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'ECTICON' - A Smart Android Application for the Identification and Management of Ectoparasitic Flies of Cattle

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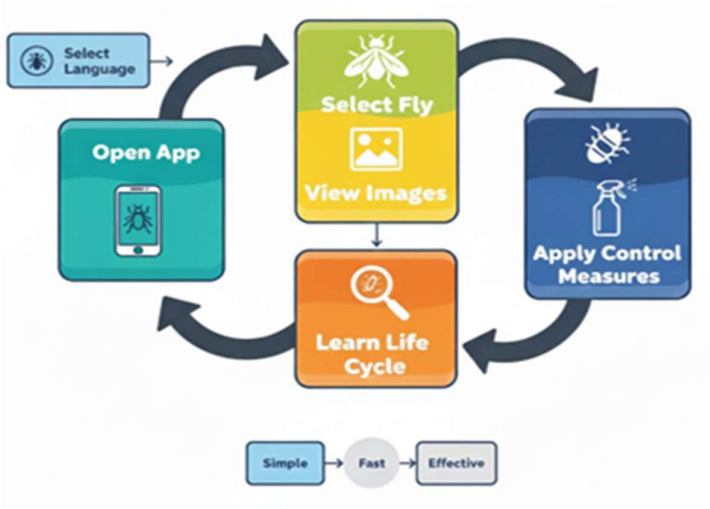
Introduction:

Parasitic flies belong to the order Diptera which possess evolved mouthparts adapted for blood feeding and acts as mechanical and biological vectors for pathogens (Desquesnes et al., 2018). Anong the flies, *Musca*, *Stomoxys*, *Haematobia*, *Tabanus* and *Hippobosca* were the major flies cause irritation, blood loss, stress and reduced productivity in cattle (Strydom et al., 2025). More importantly, many of these flies act as vectors for various disease-causing pathogens and posing serious threats to animal health and farm economics (Byford et al., 1992). Despite their impact, accurate identification of ectoparasitic flies remains difficult at the field level. Farmers and livestock workers often rely on guesswork or delayed expert consultation, which can lead to improper control practices (Smythe, 2018). Misidentification of veterinary important flies leads to ineffective control measures, insecticide overuse and resistance development (Changbunjong et al., 2016). Proper fly identification remains essential for epidemiological surveillance and formulating targeted IPM strategies in livestock systems (yaswanthkumar et al., 2024). With the widespread use of smartphones, digital solutions offer an effective way to deliver scientific knowledge directly to end users (Kakani et al.,2021). To address this need, ECTICON was developed as a simple, user-friendly android application that helps users identify ectoparasitic flies of cattle and understand appropriate management strategies.

Development of the ECTICON App:

ECTICON was designed and developed using modern android application tools to ensure reliability and ease of use. The app supports a wide range of android devices and was carefully optimized for smooth performance. A clean and intuitive interface was created so that even non-technical users can navigate the app comfortably. Special emphasis was placed on clarity of content, visual presentation and easy navigation, making the application suitable for use in farms, classrooms and field conditions.



Key Features of ECTICON

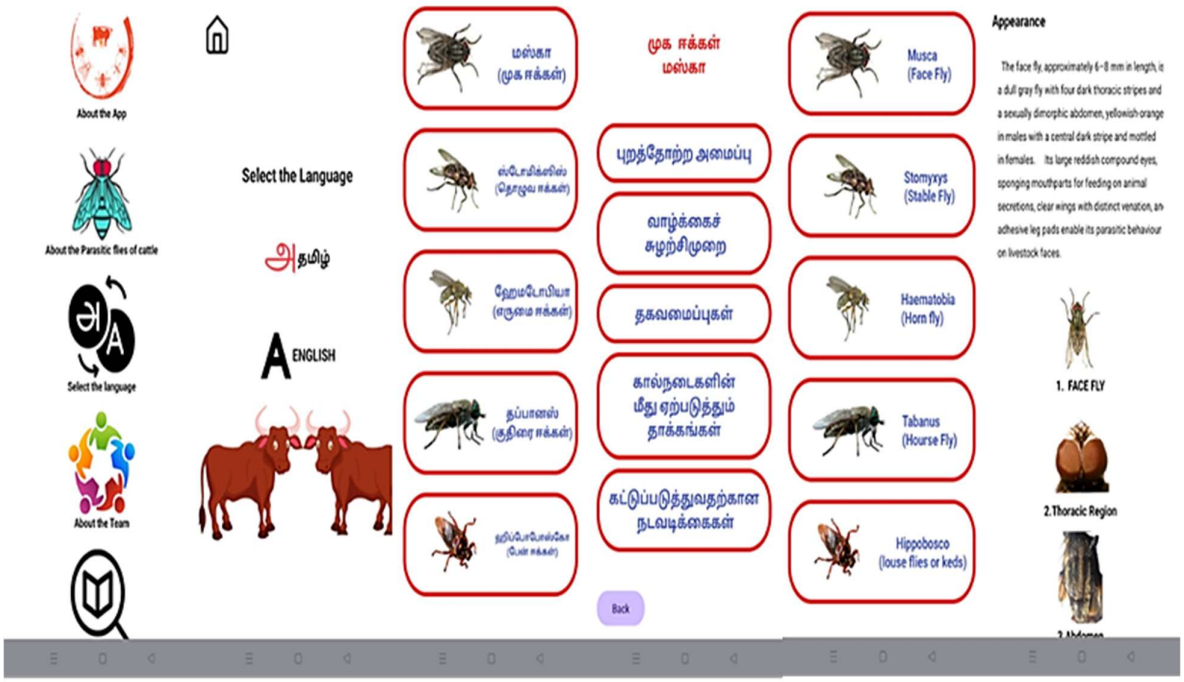
The application offers several practical features aimed at education and field-level decision support:

- **Structured Home Interface:** Easy access to all sections of the app
- **Fly Identification Module:** Detailed profiles of *Musca*, *Stomoxys*, *Haematobia*, *Tabanus*, and *Hippobosca*
- **Life Cycle and Adaptation:** Simple explanations to understand fly biology
- **Control Measures:** Scientifically validated management and control options
- **Bilingual Support:** Content available in both English and Tamil, allowing wider accessibility for regional farmers
- **Visual Aids:** High-quality images to assist accurate identification

The app's step-by-step layout ensures that users receive information in a logical and easy-to-follow manner.

Significance and Future Scope

Digital tools are becoming increasingly important in veterinary extension and livestock management. Compared to printed manuals, mobile applications like ECTICON offer portability, real-time access and continuous availability. ECTICON helps bridge the knowledge gap between scientific research and field-level application. In the future, the app could be enhanced with features such as image-based fly recognition, offline access, in-app reporting, and integration with veterinary advisory services.



App Layout

Conclusion

ECTICON represents an innovative step toward integrating digital technology with livestock health management. By providing accurate identification, educational content, and management guidance in a bilingual format, the app serves as a valuable resource for farmers, students, and veterinary professionals. Such digital innovations have strong potential to improve animal welfare, enhance farm productivity and support sustainable livestock practices.

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