

Using the app to analyze data on sheep fertility

Problems:

Dairy sheep farms in Tuscany region (Italy) are characterized by a level of fertility around 90%, a value that could be improved by the farmers through a continuous monitoring of the flock's reproductive state that allows them to identify any decline in fertility early. Moreover, usually farmers are not adopting efficient systems to keep the flock register and digital technology may support farmers in sheep identification and traceability. In particular, registering the conceptions, the dates of births for each animal and the number of lambs born allows the farmer to have an overview of the flock from the aspect of fertility.

Solutions:

The app for smartphones developed within Precision Sheep includes a Decision Support System (DSS) for the flock register, addressed both to technicians/veterinarian and farmers.

Data from the national database of the livestock register (Banca Dati Nazionale dell'Anagrafe Zootecnica) are automatically imported in the application for each logged farmer.

The app is able to communicate with some models of bluetooth ID tag readers, allowing to: (i) recall the schema of the animal scanned to enter births or other data, (ii) update the database in case that the scanned animal has not yet been registered.

Moreover, data of each single animal within the flock is manageable through the digital register included in the DSS. In particular, possible operations are: (i) add a new animal, (ii) modify the data of an existing animal by entering for example the date of sale or slaughter.

The form of each single animal includes the main characteristics of the animal (e.g., id code, sex, breed, age) and the list of the related events (e.g., ultrasound results, births etc.). In particular, the results of the ultrasounds can be entered in the register by the veterinarian and can be consulted by the farmer.

The entered births are shown in a dashboard allowing the farmer to monitor the reproductive performance of the flock, by visualizing the number of births in the last 12, 24 and 36 months and a percentage of

reproductive efficiency calculated using as a baseline (100% of efficiency) an average of 1,5 lambs/year for each sheep.

Practical recommendations:

- registering all the animals within the app will help farmers to monitor the reproductive efficiency of the flock;
- recording in the app every reproductive event involving the animal: e.g., date of the last birth, of the introduction of ram in the flock or of the last instrumental insemination and of any abortions;
- accessing the results of the ultrasounds using the app will help farmers to control the results of mating.