## BIBLIOGRAPHY

MATIAS, CRISTY TINGCAWA. APRIL 2012. Bean Common Mosaic Virus Infection on Different Cultivars of Bean. Benguet State University, La Trinidad Benguet.

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## ABSTRACT

The experiment was conducted under Greenhouse condition at Benguet State University, La Trinidad, Benguet from August 2010 to March 2011. The study aimed to assess the reaction of different cultivars of bean against Bean common mosaic virus through sap inoculation and to determine the symptoms of mosaic virus on the different cultivar of beans.

The type of symptoms produced was determined by the stain of bean common mosaic virus, temperature and the host genotype. BCMV may incite three types of symptoms: mosaic, systemic necrosis (black rot), or local lesions (malformation). Symptoms associated with common mosaic virus include leaf rolling or blistering, light and dark green patches on the leaf (green mosaic), chlorotic vein banding, yellow mosaic and growth reduction.

Based on the results, the Black Valentine cultivar had the highest severity of Bean common mosaic virus and the lowest incidence of Bean common mosaic virus was recorded in Blue lake cultivar had the lowest severity of Bean common mosaic virus. Also, highest incidence of bean common mosaic virus was observed in maroon cultivar.

## RESULTS AND DISCUSSION

### Symptomatological Observations on The Different Bean Cultivar

The different bean cultivars that were mechanically inoculated with bean common mosaic virus were rated visually on the severity of the disease (Table 1). Most of the bean cultivars: Black Valentine (Figure 3), Blue Lake (Figure 4), Burik (Figure 5), Maroon cultivar (Figure 6) and Stone Hill Brown (Figure 7) had low virus infection. Taichung cultivar (Figure 8) had moderate susceptibility against the virus.. Maccarao cultivar (Figure 9) was the most susceptible.

Table 1. Reaction of the different bean cultivar against mechanically inoculated bean common mosaic virus.

| CULTIVAR | DISEASE SEVERITY | |
|---|---|---|
| Untreated | 0.00 | no disease |
| Black valentine | + | low |
| Blue lake | + | low |
| Burik | + | low |
| Maccarao | +++ | severity |
| Maroon | + | low |
| Stone hill brown | + | low |
| Taichung | ++ | moderate |

Figure 1. Uninoculated bean plant.

Figure 2.Bean common mosaic infected plant.

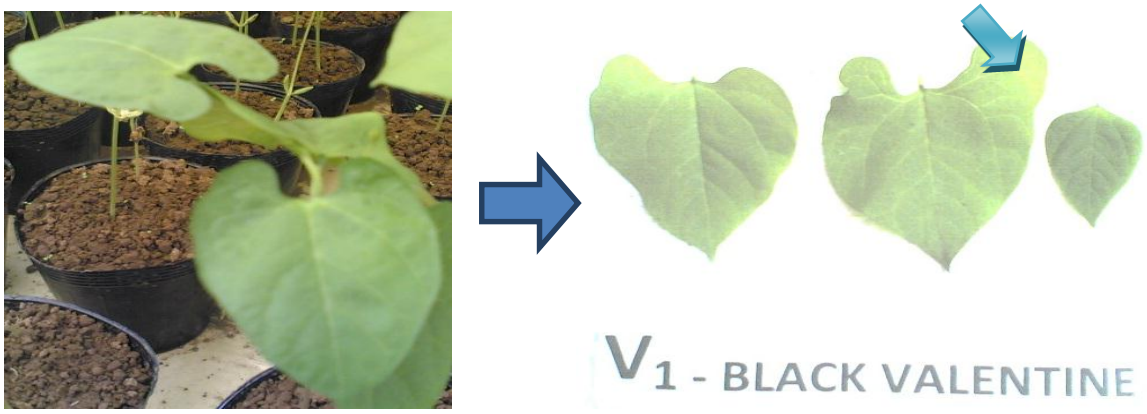


Figure 3. Black Valentine cultivar had low infection against Bean common mosaic virus.

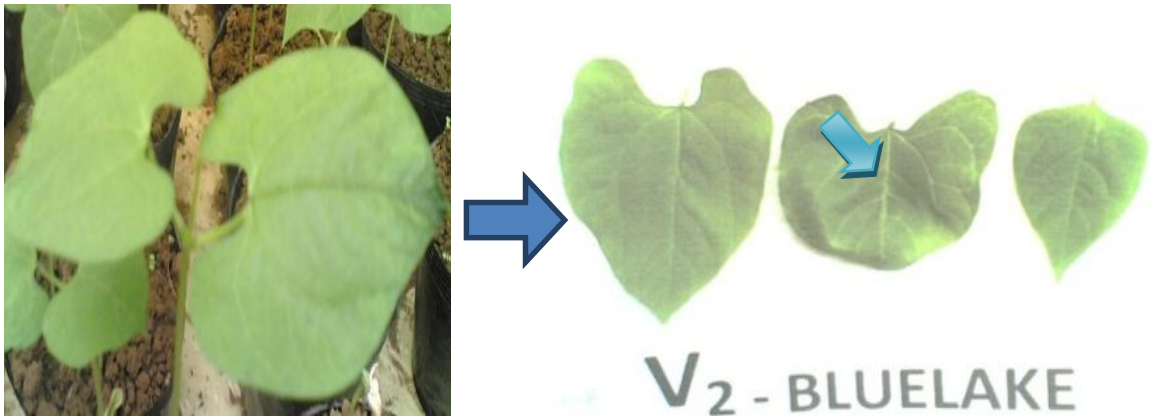


Figure 4. Blue Lake cultivar had low infection against Bean common mosaic virus.

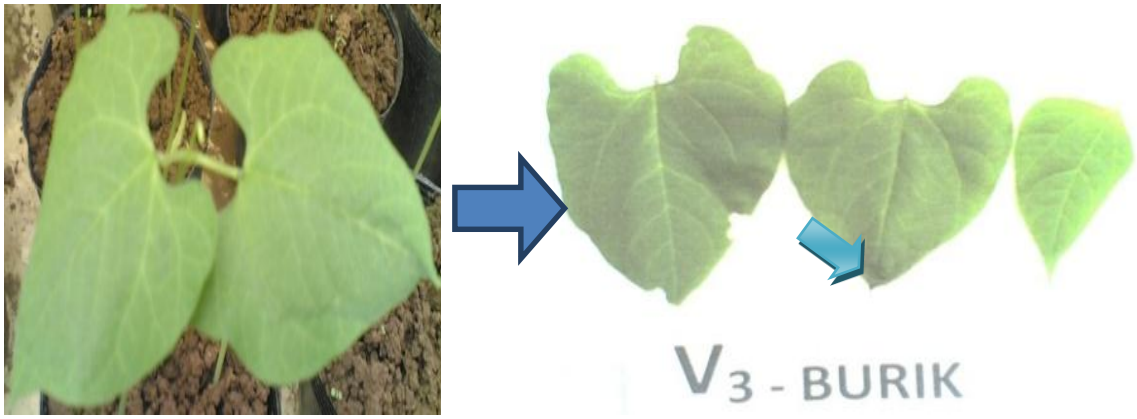


Figure 5. Burik cultivar had low infection against Bean common mosaic virus.

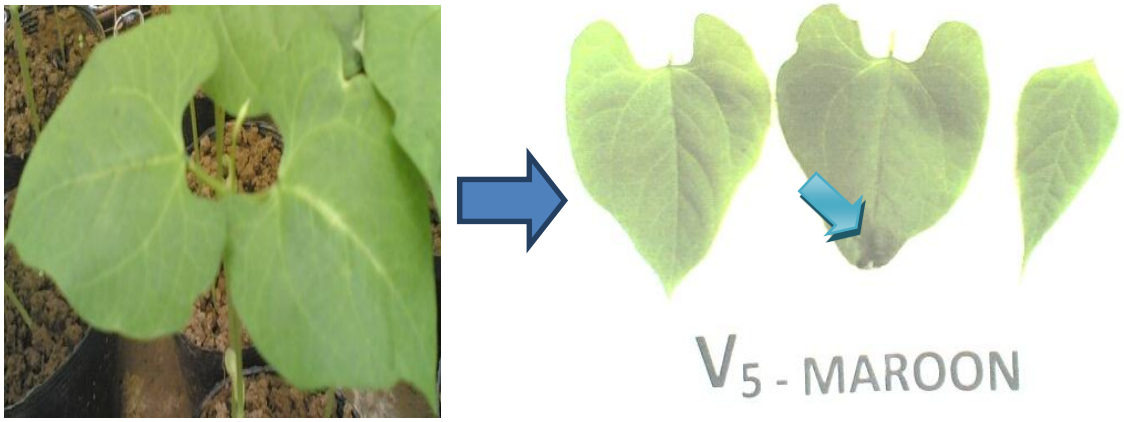


Figure 6. Maroon cultivar had low infection against Bean common mosaic virus.

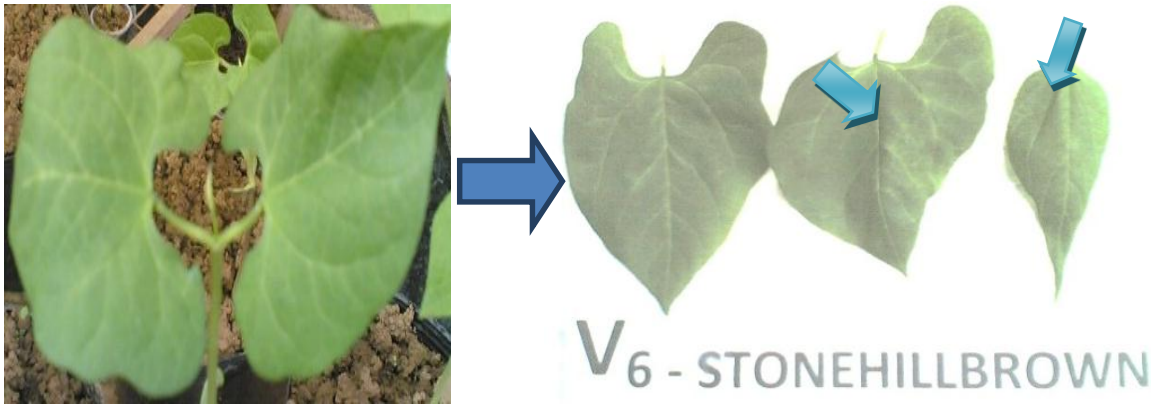


Figure 7. Stone  Hill brown cultivar had low infection against Bean common mosaic virus

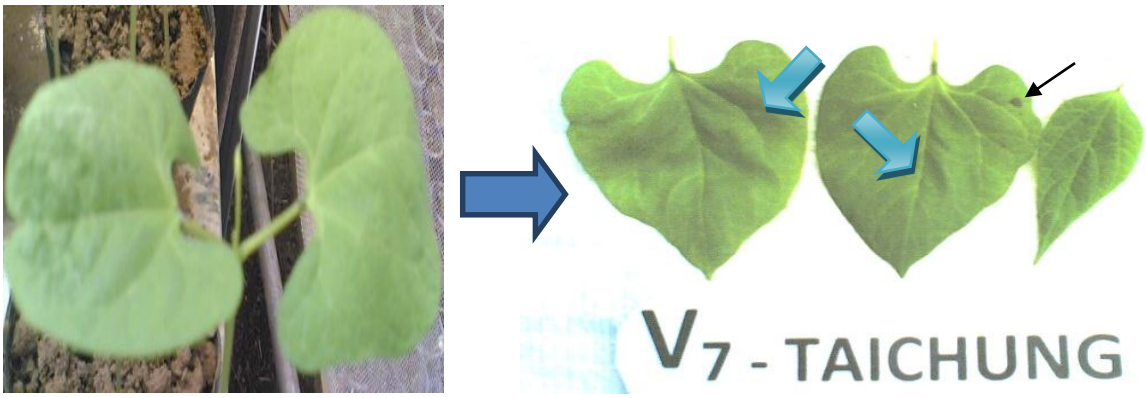


Figure 8. Taichung Cultivar had moderate infection against Bean common mosaic virus

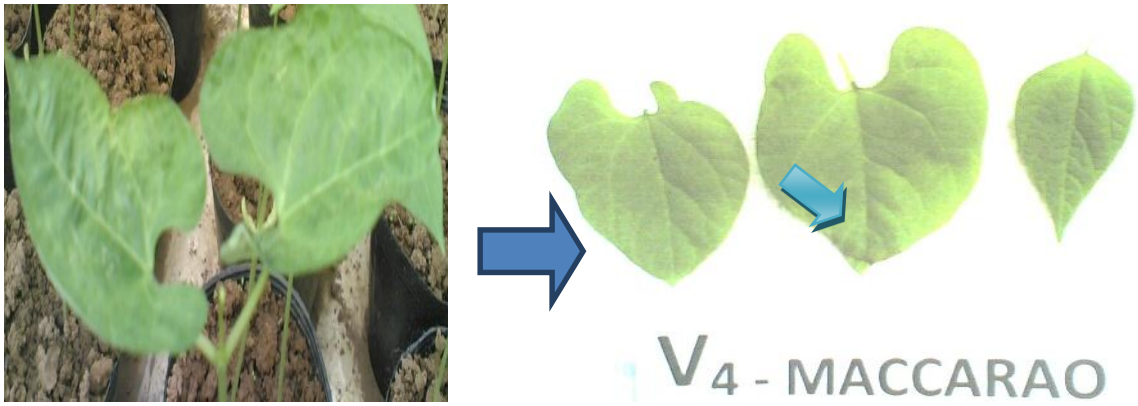


Figure 9. Maccarao cultivar had the highest infection against Bean common mosaic virus.

Bean Common Mosaic Virus Incidence

Black Valentine cultivar had the lowest bean common mosaic virus incidence (Table 2 and Figure 10). Maroon cultivar (Figure 6) had the highest virus incidence.

Common bean (*Phaseoluss Vulgaris L.*), also referred to as dry bean, is an annual leguminous plant that belongs to the genus *phaseolous* with pinnately compound trifoliate large leaves it is largely as self-pollinated plant though cross-pollination is possible if the stigma contacts with pollen coated bee when extended. Seeds are none dospermic and vary greatly in size and colour from the small black wild type to the large

Table 2. Incidence of bean common mosaic virus on mechanically inoculated different bean cultivars

| CULTIVAR | MEAN |
|---|---|
| Black valentine | 50.0[a] |
| Blue lake | 55.0[a] |
| Burik | 52.5[a] |
| Maccarao | 70.0[a] |
| Maroon | 72.5[a] |
| Stone hill brown | 70.0[a] |
| Taichung | 55.0[a] |

white, brown, red, black, blue or mottled seeds of varieties, which are 7-16 mm long (Cobley and Steele, 1976 ).

Bevoric *et al* (1996) reported that bean plants are the host for a number of viruses like common mosaic virus which is known to be transmitted by seeds. The incidence of virus diseases was conformed on a considerable number of seeds. Transmission ranges from 20% to 26%. Based on the results obtained it can be concluded the virus disease bean seeds play a major role in further disease spread.

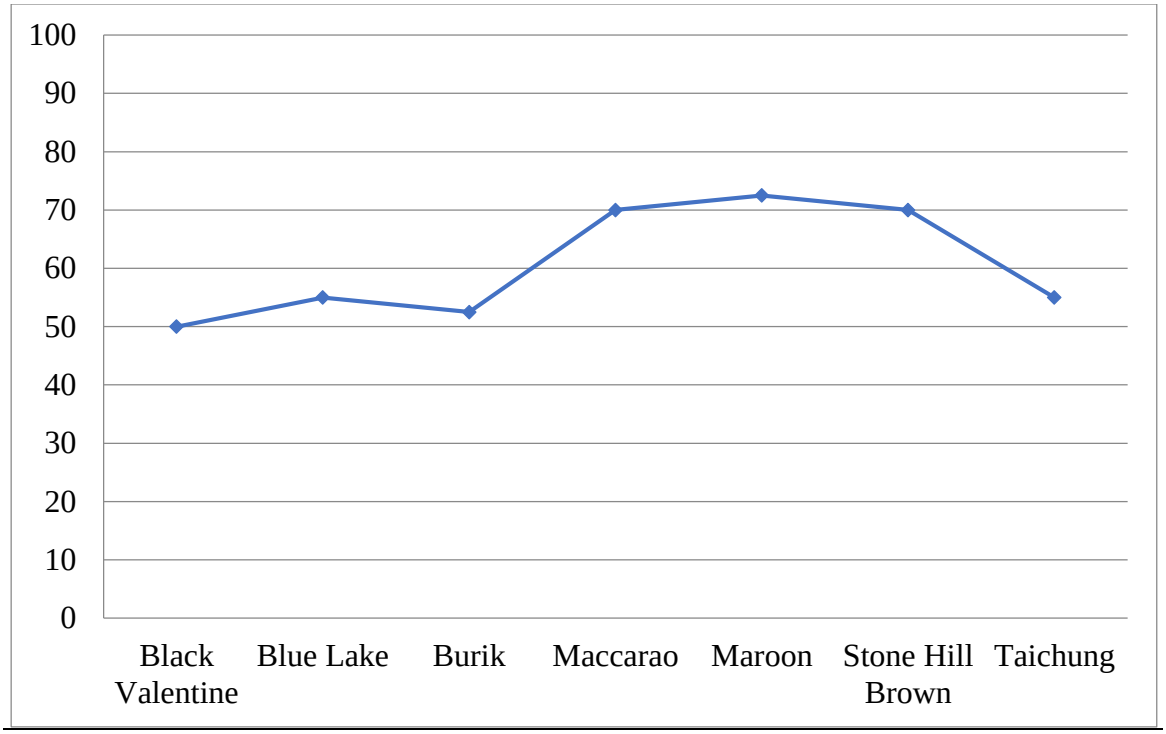


Figure 10. Incidence of bean common mosaic virus on mechanically inoculated different bean cultivars

Severity of Bean Common Mosaic Virus on Different Cultivars of Bean

Blue Lake cultivar had the lowest bean common mosaic virus infection (Table 3 and Figure 11). Maroon and Maccarao cultivars had the highest virus infection.

*Phaseolus Vulgaris L.* Sensitive cultivars usually develop a characteristic systemic mosaic. Some cultivars develop necrotic local lesions with certain strains of the virus (Zaumeyer & Goth 1963). Leaves of hypersensitive cultivars (*e.g.* Topcrop) detached after inoculation and incubated on moist filter paper in closed Petri dishes under artificial light at 30-32°C may develop necrotic local lesions after 2-3 days (Quartz, 1957-1958).

Table 3. Severity of bean common mosaic virus on mechanically inoculated different bean cultivars

| CULTIVAR | MEAN |
|---|---|
| Black valentine | 15[a] |
| Blue lake | 8[c] |
| Burik | 8.25[c] |
| Maccarao | 14[ab] |
| Maroon | 14[ab] |
| Stone hill brown | 13[ab] |
| Taichung | 10[bc] |

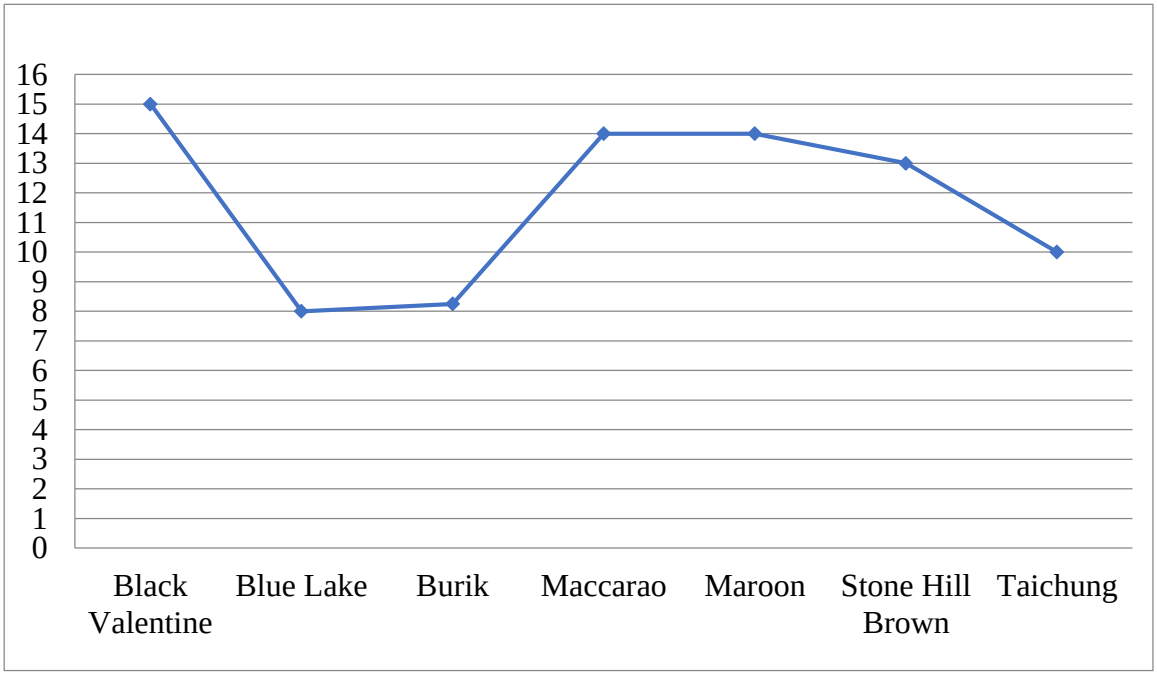


Figure 11. Incidence (%) of bean common mosaic virus on sap inoculated different cultivars of bean.

# SUMMARY, CONCLUSION AND RECOMMENDATION

## Summary

The study was conducted to assess the reaction of different cultivars of bean against Bean common mosaic virus through sap inoculation. Results revealed that Blue lake cultivar had the lowest severity of Bean common mosaic virus, while Black valentine cultivar had the highest severity of Bean common mosaic virus. On incidence, the Black valentine cultivar had the lowest incidence, while the Maroon cultivar had the highest incidence of Bean common mosaic virus.

## Conclusion

Among the different cultivars of bean, it was found that Blue lake cultivar had some sort of tolerance or resistance against Bean common mosaic virus. Black valentine cultivar was susceptible to Bean common mosaic virus. Black valentine cultivar had the lowest incidence and at the same time had the lowest severity of Bean common mosaic virus.

## Recommendation

Further studies could include yield datum in order to find out which variety can gain more profit to farmers.

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