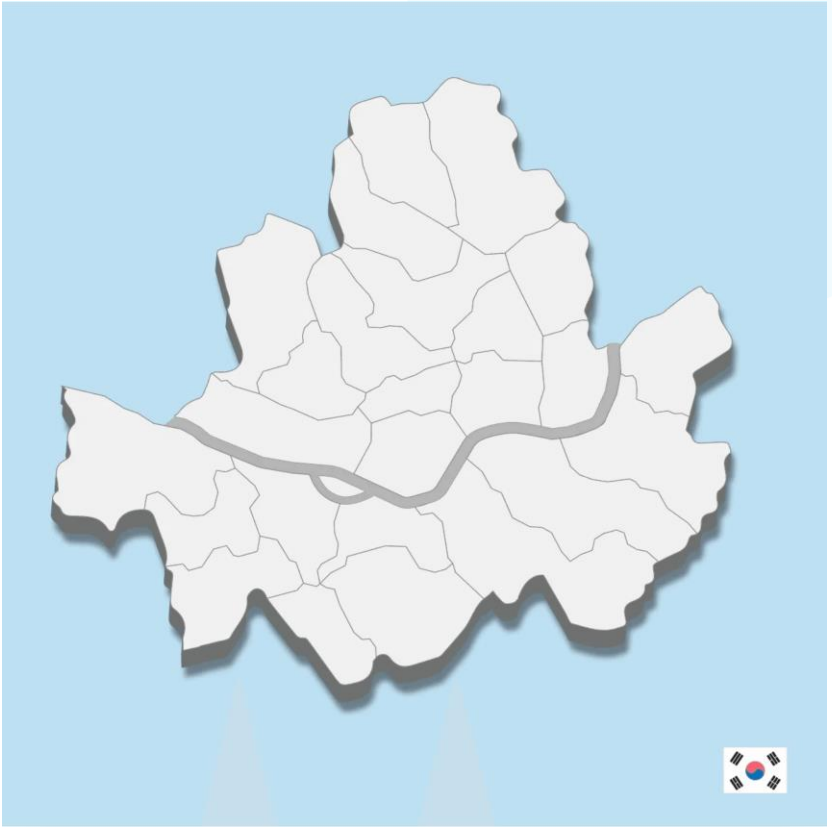
- IPM* under Climate Change -

Seoul-type Smart IPM

Infectious Disease Control Division, Seoul Metropolitan Government

Mar 18, 2026



*IPM: Integrated Pest Management

Increasing need for systematic pest control underpinned by legal bases

Korean laws

Systematic pest control approaches required by 「Infectious Disease Control and Prevention Act」 and 「Act on the Conservation and Use of Biological Diversity」

Seoul Metropolitan Government Ordinance

According to the 'Ordinance on the Management and Control of Mass-occurring Insects'(effective on Mar 27, 2025), Seoul Metropolitan Government needs to collaborate with 25 district offices in Seoul for systematic pest control

Issues to solve

Although there is a legal ground for pest control in Korea, a well-organized working model for implementing the concept of eco-friendly IPM in real world setting is not yet established

Call for scientific pest control responding to climate change and urban ecological change

Increasing complaints

Pest-related complaints on an increasing trend

- Mosquito complaints, **350,000***
- Lovebug complaints, **5,000***
- Rat complaints, **2,900***

Environmental drivers

Global warming and pest importation risk are likely to expand vector habitats. Concerns on emerging disease vectors are increasing.

Urgent need for technology transition

Time to change from traditional spray methods to **AI/data-based spray pest control** (precision/smart spraying)

*2025 statistics in Seoul

Adoption of IPM for minimizing pesticide use and protecting the environment

Definition of IPM and core principles

- Eco-friendly approach through prevention, monitoring, detection, and control steps
- Prioritizing physical and biological pest control over chemical pest control
- Minimizing pesticide use and pursuing highly-targeted interventions

Seoul-type Smart IPM

- Intelligent systems combining AI-assisted prediction data and IoT* traps
- Automated pest control decision based on real-time vector density analysis
- Applying customized control scenarios optimized for each sector’s spatial characteristics

Expected outcomes

- Minimizing disruption of urban ecosystems and preserving biodiversity
- Protecting public health and reducing pesticide exposure risks
- Realizing a sustainable, eco-friendly, smart city, Seoul

Unmanned surveillance trap image

*IoT: Internet of Things

In 2026, implementation of a data-driven ‘Seoul-type Smart IPM’ model

VISION

Creating a safe and comfortable urban environment for citizens

01
Proactive surveillance

Strengthening the IoT-based
real-time vector monitoring system

02
Scientific analysis

AI-assisted outbreak prediction and
improving risk assessment model

03
Eco-friendly pest control

Implementing customized IPM
considering each sector’s spatial characteristics

Data-driven **Citizen-engaged** **Eco-friendly**

Expanding real-time surveillance networks using IoT* traps and digital sensors

Infrastructure expansion

Building a dense surveillance network by expanding DMS** and smart rat traps to all districts

Data integration among 25 district sources

Monitoring the situation across all districts at a glance, by linking real-time data on vector occurrence by district to the integrated platform of the Seoul Metropolitan Government

AI-based automatic identification technology

Through AI vision technology, species of vectors captured in traps are automatically classified and their occurring densities are instantly analyzed

*IoT: Internet of Things
**DMS: Digital Mosquito Monitoring System

Predicting outbreaks and optimizing pest control through big data analysis

Development of AI prediction algorithms

Building precise models that combine meteorological data, geographic information, and historical complaint data to predict the likelihood of vector occurrences in advance

Risk map visualization

Supporting intuitive decision-making, by calculating an infectious disease vector risk index by district and presenting it on a dashboard map in real-time

Provision of optimized pest control guidance

Maximizing pest control efficiency by operating intelligent systems that automatically recommend the most effective pest control timing and method based on outbreak prediction

Deep analysis of pest control outcomes

Through comparative analyses using before-and-after pest control data, verifying the effectiveness of pest control activities and thereby continuously improving the accuracy of the prediction model

Eco-friendly pest control approaches tailored to districts’ spatial characteristics

Customized approaches to each district

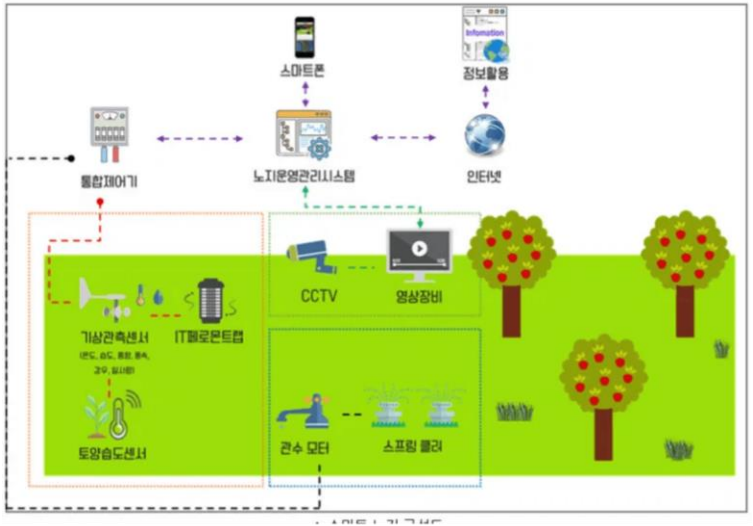
Through pest control strategies based on spatial characteristics considering residential areas, parks and rivers, minimizing unnecessary pesticide use and maximizing pest control efficiency

Expansion of eco-friendly pest control approaches

Protecting the ecosystem by prioritizing eco-friendly alternatives to chemical pesticides, such as larval control, physical barriers and the use of natural enemies

Strengthening the collaboration with private stakeholders

Building a close network with pest control companies and community pest control groups, and distributing a citizen’s guide to pest control



Improving the quality of life for citizens through scientific pest control systems

Expected outcomes

Improving health indicators

Creating a health city by reducing the incidence of vector-borne diseases and alleviating citizens' concerns

Budget efficiency

Reducing unnecessary pesticide use and workforce through data-driven targeted control

Protecting environment

Restoring the health and sustainability of urban ecosystems by preventing pesticide misuse and abuse

Plans

2026. 1H

Improving systems

AI prediction algorithm refinement and the development of the integrated platform of the Seoul Metropolitan Government

2026. 2H

Expansion of pilot operation

Pilot operation and effective analysis of the smart pest control model across all districts in Seoul

2027. ~

Settlement of the Seoul-type smart IPM*

Go-live of the data-driven 24/7 pest control system and domestic expansion of the model

* Integrated Pest Management (IPM): the process of evaluating and determining pest management with minimal pesticide use involves four stages: set action thresholds, monitor and identify pests, prevention, and control.

CONCLUSION

Creating a healthier future for Seoul through proactive·scientific·eco-friendly IPM*

In the era of climate change, Seoul-type smart IPM will serve as a backbone to protect citizens' safety.

Thank you for your listening!

THANK YOU

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