Figure S1. The number of SNPs within 1Mb Window size
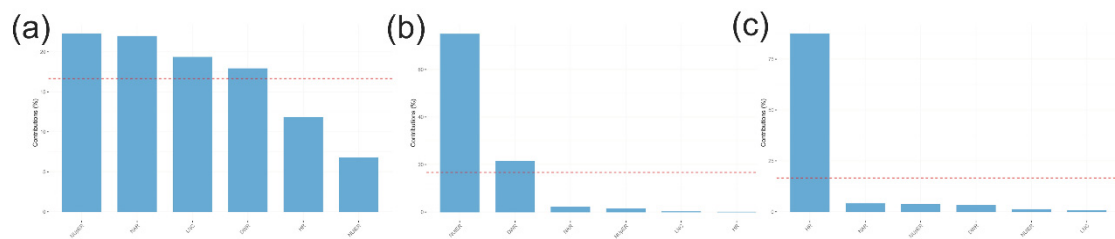

Figure S2. Principal component analysis of phenotypic data
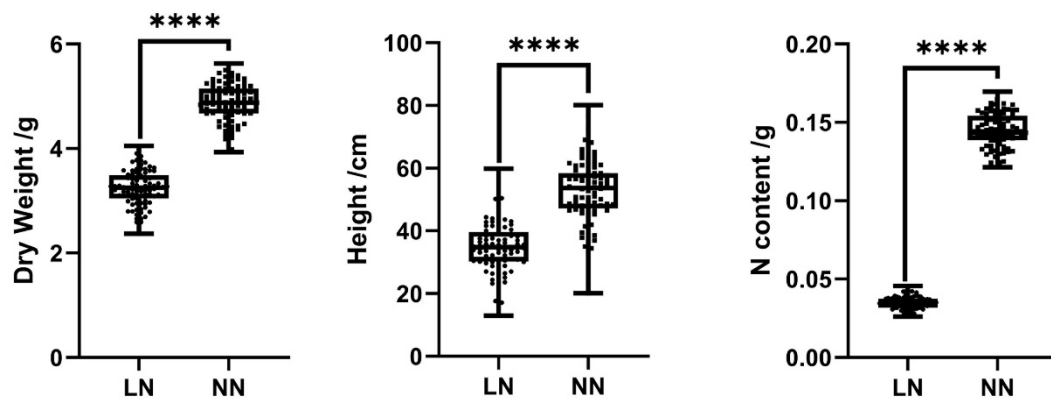(a) -(b) significant phenotypes in Dim1-3,

Figure S3. Dry Weight, Height and N content of cucumbers under different treatment. ****
indicate significance at $p < 0.0001$

Table S1.Solution formula

Nitrogen Content	Solution A	Solution B
Low Nitrogen (3.5mmol/L N)	$Ca(NO_3)_2 \cdot 4H_2O$：413 $CaCl_2$：194. 25	K_2SO_4：522 $MgSO_4 \cdot 7H_2O$：492 $NH_4H_2PO_4$：115
Normal Nitrogen (14mmol/L N)	KNO_3：606 $Ca(NO_3)_2 \cdot 4H_2O$：826	$MgSO_4 \cdot 7H_2O$：492 $NH_4H_2PO_4$：115

Micronutrients should also be added in the concentrations shown below, EDTA·Fe16mg/L, H_3PO_3 3mg/L，$MnSO_4$ 2mg/L，$ZnSO_4$ 0.22mg/L，$CuSO_4$ 0.08mg/L，$(NH_4)6Mo_7O_{24} \bullet 4H_2O$ 0.5mg/L

Table S2. SNP distribution in cucumber chromosom

Chromosome	Length	Variants	Variants rate
1	32,926,272	89,772	366
2	24,837,039	75,231	330
3	40,877,379	133,583	306
4	26,827,763	81,194	330
5	31,913,682	68,612	465
6	31,125,843	80,689	385
7	22,466,726	54,637	411
Total	210,974,704	583,718	361