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LIST OF ABBREVIATIONS

CMV	Cucumber mosaic virus
CGMMV	Cucumber green mottle mosaic virus
CYSDV	Cucurbit yellow stunting disorder virus
EAPV	East Asian passiflora virus
MNSV	Melon necrotic spot virus
PeMV	Pepper mottle virus
PMMoV	Pepper mild mottle mosaic virus
PRSV-W	Papaya ring spot virus-W
PWV	Passion fruit woodiness virus
PVY	Potato virus Y
RPDC	Royal Project Development Center
SqMV	Squash mosaic virus
SLCV	Squash leaf curl virus
SqVYV	Squash vein yellow virus
TMV	Tobacco mosaic virus
ToMV	Tomato mosaic virus
TSWV	Tomato spotted wilt virus
WSMoV	Watermelon silver mosaic virus
ZYMV	Zucchini yellow mosaic virus

LIST OF SYMBOLS

°C Degree Celsius

= Equal to

g Gram

μl Microliter

% Percentage

The seal of Chiang Mai University is a circular emblem. It features a central illustration of an elephant standing and facing left, with a traditional Thai umbrella (parasol) above its head. The elephant is surrounded by a circular border containing the university's name in Thai script at the top and "CHIANG MAI UNIVERSITY 1964" in English at the bottom. Two decorative floral motifs are positioned on the left and right sides of the seal.

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STATEMENT OF ORIGINALITY

- 1) A new and definitive report on the incidence of viruses infecting zucchini, Japanese pumpkin and Japanese cucumber crops in the Royal Project Development Centers' (RPDCs') areas in the high land of northern Thailand, which could help the RPDCs staff in developing effective strategies for management of viral diseases in cucurbit fields.
- 2) New finding on native alternate hosts of CMV: *Crassocephalum crepidioides*, CMV and Potyvirus: *Physalis peruviana* (cape gooseberry); Geminivirus: *Ageratum conyzoides* (chick weed) and *Solanum torvum* (pea eggplant). Moreover, new report that *Sechium edule* (chayote) is an alternate host of many viruses: CMV, PRSV-W, WMV-2, ZYMV, CGMMV, PVY, MNSV, WSMoV, TMV, TSWV, Tospovirus, and Potyvirus. Furthermore that *Passiflora laurifolia* (passion fruit) is an alternate host of CMV, PWV, EAPV and Potyvirus.
- 3) First report on the etiology of complex symptoms in zucchini caused by ZYMV single infections and its combination with the other viruses. Synergistic and antagonistic reaction of ZYMV and other viruses were clearly demonstrated.
- 4) New evidence on ZYMV and its insect vector, *Aphis gossypii*, concerning transmission efficiency and latent period.
- 5) Evidence that seed transmission of CGMMV in Japanese cucumber did not occur as tested by DAS-ELISA.

ข้อความแห่งการริเริ่ม

- 1) วิทยานิพนธ์นี้ได้นำเสนอรายงานใหม่และรายงานสรุปอัตราการติดเชื้อไวรัสในชุกคินี, พักทองญี่ปุ่น และแตงกวาญี่ปุ่นในพื้นที่มูลนิธิโครงการหลวง ซึ่งอยู่บนพื้นที่สูงทางภาคเหนือของประเทศไทย โดยข้อมูลดังกล่าว จะช่วยเจ้าหน้าที่ของมูลนิธิโครงการหลวงในการพัฒนาวิธีการที่มีประสิทธิภาพในการจัดการโรคไวรัสในแปลงพืชตระกูลแตง
- 2) การค้นพบใหม่ พืชอาศัยของเชื้อไวรัส ที่ขึ้นตามธรรมชาติ โดยพบเชื้อ CMV ในเหงือกปลาช่อน (*Crassocephalum crepidioides*), CMV และ Potyvirus ในกะหล่ำปลี (*Physalis peruviana*), Geminivirus ใน สาบแฉ่งสาบกา (*Ageratum conyzoides*) และ มะเขือพวง (*Solanum torvum*). นอกจากนี้ มีรายงานใหม่ในชาโยเต้ (*Sechium edule*) เป็น พืชอาศัยของเชื้อไวรัสหลายชนิด เช่น CMV, PRSV-W, WMV-2, ZYMV, CGMMV, PVY, MNSV, WSMoV, TMV, TSWV, Tospovirus, and Potyvirus. ยิ่งไปกว่านั้นยังพบว่าเสาวรส เป็นพืชอาศัยของเชื้อไวรัส CMV, PWV, EAPV และ Potyvirus.
- 3) การรายงานครั้งแรกเกี่ยวกับสาเหตุและการเกิดอาการซับซ้อนบนชุกคินี ซึ่งเกิดจากเชื้อ ZYMV ชนิดเดี่ยว และผสมรวมกับเชื้อไวรัสชนิดอื่น ปฏิริยาที่ส่งเสริมกัน (synergistic) และปฏิปักษ์กัน (antagonistic) ของเชื้อ ZYMV และเชื้อไวรัสชนิดอื่นได้แสดงให้เห็นอย่างชัดเจนแล้วในวิทยานิพนธ์นี้
- 4) หลักฐานใหม่ของความสัมพันธ์ระหว่างเชื้อ ZYMV และแมลงพาหะ คือ เพลี้ยอ่อน (*Aphis gossypii*), ในประสิทธิภาพการถ่ายทอดเชื้อไวรัสของเพลี้ยอ่อนและระยะเวลาที่เชื้อไวรัส ซ่อนอยู่ในตัวแมลง ซึ่งได้ทำการพิสูจน์ให้เห็นแล้วในวิทยานิพนธ์นี้
- 5) หลักฐานที่เป็นรูปธรรมของเชื้อ CGMMV ซึ่งเป็นเชื้อไวรัสที่ถ่ายทอดทางเมล็ดพันธุ์ในเมล็ดพันธุ์แตงกวาญี่ปุ่น ซึ่งไม่พบเชื้อไวรัสดังกล่าว เมื่อใช้การตรวจสอบด้วยวิธี DAS-ELISA