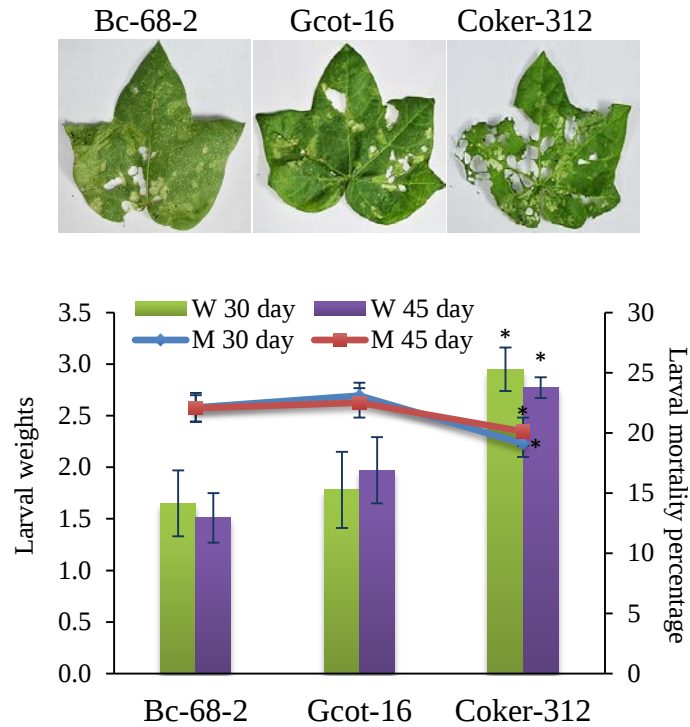


Supplementary figures

Fig-S1

A



B

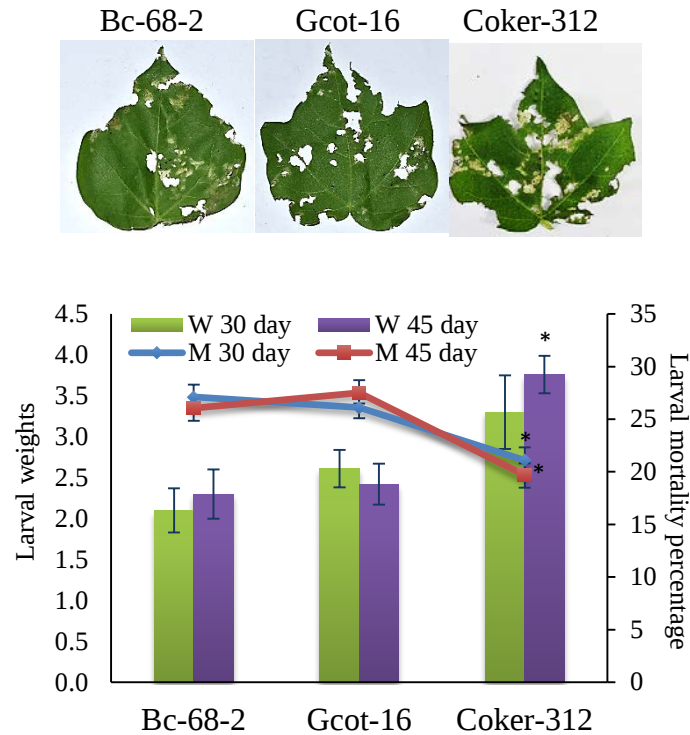


Figure S1. *In planta* insect bioassay for tolerance in cultivated cotton varieties against chewing pests, *S. litura* (A) and *H. armigera* (B). Asterisks indicate significant differences for larval mortality percentage with respect to Bc-68-2, Student's t-test, $^* = P < 0.05$

Fig-S2

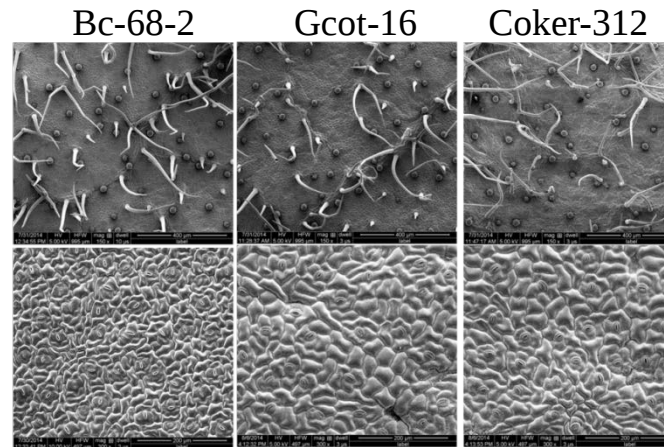


Figure S2. The trichome and stomatal distribution in different *G. hirsutum* varieties. Scanning electron micrograph displaying (a) trichome and (b) stomatal distribution on leaf surface of more tolerant (Bc-68-2 and Gcot-16) and susceptible (Coker-312) varieties

Supplementary tables

Table S1. Larval weights at three different leaf positions on *G. hirsutum* varieties

S.No.	<i>G. hirsutum</i> varieties	<i>Spodoptera litura</i>			<i>Helicoverpa armigera</i>		
		2 nd leaf	5 th leaf	7 th leaf	2 nd leaf	5 th leaf	7 th leaf
1	JKC-725	2.67 ± 0.12 ^b	2.65 ± 0.33 ^b	2.66 ± 0.97 ^b	2.83 ± 0.33 ^b	2.83 ± 0.20 ^b	2.82 ± 0.80 ^b
2	JKC-783	2.13 ± 0.54 ^{ab}	2.11 ± 0.48 ^{ab}	2.10 ± 0.56 ^{ab}	2.88 ± 0.07 ^b	2.87 ± 0.10 ^b	2.88 ± 0.09 ^b
3	GCOT-16	1.67 ± 0.24 ^a	1.66 ± 0.15 ^a	1.67 ± 0.13 ^a	1.38 ± 0.26 ^a	1.37 ± 0.49 ^a	1.37 ± 0.52 ^a
4	KC 1	2.96 ± 0.90 ^b	2.97 ± 0.66 ^b	2.97 ± 0.72 ^b	2.81 ± 0.06 ^b	2.81 ± 0.10 ^b	2.80 ± 0.26 ^b
5	JKC-701	2.66 ± 0.10 ^b	2.64 ± 0.90 ^b	2.65 ± 0.67 ^b	2.77 ± 0.31 ^b	2.76 ± 0.80 ^{bc}	2.77 ± 0.24 ^b
6	COKER-312	4.06 ± 0.08 ^c	4.01 ± 0.05 ^c	3.96 ± 0.40 ^c	3.92 ± 0.26 ^c	3.91 ± 0.45 ^c	3.92 ± 0.11 ^c
7	BC-68-2	1.96 ± 0.53 ^a	1.95 ± 0.44 ^a	1.96 ± 0.25 ^a	1.32 ± 0.75 ^a	1.32 ± 0.60 ^a	1.33 ± 0.09 ^a
8	LRA-5166	2.74 ± 0.2 ^b	2.73 ± 0.14 ^b	2.74 ± 0.33 ^b	2.74 ± 0.24 ^b	2.74 ± 0.16 ^b	2.73 ± 0.98 ^b
9	MCU-5	2.60 ± 0.12 ^b	2.61 ± 0.09 ^b	2.60 ± 0.33 ^b	2.33 ± 0.05 ^b	2.33 ± 0.10 ^b	2.32 ± 0.77 ^b
10	VIKAS	2.88 ± 0.46 ^b	2.89 ± 0.52 ^b	2.88 ± 0.50 ^b	2.90 ± 0.71 ^b	2.91 ± 0.05 ^b	2.90 ± 0.94 ^{bc}
11	AS3	2.77 ± 0.70 ^b	2.76 ± 0.66 ^b	2.76 ± 0.92 ^b	2.77 ± 0.26 ^b	2.77 ± 0.16 ^b	2.76 ± 0.94 ^{bc}
12	GCOT-12	2.42 ± 0.89 ^b	2.42 ± 0.90 ^b	2.41 ± 0.66 ^b	2.45 ± 0.77 ^b	2.46 ± 0.05 ^b	2.45 ± 0.83 ^b
13	GCOT-10	2.78 ± 0.99 ^b	2.77 ± 0.56 ^b	2.78 ± 0.16 ^b	2.98 ± 0.11 ^b	2.98 ± 0.34 ^b	2.97 ± 0.91 ^{bc}
14	GCOT-100	2.68 ± 0.66 ^b	2.67 ± 0.94 ^b	2.68 ± 0.56 ^b	2.54 ± 0.30 ^b	2.54 ± 0.12 ^b	2.54 ± 0.96 ^b
15	G-67	2.10 ± 0.3 ^b	2.09 ± 0.75 ^{ab}	2.09 ± 0.90 ^{ab}	2.92 ± 0.75 ^b	2.93 ± 0.10 ^b	2.92 ± 0.80 ^{bc}
16	REBA PVT-9	2.18 ± 0.7 ^b	2.18 ± 0.05 ^b	2.17 ± 0.45 ^{ab}	2.55 ± 0.70 ^b	2.56 ± 0.10 ^b	2.55 ± 0.81 ^b
17	JBWR-25	2.31 ± 0.67 ^b	2.30 ± 0.45 ^b	2.30 ± 0.66 ^{ab}	2.74 ± 0.05 ^b	2.74 ± 0.10 ^b	2.73 ± 0.96 ^b
18	KH2	2.42 ± 0.56 ^b	2.41 ± 0.86 ^b	2.42 ± 0.16 ^b	2.76 ± 0.17 ^b	2.75 ± 0.76 ^b	2.75 ± 0.82 ^b
19	KC-2	2.32 ± 0.17 ^b	2.31 ± 0.65 ^b	2.32 ± 0.09 ^b	2.65 ± 0.14 ^b	2.64 ± 0.91 ^b	2.65 ± 0.05 ^b
20	JKC-782	2.51 ± 0.56 ^b	2.50 ± 0.90 ^b	2.51 ± 0.42 ^b	2.64 ± 0.16 ^b	2.63 ± 0.80 ^b	2.63 ± 0.77 ^b
LSD at 5%		0.67	0.69	0.66	0.96	0.91	0.94
C.V. (%)		18.90	18.61	18.74	17.66	17.59	17.90

Larval weights of chewing pests (*S. litura* and *H. armigera*) feeding on detached leaves (at three different leaf positions: 2nd, 5th and 7th leaf from top) of 65 days old *G.hirsutum* varieties grown in net-house conditions. Values (mean ± SD) with similar letters within a column do not differ significantly at P≤0.01 (DMRT). Data is a combined average mean of three replications ± standard deviation.

Table S2. Larval mortality percentage at three different leaf positions on *G. hirsutum* varieties

S.No.	<i>G. hirsutum</i> Variety	<i>Spodoptera litura</i>			<i>Helicoverpa armigera</i>		
		2 nd leaf	5 th leaf	7 th leaf	2 nd leaf	5 th leaf	7 th leaf
1	JKC-783	27.40 ± 3.28 ^{bc}	24.87 ± 3.24 ^{cd}	23.19 ± 4.12 ^{cd}	31.09 ± 2.96 ^a	32.33 ± 0.21 ^{ab}	31.22 ± 3.20 ^{ab}
2	JKC-725	17.02 ± 1.30 ^{de}	15.62 ± 1.49 ^{ef}	18.10 ± 1.09 ^e	19.12 ± 0.87 ^{ef}	21.05 ± 2.09 ^{de}	18.55 ± 1.50 ^{ef}
3	GCOT-16	33.96 ± 4.6 ^{abc}	30.26 ± 3.25 ^b	31.90 ± 5.10 ^{ab}	31.21 ± 3.33 ^a	32.54 ± 2.79 ^{ab}	31.66 ± 4.38 ^{ab}
4	KC 1	23.44 ± 8.9 ^{cd}	22.60 ± 4.12 ^{cd}	23.45 ± 5.60 ^{cd}	30.66 ± 1.62 ^b	29.0 ± 2.10 ^{ab}	29.7 ± 2.25 ^{ab}
5	JKC-701	17.86 ± 2.72 ^{de}	17.90 ± 2.35 ^{ef}	19.20 ± 2.31 ^{ab}	20.90 ± 0.10 ^{ef}	19.66 ± 2.60 ^{de}	20.06 ± 3.47 ^{cd}
6	COKER-312	32.13 ± 0.08 ^{ab}	30.19 ± 1.25 ^b	30.66 ± 4.19 ^{ab}	27.33 ± 0.91 ^c	28.11 ± 0.14 ^b	28.07 ± 0.24 ^{ab}
7	BC-68-2	35.21 ± 3.44 ^{abc}	35.67 ± 1.18 ^a	35.80 ± 2.70 ^a	31.26 ± 3.10 ^a	31.40 ± 2.66 ^a	30.88 ± 4.21 ^{ab}
8	LRA-5166	18.74 ± 2.89 ^d	16.33 ± 1.09 ^{ef}	15.41 ± 2.36 ^f	22.10 ± 2.97 ^{ef}	22.45 ± 2.64 ^{cd}	21.46 ± 3.50 ^{cd}
9	MCU-5	27.85 ± 3.70 ^{bc}	26.70 ± 2.18 ^c	24.33 ± 4.19 ^{cd}	25.66 ± 3.60 ^{de}	24.55 ± 4.99 ^{cd}	25.78 ± 3.44 ^{cd}
10	VIKAS	25.10 ± 2.66 ^{bc}	24.33 ± 3.71 ^d	24.09 ± 2.97 ^{cd}	13.45 ± 2.76 ^g	14.20 ± 1.72 ^e	13.70 ± 2.1 ^g
11	AS3	18.45 ± 2.18 ^{de}	19.01 ± 1.96 ^e	18.57 ± 2.33 ^e	22.10 ± 2.44 ^{de}	21.90 ± 3.09 ^{cd}	21.66 ± 3.50 ^{de}
12	GCOT-12	25.06 ± 1.79 ^{bc}	24.04 ± 2.15 ^c	24.81 ± 2.28 ^{cd}	28.66 ± 2.74 ^{bc}	28.10 ± 2.69 ^b	27.65 ± 3.74 ^{bc}
13	GCOT-10	25.11 ± 3.90 ^{bc}	25.01 ± 2.73 ^c	25.10 ± 3.06 ^c	22.38 ± 1.97 ^{de}	23.14 ± 1.29 ^{cd}	22.05 ± 2.19 ^{de}
14	GCOT-100	23.45 ± 3.76 ^{cd}	22.33 ± 4.82 ^{cd}	23.06 ± 3.16 ^{cd}	15.20 ± 1.80 ^g	15.61 ± 1.65 ^e	16.12 ± 0.33 ^f
15	G-67	25.01 ± 3.05 ^{bc}	24.33 ± 3.96 ^{cd}	25.25 ± 3.42 ^c	32.09 ± 2.24 ^a	31.06 ± 3.15 ^{ab}	33.01 ± 0.94 ^a
16	REBA PVT-9	20.33 ± 1.80 ^d	21.06 ± 0.94 ^d	20.56 ± 1.22 ^d	23.90 ± 1.45 ^{de}	24.81 ± 1.33 ^c	23.67 ± 2.72 ^{cd}
17	JBWR-25	23.70 ± 1.64 ^{cd}	22.10 ± 2.06 ^{cd}	22.55 ± 2.80 ^{cd}	7.90 ± 0.33 ^{hi}	7.36 ± 1.21 ^g	7.27 ± 1.44 ⁱ
18	KH2	20.22 ± 3.77 ^{de}	21.29 ± 2.56 ^d	20.56 ± 2.58 ^d	28.33 ± 2.18 ^{bc}	28.16 ± 2.33 ^b	27.37 ± 3.56 ^{bc}
19	KC-2	21.41 ± 2.50 ^{de}	20.66 ± 3.60 ^{cde}	21.45 ± 2.68 ^d	25.10 ± 2.09 ^d	25.56 ± 1.77 ^c	24.33 ± 3.71 ^{cd}
20	JKC-782	26.33 ± 1.29 ^{bc}	25.33 ± 2.36 ^{cd}	25.91 ± 1.90 ^c	27.80 ± 3.10 ^c	26.57 ± 4.35 ^{bc}	28.01 ± 2.90 ^{bc}
LSD at 5%		3.11	3.20	3.09	2.52	2.64	2.70
C.V. (%)		24.90	24.26	24.49	21.66	21.30	21.19

Larval mortality percentage of chewing pests *S. litura* and *H. armigera* feeding on detached leaves (at three different leaf positions: 2nd, 5th and 7th leaf from top) of 65 days old *G. hirsutum* varieties grown in net-house conditions. Values (mean ± SD) with similar letters within a column do not differ significantly at $P \leq 0.05$ (DMRT).

Table S3 Morphological traits in tolerant and susceptible varieties

MORPHOLOGICAL CHARACTERS	Variety	30 d	45 d	65 d
Plant height	Coker-312	27.2±3.3b	35±3.4c	77.9±4.7b
	Bc-68-2	49±2.3a	57±4.2a	104.6±7.7a
	Gcot-16	21.6±2.3b	27.6±1.6b	71±2.9b
Canopy cover	Coker-312	16.6±1.2c	31.2±2.2b	33.7±0.9b
	Bc-68-2	21.2±0.4a	35±1.4a	54±3.1a
	Gcot-16	11.6±0.3b	30±2.1b	32.2±4.1b
No. of leaves/plant	Coker-312	10.8±0.6a	35.2±3.3c	36.6±2.6c
	Bc-68-2	11.2±0.2a	60±1.6a	50.6±4.1a
	Gcot-16	7.2±0.4b	45±2.1b	40.6±3.7b
YIELD CHARACTERS				
Boll/ plant	Coker-312	17.6±0.4a		
	Bc-68-2	16.4±1.2a		
	Gcot-16	11.2±0.5b		
Boll weight (in grams, average of five)	Coker-312	2.7±0.7a		
	Bc-68-2	3.2±0.5a		
	Gcot-16	2.81±0.4a		
Seed/ boll	Coker-312	19.6±0.3b		
	Bc-68-2	19.3±0.2b		
	Gcot-16	21.2±0.4a		

Significant differences in the variable means between the three varieties are indicated by different letters ($P < 0.05$). Values with same alphabets do not differ significantly.

Table S4 Physiological characters in tolerant and susceptible varieties.

Physiological characters	Coker-312	Bc-68-2	Gcot-16
Photosynthesis rate ($\mu\text{mol m}^{-2} \text{s}^{-1}$)	18.16 ± 0.03^a	17.91 ± 1.53^a	15.8 ± 1.73^b
Stomatal conductance ($\text{mol m}^{-2} \text{s}^{-1}$)	0.379 ± 0.02^a	0.29 ± 0.08^b	0.31 ± 0.05^b
Transpiration ($\text{mmol m}^{-2} \text{s}^{-1}$)	7.65 ± 0.70^a	6.6 ± 1.41^b	6.71 ± 0.80^b
Water use efficiency	2.41 ± 0.20^a	2.18 ± 0.06^c	2.36 ± 0.02^b

Comparative physiological characteristic of tolerant and less tolerant cotton varieties in 45 days old plants (Mean $\pm$ SE). Differences in variable means indicated by different letters ($P < 0.05$, DMRT). Values with same letters do not differ significantly.

Table S5 Comparative anatomical characteristic of tolerant and susceptible cotton varieties in 45 days

Anatomical Characteristics	Coker-312	Bc-68-2	Gcot-16
Abaxial stomatal density (per cm^{-1} of leaf) *	5.27×10^{3b} (15)	9.60×10^{3a} (15)	5.24×10^{3b} (15)
Adaxial stomatal density (per mm^2 of leaf) *	0.82×10^{3c} (15)	0.51×10^{3b} (15)	0.24×10^{3a} (15)
Average stomatal length (μm)**	18.32 ± 4.6^a (21)	20.30 ± 3.2^a (21)	15.42 ± 2.7^b (21)
Average stomatal width (μm) **	3.40 ± 0.2^a (21)	3.61 ± 0.2^a (21)	3.34 ± 0.8^a (21)
Average stomatal area (μm^2) **	71.33 ± 0.6^a (21)	72.40 ± 0.7^a (21)	76.4 ± 0.4^b (21)
Percent of abaxial leaf surface occupied by stomata	1.41	1.43	1.37
Percent of adaxial leaf surface occupied by stomata	0.60	0.57	0.56
Trichome density (per cm^2 of leaf) *	2.01×10^{3a} (15)	2.22×10^{3a} (15)	1.98×10^{3a} (15)
Average trichome length (μm)**	297.99 ± 0.8^b (21)	247.05 ± 1.0^a (21)	457.74 ± 0.4^c (21)
Percent of leaf surface occupied by trichome	0.86^a	0.84^a	0.72^b

Comparative anatomical characteristic of tolerant and less tolerant cotton varieties in 45 days old plants (Mean $\pm$ SD). The sample size is given in parentheses. Differences in variable means indicated by different letters ($P < 0.05$, DMRT). Values with same letters do not differ significantly. (*) denotes average of the five measurements with three repetitions. (**) denotes average of the seven measurements with three repetitions.

Table S6. Oligonucleotide primers for selected genes

Gene	Forward (5'–3')	Reverse (5'–3')
Dihydro flavanol reductase	CCTGTTGGAGCGACCTTGAA	GCGAATTTCCAGGCTGCTT
Chalcone isomerase	GGAGGGAAAGGAGGAAGCAAA	AGTTGCAGACACTCCCCTTGTTT
Phenylalanine ammonia lyase	CAACAACGGTCTCCCATCAAAC	CTCGGAACAATAGGAGGCCATT
Anthocyanin synthase	GGTTCCGACCATCGATTTGAC	TGCATCACACCCCATTCCAT
Anthocyanin reductase	TTTCCCCTCCAAACCCAAGT	CCACGGTTTGGTCGTAGATTTC
Chalcone synthase	ATGGCTCCTTCACTGGATGCTA	GCTGGCCCCATTCTTAATG
Flavanone-3-hydroxylase	GGAGGCTTTGACTAAGGCATGTG	TGTGGCGCTTGAGTCCTAAAGT
Ubiquitin	AGCTCGGATACGATTGATAACG	GAAGACGAAGAACAAGGGGAAG