



# EVALUATION OF HOLISTIC IPM PACKAGES FOR RAINFED UPLAND PIGEON PEA

P. K. Singh, W. Aind and K. Prasad  
Birsa Agricultural University,  
Zonal Research Station, Dumka - 814101

# Site of Experimental Area

## Block

✦ Jarmundi

✦ Jama

## Village

Kaladumaria  
Bagjhopa

Lagwan

# Objectives

- ★ Develop location specific Holistic IPM packages for rainfed upland Pigeon Pea AES.
- ★ Evaluation of these IPM modules with motivation and involvement of farmers.
- ★ Minimised the cost of production in Pigeon Pea rainfed upland production system.
- ★ To increased the efficacy in collective action by farmers organiser.

# Objectives

- ★ To developed confidence in farmers regarding decision making in IPM.
- ★ To developed skill in Identification of natural enemies and destructive pests.
- ★ To developed skill up farmers regarding use of Rizobium culture and Agriculture lime.
- ★ To upgrade the skill in Intercropping of Pigeon Pea with Maize.

# CONSTRAINTS OF LOW YIELD

★ Abiotic - Rainfall  
Soil Type

★ Biotic - Weeds  
Insects – Pod borer complex  
Leaf & Shoot folder  
Termites  
Disease – Wilt  
Birds - Parrot

# Others

- ✱ Use of traditional variety of Pigeon Pea
- ✱ Showing seeds without seed treatment
- ✱ Not applying Agril. Lime in red soil.
- ✱ Not using Rizobium culture
- ✱ Poor IPM & INM management
- ✱ High seed rate & high population density
- ✱ Use of traditional variety in Intercropping

# Location specific Holistic IPM modules developed

## ★ Pre sowing

- ★ Proper ploughing done to destroy weeds, volunteer host and soil insects.
- ★ Remove all residue from field.
- ★ Seed treatment with fungicide (Carbendazim @ 2gm/Kg seed)
- ★ Seed treatment with Rizobium culture.

# Location specific Holistic IPM modules developed

## ★ Sowing

- ★ Plant density management by applying seed @ 20 kg/ha.
- ★ Line sowing at the distance of 60X25 cms.
- ★ Application of Lime @ 3 qt/ha. In furrow at the time of sowing.
- ★ Fertiliser Management 20 N, 20 P, 20 K/ha.
- ★ Application of Ethyle Parathion @ 25 Kg/ha. to control soil insects.

# Location specific Holistic IPM modules developed

## ☀ Vegetative

- ☀ Periodical weeding to remove all volunteer and alternate host.
- ☀ Manual removal of infested leaves by shoot and leaf folder.
- ☀ Conserve natural enemies by avoiding insecticide spray.

# Location specific Holistic IPM modules developed

## ★ Flowering and Pod formation

- ★ Periodical monitoring manual removal of infested plant.
- ★ One need base application of endosulfan @ 0.07 % when 50 % flowering takes place.
- ★ Manually protection from Bird.

# Treatments

## (A) Sole Crop

- ✱ Birsa Arhar – 1 with IPM
- ✱ Birsa Arhar – 1 with TFP
- ✱ Local Arhar with IPM
- ✱ Local Arhar with TFP

## (B) Inter Crop

- ✱ Birsa Arhar – 1 + Suwan – 1 with IPM
- ✱ Birsa Arhar – 1 + Suwan – 1 with TFP
- ✱ Local Arhar + Local maize with IPM
- ✱ Local Arhar + Local maize with TFP

# Results

## Incidence of Pod borer complex & Termite

Treatments	Incidence %			
	Pod borer		Termite	
	IPM	TFP	IPM	TFP
Birsa Arhar –1	5.53	24.36	2.19	7.78
Local Arhar	4.24	22.51	1.47	6.68
Birsa Arhar-1 + Suwan-1	3.82	16.70	2.60	9.14
Local Arhar + Local Maize	3.15	20.02	1.24	8.14

# Yield of Pigeon Pea & Maize (qt./ha)

Treatments	Pigeon Pea		maize	
	IPM	TFP	IPM	TFP
Birsa Arhar –1	17.01	7.99	-	-
Local Arhar	8.53	4.45	-	-
Birsa Arhar-1 + Suwan-1	9.28	4.18	20.32	8.47
Local Arhar + Local Maize	5.09	3.34	10.42	5.16

# Increase Yield q/ha & monetary gain (Rs.) in IPM over TFP

Treatments	Pigeon Pea	Monetary gain	Maize	Monetary gain	Total	CB
Birsa Arhar -1	9.02	13530	-	-	13530	1:5.05
Local Arhar	4.08	6120	-	-	6120	1:2.28
Birsa Arhar-1 + Suwan-1	5.1	7650	11.85	5925	13575	1:5.06
Local Arhar + Local Maize	1.75	2625	5.26	2650	5275	1:1.9

Cost of Holistic IPM Rs. 2678; Pigeon Pea @Rs. 1500 / qt.; maize Rs. 500/qt.

# Conclusions

- ✦ By adopting improved management practices with improved variety either as sole crop or inter crop farmers could get more benefit in Rainfed upland Pigeon Pea production system.
- ✦ These study suggest that if Holistic IPM implemented with proper motivation and involvement of the farmers, it may lead to sustainability of Pigeon Pea under agro-climatic of Santhal Pargana.

# Constraints

- ✱ Lack of knowledge about rizobium culture and application of Agricultural Lime.
- ✱ Lack of knowledge about fertiliser management.
- ✱ Unavailability of rizobium culture and good quality of improved seed.
- ✱ Lack of knowledge in need based application of insecticide and seed treatment.
- ✱ Skill to identify the natural enemies and destructive pest.
- ✱ Grazing problem
- ✱ Absence of collective action by farmers organisation.

# Impact of studies

- ★ Farmers learn practically how to use rizobium for seed treatment.
- ★ Know the importance of Agriculture Lime for production of Pigeon Pea.
- ★ Practically observed the response of fertiliser.
- ★ Develop skill to identify the insect pests and their natural enemy.
- ★ Develop confidence in decision making in IPM
- ★ Compared the responses of improved variety with native variety.
- ★ Compared the responses of Holistic IPM practices with traditional farmer practices.