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Biopesticide test of neem seed (*Azadirachta indica* A. Juss.) extract and *MaviNPV* virus for the control of main insects pest of cowpea in Niger

Ousseina ABDOULAYE ZAKARI, Ibrahim BAOUA, Seyni BOUREIMA, Manuele TAMÒ, Saadou MAHAMANE, Barry Robert PITTENDRIGH

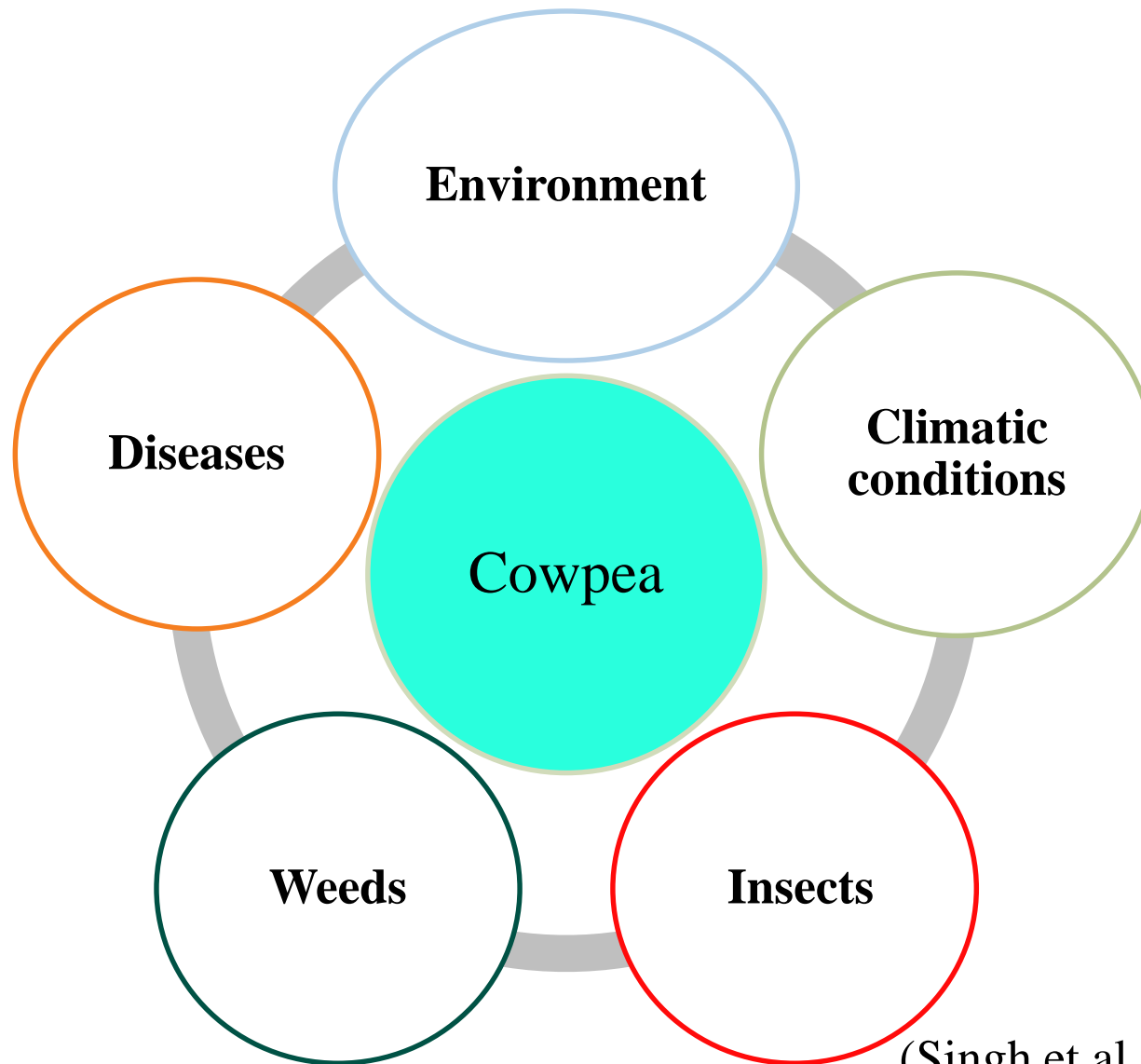


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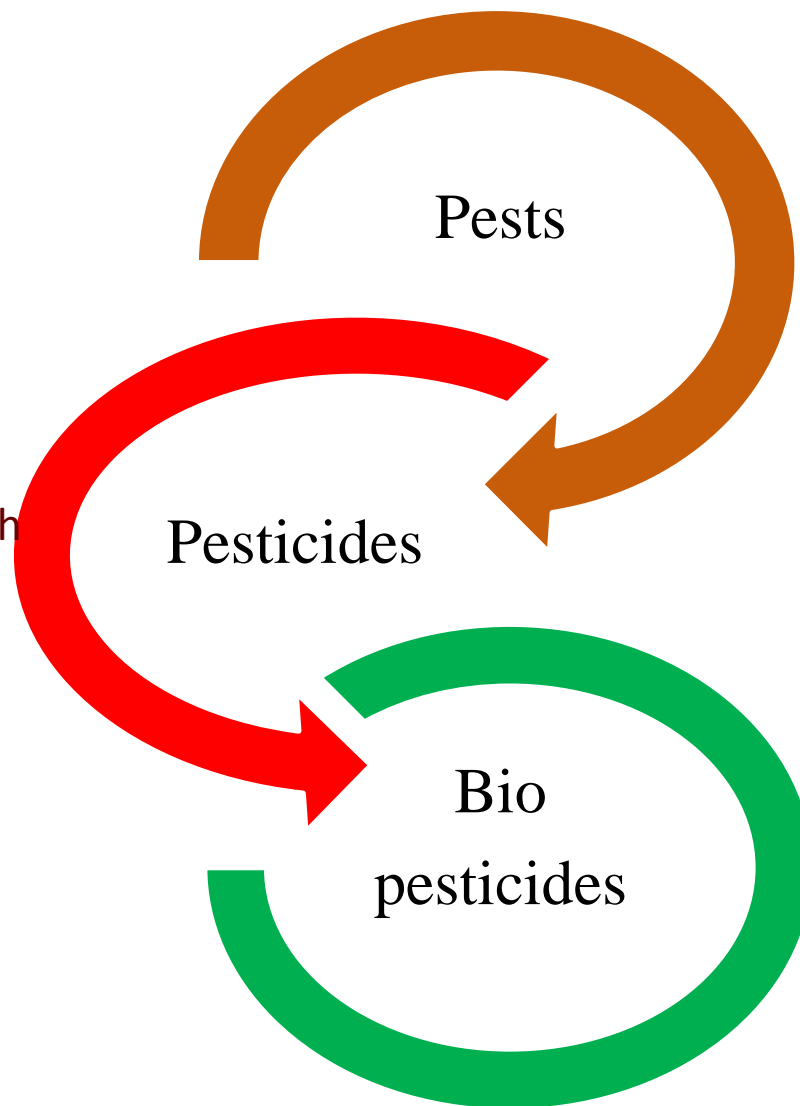
Introduction

- Cowpea *Vigna unguiculata* Walp is the main food legume world-wide (Singh et al.. 2000);
- Niger is the 2nd largest cowpea producing country with an average production of 1.7million tons over an area of 550 000 ha (MA, 2015);
- However Yield remain still low in the main production areas and does not exceed 297 to 332 kg / ha (MA, 2015).



(Singh et al. (1979) ;Rachi (1985)

- Very expensive;
- Environmental and health Hazards.



- Effective;
- Environmental friendly;
- Available locally

(Silva-Agayo 2013)

Methods

Objective: This study was conducted to test the effectiveness of neem seed extract and the *MaviNPV* virus for the control of cowpea pests.

Experimental trial:

Fisher block design

- ✓ 6 treatments ;
- ✓ 8 repetitions.

The experimental plots are 30m² ; and The cowpea variety used was IT90K-372-1-2 with a density of 75 x 35 cm



HUILE
NEEM

The treatments:

1. Neem seeds aqueous extract (12.5kg/ha)
2. Neem oil (1,6l/ha)
3. *MaviNPV* virus (115ml/ha)
4. TopBio (2l/ha) + *MaviNPV* virus
5. Pesticide : Conquest C 88 EC (500ml/ha; Acetamiprid 16g /l ,Cypermethrin 72g/l)
6. Control

(4 applications)



Neem seeds



Data collected

- Pests infestations ;
- Pests damage on cowpea's flowers and pods ;
- Seeds's quality evaluation through determining damaged seeds by **LPB** ,**PSB** and others pests per treatment;
- Yield per treatments after harvest.

Data collection



Marked stand



Flowers and pods collection



Plastic vials



Dissection and larvae counting



A large pile of white beans, possibly navy beans, arranged in a circular pattern on a white surface. Each bean has a distinct dark brown or black spot, likely a bruise or a mark from a chemical treatment. The beans are slightly irregular in shape and have a smooth, matte texture.

• RESULTS

figure 1: Pest proportion observed on cowpea crop in Maradi station

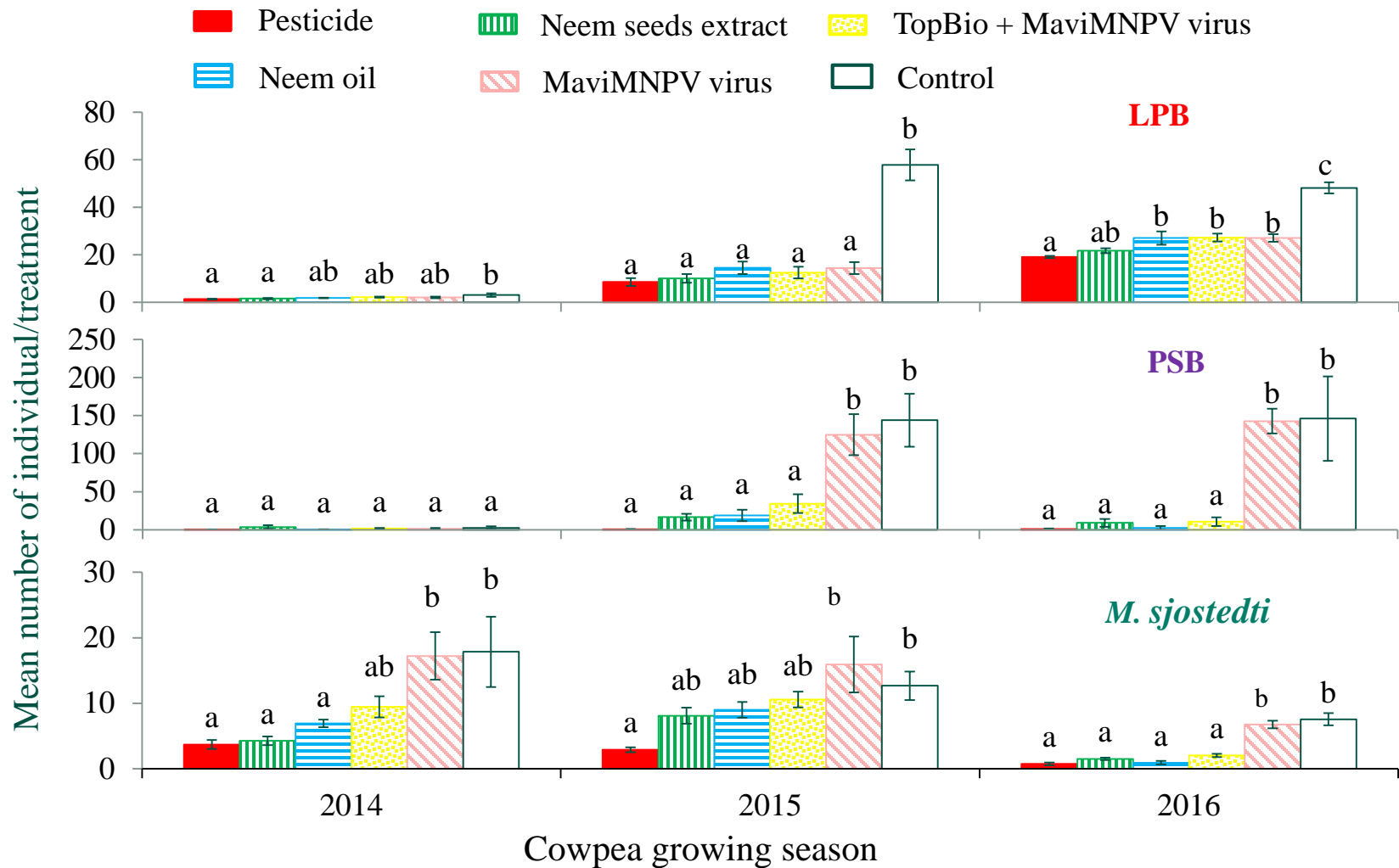
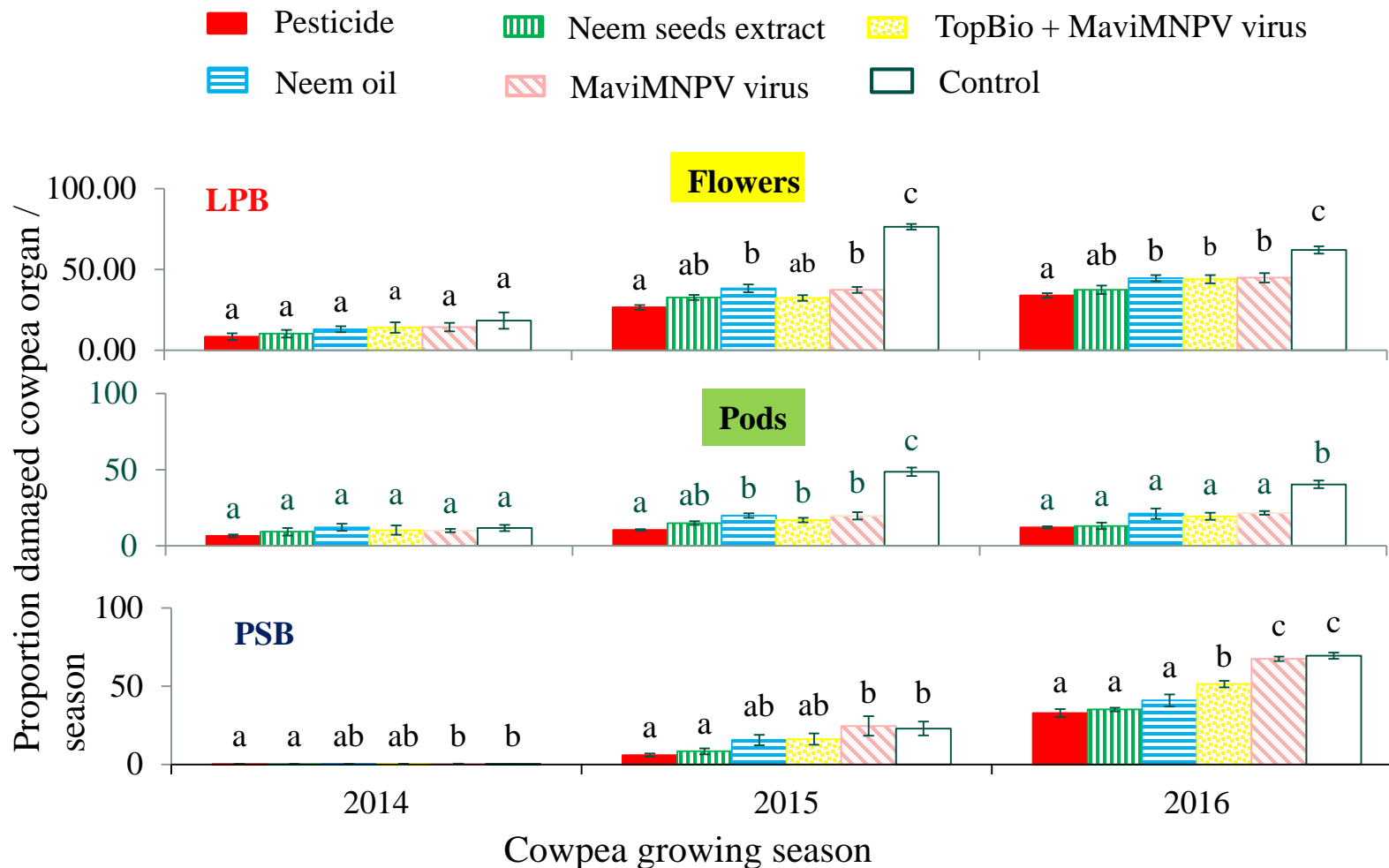


Figure 2: Proportion of Flowers and pods damaged by LPB and PSB



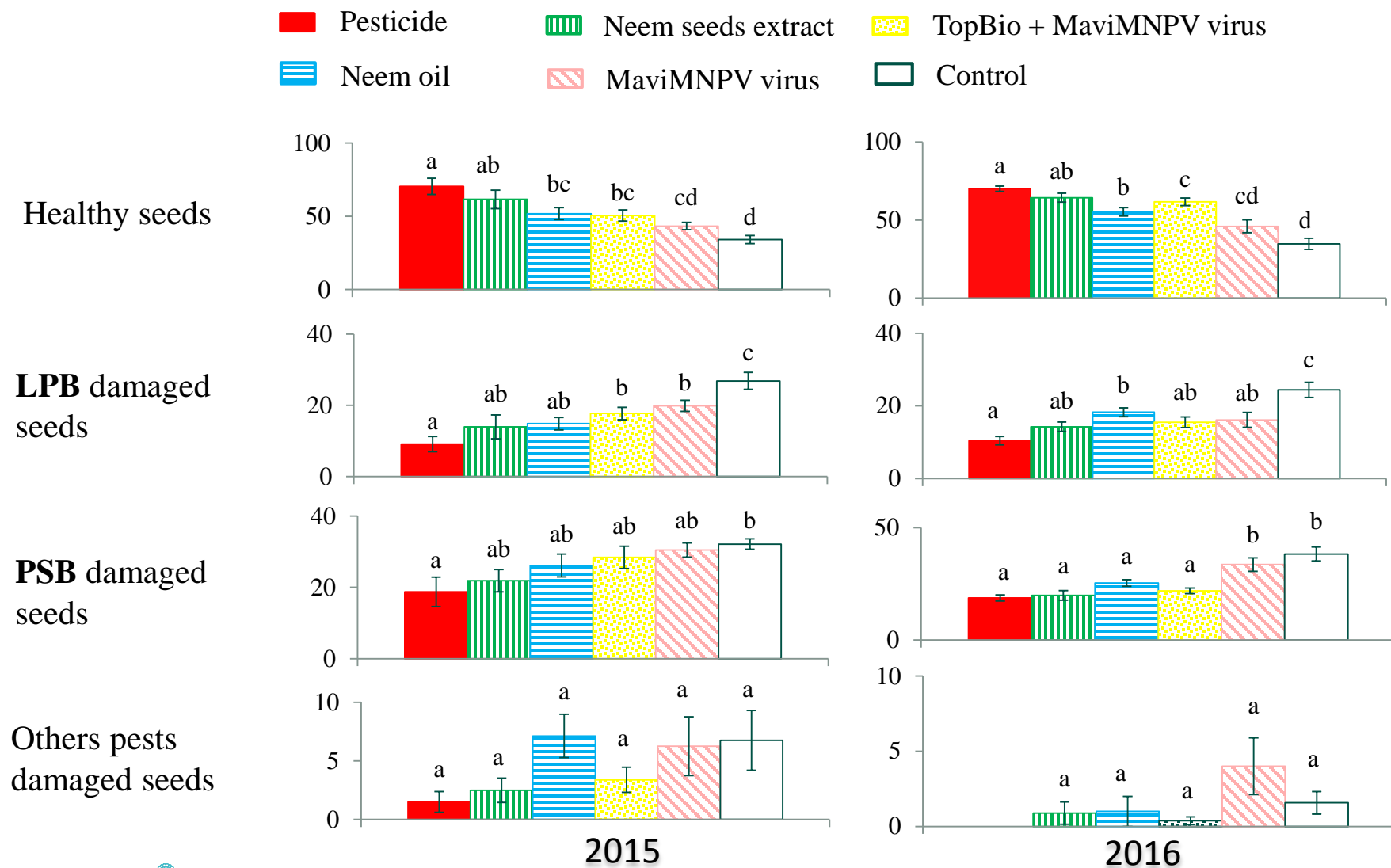
Pest damages on cowpea pods



Damaged pods by M.vitrata

Damaged pod by C.tomentosicollis

Figure 3: Proportion of seeds damaged by LPB ,PSB and others pests



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Damaged seeds



Healthy seeds



PSB damaged seeds



LPB damaged seeds



Others pests damaged seeds

Table 1: Yield kg / ha per treatment

Treatment	2014	2015	2016
Pesticide	1403±115 a	1727±273 a	1123.34±77 a
Neem seeds extract	1241±305 ab	1000±91 b	713.94±105 b
Neem oil	542±12 bc	842±173 b	622.42±76 b
MaviNPV virus	724±58 bc	791±27 b	683.03±62 b
TopBio + MaviNPV virus	574±28 bc	691±28 b	473.46±70 b
Control	154±42 c	200±72 c	101.16±5 c
ANOVA	F=8.16; P<0.001	F=11.4; P=0.003	F=16.35; P=0.001

Conclusion

- ✓ The study found that the use of biopesticides allows an increase in yield of 323%;
- ✓ The neem seeds extract at a dose of 5% provides an average cowpea yield of 985 kg / ha ; an increase in yield of 679% ;
- ✓ The use of neem seed extract available in the country is to promote on-farm;
- ✓ Phytosanitary treatment must start early to ensure better crop protection.

Acknowledgements



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THANKS