

## SUPPORTING INFORMATION

### Eco-friendly Chitosan Base Chlorantraniliprole Nano-pesticides for Effective Control of *Chilo Suppressalis* (Walker) through Bidirectional Transport

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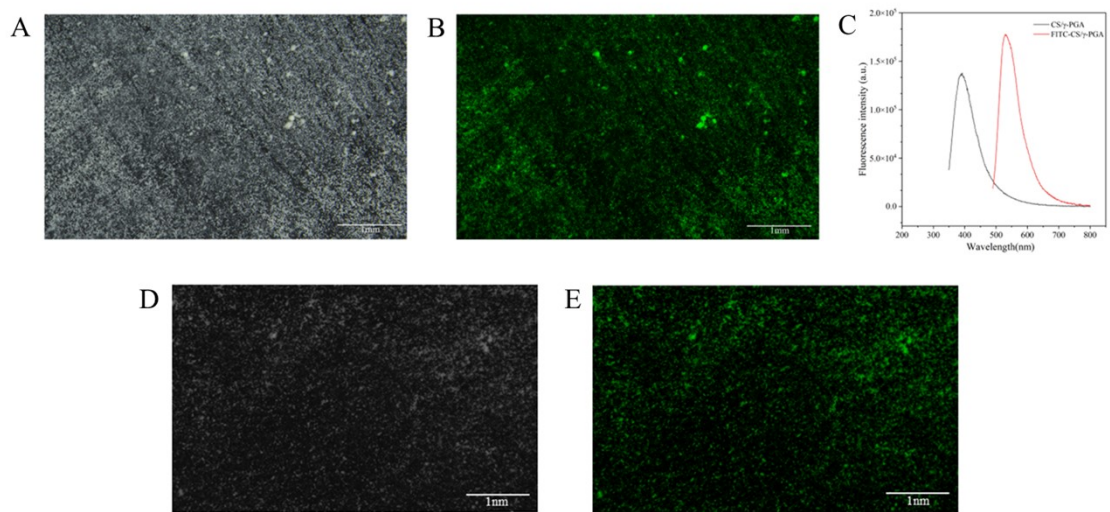
**Table S1.** Primers used in qRT-PCR for P450s

	Gene name	Forward primer	Reverse primer
P450 genes	<i>CYP324A12</i>	CGATGTGGATGCGTGAGATG	CTGTTCCCTGAAGGCGTCGAA
	<i>CYP321F3</i>	TTACGTGGTGCAGGGATCAA	AGTGGGGTCATCTTTGCCT
	<i>CYP9A68</i>	GCATCGTTGGCGCTTTTCTT	TCCGAGAAGTGTTTCGATCCG
	<i>CYP6CV5</i>	ACACCAGTGTTTACGACACGA	ATTTGGCGGTCAATGCTCTT
reference genes	<i>EF1</i>	CTGGGTATTGGACAAACTGA	GAGGTTCCCTGTGATCATGTT

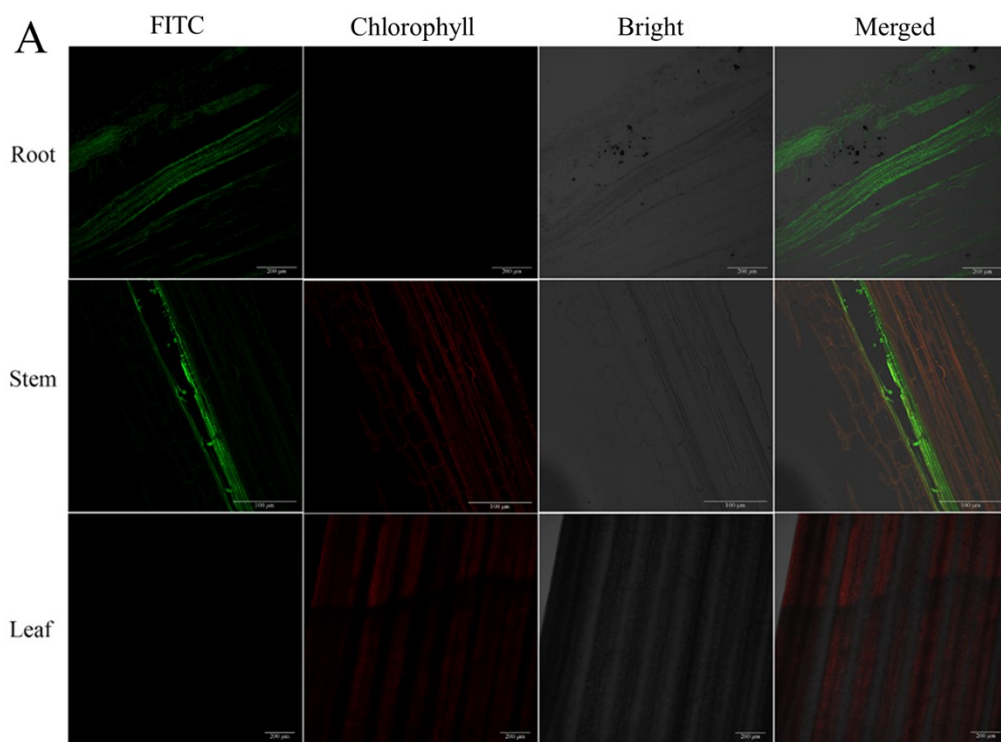
Note: The above twelve gene primers were designed using NCBI Primer-BLAST.

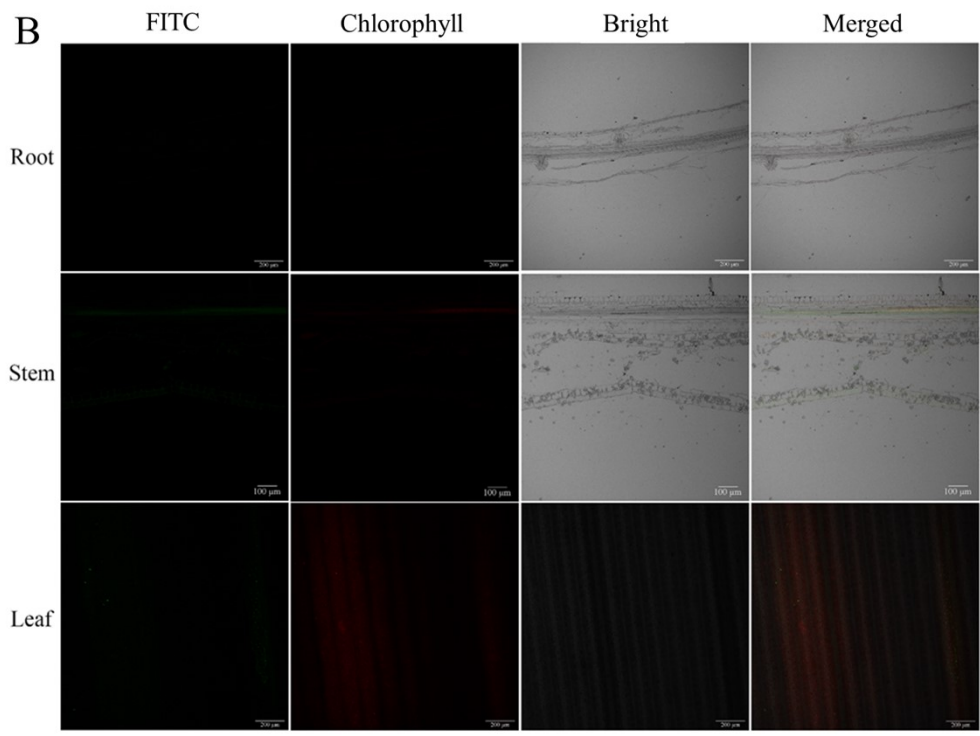
<sup>†</sup> This author has an equal contribution and first authorship.

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E-mail address: wangxuegui@sicau.edu.cn (X.G. Wang).

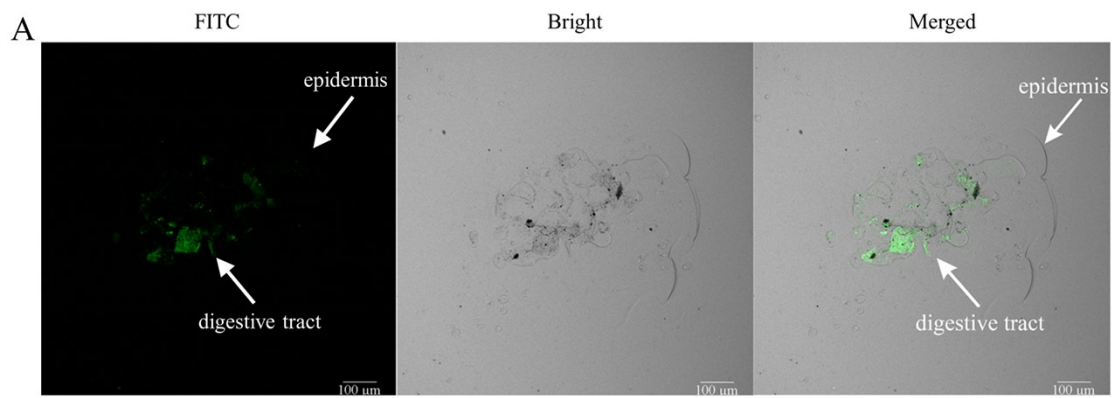


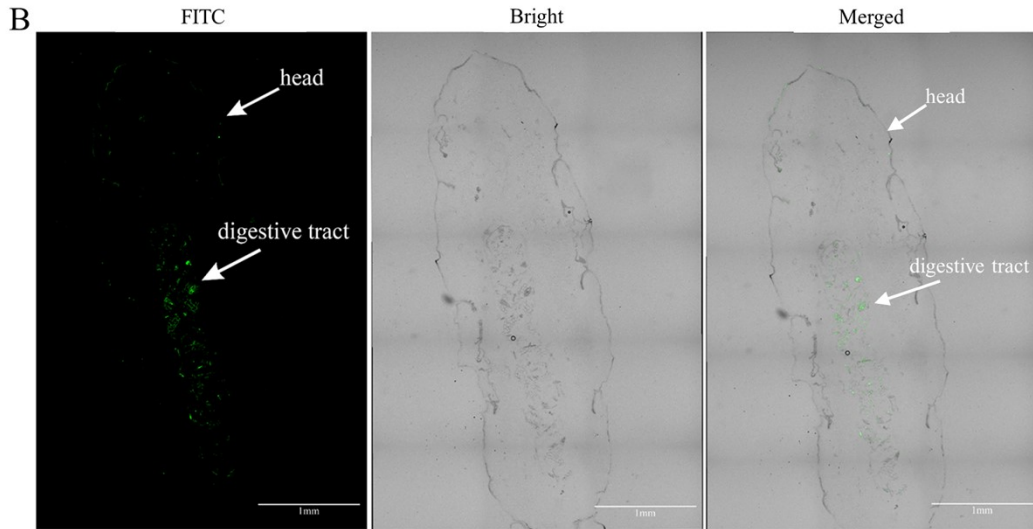
**Fig. S1.** FITC-CS/ $\gamma$ -PGA and FITC-CLAP@CS/ $\gamma$ -PGA under body fluorescence microscope (a) open field of FITC-CS/ $\gamma$ -PGA. (b) excitation field of FITC-CS/ $\gamma$ -PGA. (c) Emission spectra of CS/ $\gamma$ -PGA and FITC-CS/ $\gamma$ -PGA under 480 nm excitation wavelengths. (d) open field of FITC-CLAP@CS/ $\gamma$ -PGA. (e) excitation field of FITC-CLAP@CS/ $\gamma$ -PGA.



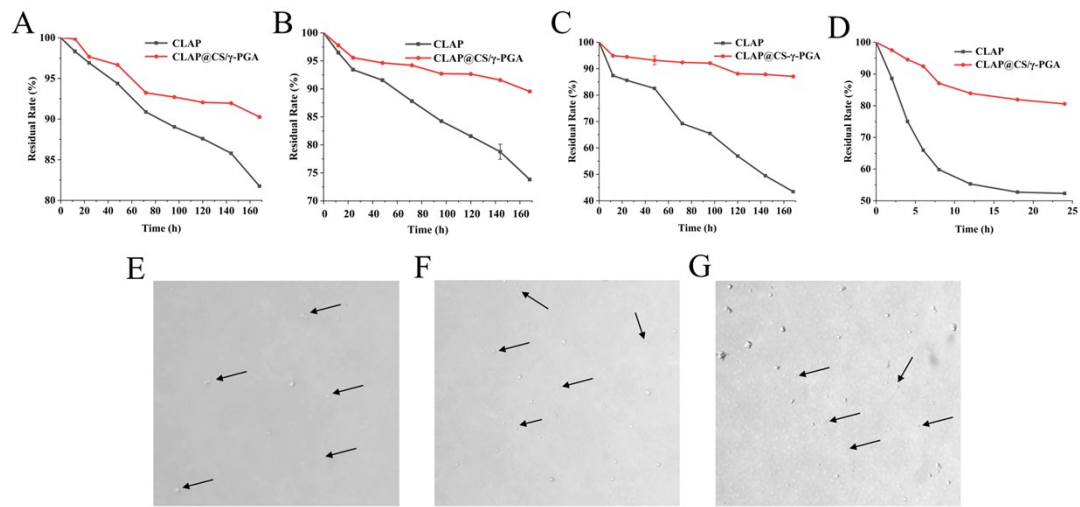


**Fig. S2.** (A) Distribution of FITC-CS/ $\gamma$ -PGA in different parts of rice at 72 hours after root treatment. (B) Distribution of FITC-CS/ $\gamma$ -PGA in different parts of rice at 72 hours after leaf treatment.

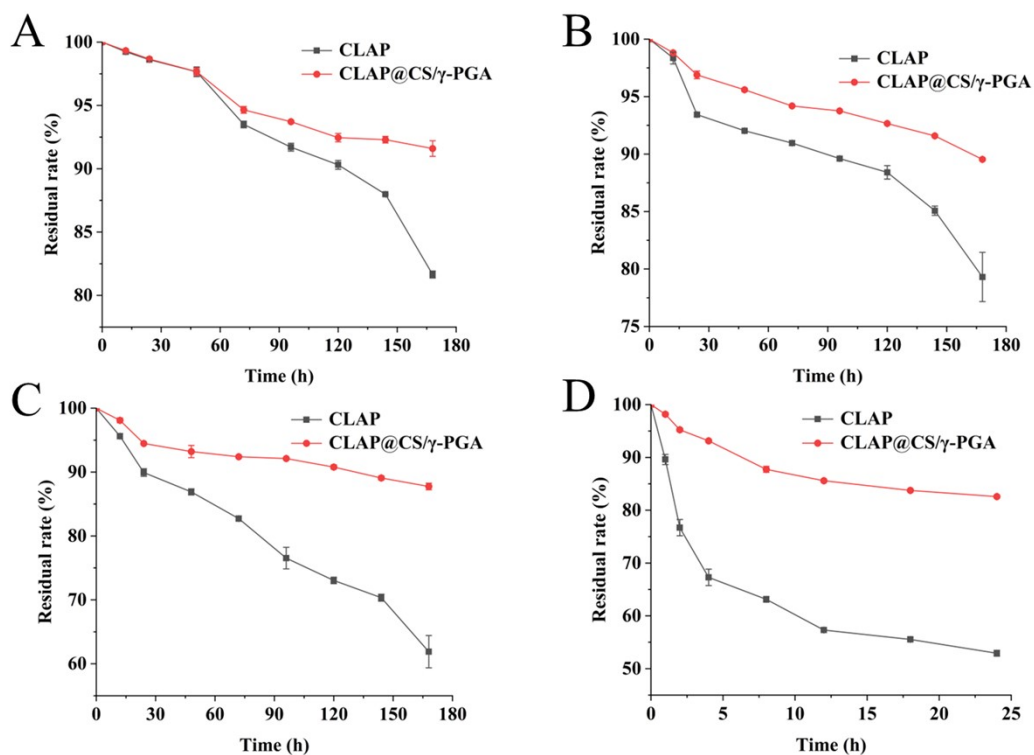




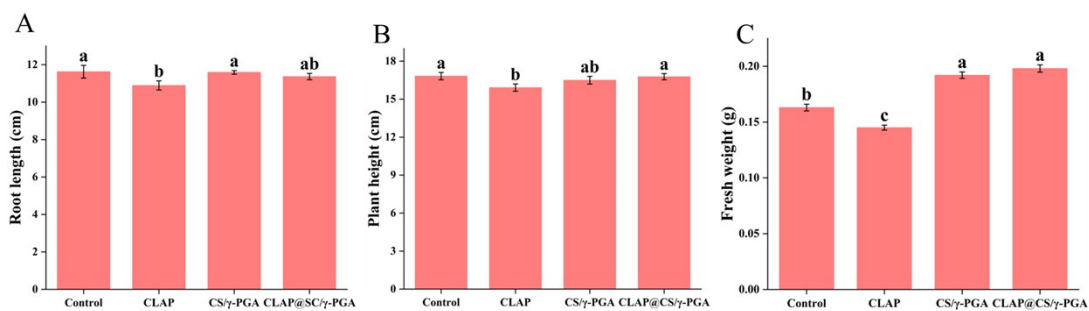
**Fig. S3.** (A) Distribution of FITC-CS/ $\gamma$ -PGA in larva (take stem) at 24 hours after feed (Cross section). (B) Distribution of FITC-CS/ $\gamma$ -PGA in the larva (take stem) at 24 hours after feed (Longitudinal section).



**Fig. S4.** (A) The residual amounts of CLAP in deionized water at 4 °C for both CLAP and CLAP@CS/ $\gamma$ -PGA. (B) The residual amounts of CLAP in deionized water at 25 °C for both CLAP and CLAP@CS/ $\gamma$ -PGA. (C) The residual amounts of CLAP in deionized water at 54 °C for both CLAP and CLAP@CS/ $\gamma$ -PGA. (D) The residual amounts of CLAP in deionized water under UV irradiation for both CLAP and CLAP@CS/ $\gamma$ -PGA. (E) Dispersion of CLAP@CS/ $\gamma$ -PGA in deionized water. (F) Dispersion of CLAP@CS/ $\gamma$ -PGA in methanol. (G) Dispersion of CLAP@CS/ $\gamma$ -PGA in ethanol.



**Fig. S5.** (A) The residual amounts of CLAP in dechlorinated drinking water at 4 °C for both CLAP and CLAP@CS/γ-PGA. (B) The residual amounts of CLAP in dechlorinated drinking water at 25 °C for both CLAP and CLAP@CS/γ-PGA. (C) The residual amounts of CLAP in dechlorinated drinking water at 4 °C for both CLAP and CLAP@CS/γ-PGA. (D) The residual amounts of CLAP in dechlorinated drinking water under UV irradiation for both CLAP and CLAP@CS/γ-PGA.



**Fig. S6.** (A) Root length of rice plants 7 days after treatment. (B) Plant height of rice plants 7 days after treatment. (C) Fresh weight of rice plants 7 days after treatment.