

**Questions asked :**

1. Major problems faced in poultry regarding
2. Production
3. Health monitoring of birds
4. Egg hatching
5. What problems are faced in terms of disease prevention?
6. What are the current systems to address these issues ?
7. What is the current production and mortality rate ?
8. Will technology(IoT) play an important role in poultry ?
9. Will a solution for monitoring the birds with help of technology be used in India ?
10. Would determining the sex of the chick inside the egg be beneficial ?

**Contacts we’ve spoken to:**

* **Dr. Kandasamy (CPF)**– 9441958953
* **Dr. Boopathi (CPF) -**- 9900157243

**Conversation Recording:** [**Recording 1**](https://recorder.google.com/65017cb9-f962-4c47-a54e-a6ff250fafb5)

**GIST:** Ammonia control is a problem. Placement of sensors and monitoring of individual chickens is going to be tough due to the high number of chickens on the farm as well as their small size. Automation might be tough.

Feed and water intake sensors already exist. Birds are said to be stressed when feed and water intake goes on. Manual monitoring of checking feed is done every day by supervisor.

Difference in feed intake might be due to electrical problems, or stress in chickens but all these are noted down as a report manually. 0.1%-0.2% is the average mortality rate. If there’s an increase, then it might be due to an outbreak.

Eggs are monitored in the incubator. Certain parameters are already stored such as rotation, humidity, eggshell temperature, etc. This is done using Chick Master.

Manual monitoring usually takes a minimum of 40 min. According to supervisors if the chicken eats and drinks well, there’s no underlying problem. In order to find the reason behind a chicken's death, a postmortem is required. If a chicken's health curve drops, then it takes about 3-4 days to recuperate.

Technology in poultry farming isn’t encouraged much in India. Since 1994, there hasn’t been many changes to the poultry farming industry.

* **Eranna (Baramati Argo)** – 7760223883
* **Sathinder(EC Farm )** – 9842324074

**Conversation Recording:** [**Recording 4**](https://recorder.google.com/071a3ee1-6a54-417f-9880-54f31e25bce0)

* **Sathish (CP Chittor Poultry)** – 6374261041

**Conversation Recording:** [**Recording 3**](https://recorder.google.com/09e6aff2-bc79-41bc-ba62-29d0b9100473)

* **Sasidharan (SKM Poultry)** -8374910851

**Conversation Recording:** [**Recording 2**](https://recorder.google.com/2fe28eba-7566-45af-88b5-af0d688f3d0b)

**GIST:**

EC (Environment Control) farm is a completely isolated with temperature, and humidity automated. This is all done using temperature sensors, humidity sensors, CO2 sensors for oxygen level monitoring, and Ammonia sensors where on increase in ammonia levels, exhaust fans help in pushing it out. Pressure sensors are also used to detect pressure levels as high-levels restrict bird movement.

Temperature sensors have a disadvantage though. They don’t correctly measure the temperature in the surrounding area except in the centre where the sensor is placed. There is a restriction in the number of sensors to be placed.

The weight of individual chicken are measured during a particular time in a day using weight sensors in the floorboards. There’s a chance of considering the weight of same chicken multiple times.

Feed and water management is done through silo. Sometimes water intake might be less as the feeds might be placed at a higher height or there might not be enough water or it also can be due to some underlying problems.

Health monitoring is done through feed and water intake, age proportionate weight and mortality rate. In worst cases post-mortem is done. No sensors used to find any respiratory problems using sound sensors. This is because there might lot of external sounds such as exhaust fan sounds that overpower these mild sounds. At the same time, during nights it’s more easier to sense any abnormalities in its sounds.

Water pH level is necessary, and no solutions have been proposed thus far. PH level monitoring is important to find the hardness of water and treat it accordingly. This can be done by adding more acidity to bring down the pH level. Change in pH level might cause digestion problems for the chickens. Birds might not drink water with a higher pH (Recommended level b/w: 6.5-7)

**Technical Details**:

* Water and feed level monitoring using pressure sensors(Analogue) to ensure the levels don’t go too low.
* Light lux(Digital) sensor for unique capabilities of light scheduling and automatic switching control. The light schedules are pre-configured, and the user can select the required times of illumination. The illumination times in the evening are guided by the age of the birds. Light scheduling improves egg production and also conserves energy.
* Monitoring of humidity and temperature inside coop using DHT11 (Digital)sensors.
* Weight monitoring by placing pressure sensors in the floorboards.
* PIR sensors, heart rate sensors, respiratory rate monitoring sensors (Digital)and ML to check for any abnormal nocturnal activities
* Raspberry Pi preferred along with GSM module for remote communication./ Arduino UNO WiFi
* NH3,H2,O2 monitoring and remotely altering parameters using MQ137 sensor(Digital) for ammonia level detection?
* In total :7 Digital sensors and 1 analogue.