EFFECTS OF CASSAVA MOSAIC DISEASE ON CYANOGEN ACCUMULATION AND STARCH YIELD IN CASSAVA (*Manihot esculenta* Crantz)

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The dilemma between CMD, yield and CNp

Cassava, grown for its its enlarged starch filled roots, is a major source of low cost carbohydrate for populations in humid tropics. Farmers for thousands of years have consistently derived great pleasure from high cassava yields and in effect spread CMD; often they have to make difficult choices between reducing cyanogens and increasing starch contents. To gain more insight about this phenomenon, we determined the relationship between CMD and cyanogens and starch yield in cassava and found a positive and negative correlation respectively.

Infected cassava plant

CMD-resistant variety Nase 4

Results and discussion

Our focus was the concern of the response of CNp and starch yield in cassava under diverse growing regimens. Here we demonstrate that increasing CMD status associates strongly with increasing CNp yield, but inversely with starch yield, consistent with energy shifts in biosystems (Figs.1,3). Our results furthermore show that changes in CNp accumulation correlate strongly with variety and CMD status singly or combined, and is linked to an endogenous developmental programme (Fig.1,3). Despite the striking CMD status in vigorous and non-vigorous plants, substantially low cyanogens accumulated in vigorous susceptible cassava than in non-vigorous susceptible cassava (Fig.2). Thus unveiling the strong association between CNp yield and vigor. Corroboration of field and greenhouse data showed that temperature and nutritional status are essential determinants of both cyanogens and starch yield in cassava.

Changing cassava- one product at a time

Prospects: Lessons and practice

We deduce from corroboration of field and greenhouse work that CMD is synonymous with increase in CNp but not with starch. Thus, in the perspective, a genetic link between CNp and CMD (stress) should be unraveled; the interaction between vigor x variety and CMD status examined and deployed safely in major cassava growing areas; effects of temperature and nutrition on CNp and starch yield need to be systematically studied. Enduser variety selected, developed and disseminated in a way that the effect of CMD would cause little or no change in CNp and starch yields.

References

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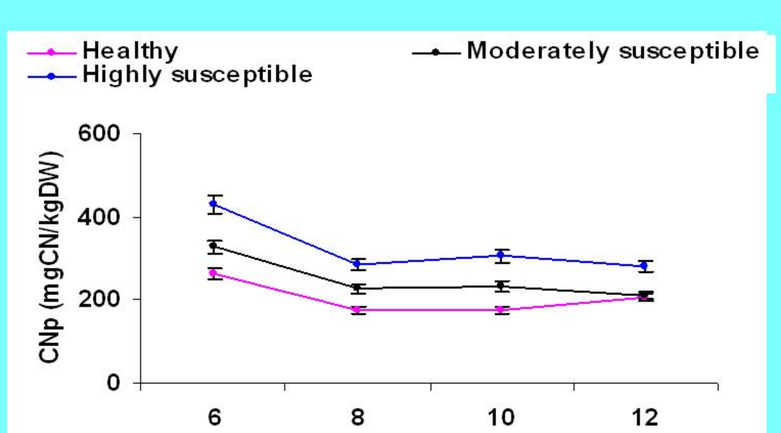

Fig.1. Effect of CMDxVariety interaction on mean CNp

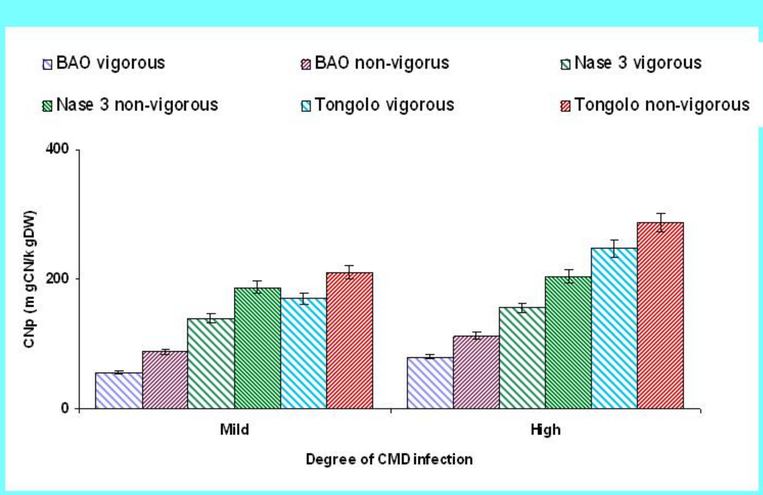

Fig.2. CNp amongst infected and less infected vigorous

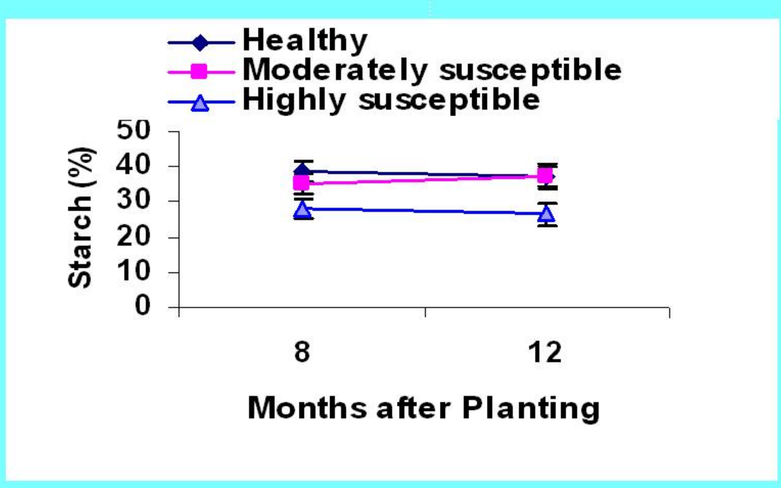

Fig. 3. Effect of CMD status on starch yield