HAYATI Journal of Biosciences, June 2009, p 78-82 Vol. 16, No. 2
ISSN: 1978-3019

SHORT COMMUNICATION

Severe Outbreak of a Yellow Mosaic Disease on the Yard Long Bean in Bogor, West Java

TRI ASMIRA DAMAYANTI[1]*, OLUFEMI JOSEPH ALABI[2], RAYAPATI ADIKESAVULU NAIDU[2], AUNU RAUF[1]

[1]Department of Plant Protection, Faculty of Agriculture, Bogor Agricultural University, Darmaga Campus, Bogor 16680, Indonesia
[2]Department of Plant Pathology, Irrigated Agriculture Research and Extension Center, Washington State University, 24106 N Bunn Road Prosser, WA, USA

Received December 12, 2008/Accepted May 2, 2009

During 2008 crop season, an outbreak of severe yellow mosaic disease on yard long bean (*Vigna unguiculata* subsp. *Sesquipedalis*) occurred in several farmers' fields in West Java. Yard long bean var. Parade inoculated manually with extracts from symptomatic leaves showed the symptoms indicating the presence of virus. Symptomatic leaf samples tested positive in enzyme linked immunosorbent assay (ELISA) with antibodies to group specific *Potyvirus* and *Cucumber mosaic virus* (CMV). Total RNA derived from symptomatic leaves was subjected to reverse transcription-polymerase chain reaction (RT-PCR) using primers specific to the cylindrical inclusion (CI) protein of potyviruses and CMV coat protein (CP) specific primers. Pair wise comparison of sequences obtained from cloned RT-PCR products with corresponding nucleotide sequences in the GenBank confirmed the presence of *Bean common mosaic virus* strain Blackeye (BCMV-BlC) and CMV in the symptomatic beans. Sequences of BCMV and CMV isolates from the beans showed maximum nucleotide sequence identities (92-97%) and (90%), respectively with BCMV-BIC and CMV isolates from Taiwan. Each virus isolate also clustered closely with corresponding isolates from Taiwan in a phylogenetic analyses. These results provide first evidence of the occurrence of multiple infection of BCMV-BIC and CMV in the yard long been from Bogor, West Java.

Key words: yard long bean, BCMV-BIC, CMV, Bogor Indonesia

INTRODUCTION

Yard long bean (Asparagus bean; *Vigna unguiculata* subsp. *Sesquipedalis*) is a legume extensively cultivated in Indonesia consumed as a green vegetable. Yard long bean, a native of Southeast Asia bean, known as "kacang panjang" in Indonesia, produces delicious edible pods and beans that are popular for their delicate flavor and nutritional value. Since the middle of 2008, a severe virus-like disease outbreak with yellow mosaic symptoms was observed in the beans grown in farmers' fields in West Java (Bogor, Bekasi, Indramayu and Cirebon) (Damayanti, Wiyono and Rauf, field observations). Indonesian Department of Agriculture also announced that the similar symptom was observed in Tangerang Banten, Subang, and Muntilan, (Central Java). In the fields, the leaves of symptomatic plants showed severe mosaic with bright yellow and vein-clearing symptoms and the pods produced by these plants were deformed with mosaic symptoms on the surface (Figure 1a-d). Vein-clearing also was observed conferring a netting pattern on the symptomatic leaves. As the season advanced, the leaves showed bright yellow mosaic symptoms followed by necrosis and the death of infected plants. In Bogor area, the disease was observed on yard long bean. The disease spread rapidly in the fields with incidence up to 80-100% resulting in huge crop loss.

The aim of the research is to identify the causal of a yellow mosaic disease on yard long bean in Bogor, West Java.

MATERIALS AND METHODS

Serological Test. To investigate the causal agent(s) of disease, we collected symptomatic leaves from field in Bubulak, Bogor. The serological and transmission tests were conducted in Laboratory of Plant Virology, Department of Plant Protection, Bogor Agricultural University (BAU), Bogor, while the molecular detection, cloning, and sequencing were done at Washington State University (WSU), Prosser, WA, USA. Samples were tested with enzyme linked immunosorbent assay (ELISA) using antibodies against viruses infecting legumes such as *Potyvirus* genus-specific antibodies (AS-573/1; DSMZ, German Resource Center for Biological Material, Braunschweig, Germany) and antibodies raised against specific potyviruses such as *Bean yellow mosaic virus* (BYMV) (AS-0471; DSMZ,), *Bean common mosaic virus* strain Peanut Stripe (BCMV) (AS-0159; DSMZ), *Soybean mosaic virus* (SMV) (AS-0794; DSMZ) and *Cowpea aphid-borne mosaic virus* (CaBMV) (AS-0417; DSMZ). Samples were also

*Corresponding author. Phone: +62-251-8629364, Fax: +62-251-8629362, E-mail: triadys@yahoo.com