



Figure S1. Positions of epitopes and primers on the BYV CP sequence. Open reading frame of the beet yellows virus protein p22 and its amino acid sequence. The red box is epitope 1 and the green box is epitope 2, and black arrows indicate primers without restriction sites used to amplify these epitopes. *Escherichia coli* rare codons are: AGG, AGA, CTA, ATA, CGA and CCC. To optimize codons for strong protein expression, we excluded rare codons from our primers. There is one rare codon in epitope 1 (AGG-R) but it located out of the primer sequence.