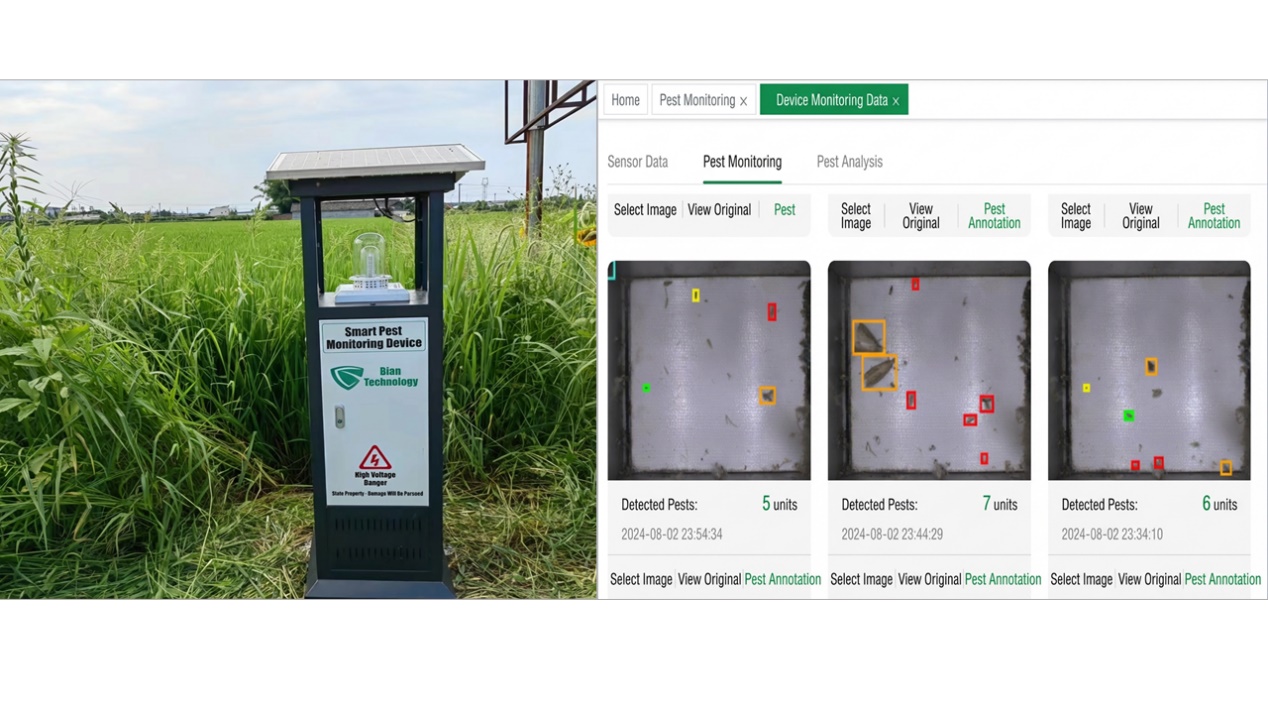
**Supplementary Information**



**Figure S1**: The intelligent insect monitoring and reporting system. Note: The insect monitoring automatic detection device deployed at the periphery of the field. The system is engineered for automated data acquisition and remote access, facilitating real-time pest surveillance.

**Table S1**. The registration and manufacturing details of insecticides used.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Pesticide** | **Dosage Form** | **Manufacturer** | **Registration Number** |
| 1 | 1.8% Avermectin | EC | Stanley | PD20093356 |
| 2 | 40% Chlorantraniliprole | DPC | Syngenta Nantong Crop Protection Co., Ltd. | PD20141973 |
| 3 | 34% Spinetoram | SC | Dow AgroSciences Co., Ltd. | PD20181332 |
| 4 | 9% Emamectin benzoate·methoxyfenozide | SC | Hebei Meibang Chemical Technology Co., Ltd. | PD20230291 |
| 5 | 16% Avermectin·indoxacarb | SC | Hebei Xingbai Agricultural Technology Co., Ltd. | PD20172786 |