



## EFFECT OF INSECTICIDE THIAMETHOXAM 25 WG, 2, 4 D WITH UREA ON THE CROPS PADDY JAYA.

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[www.doi.org/10.59436/jsiane.com/archives3/2/83](http://www.doi.org/10.59436/jsiane.com/archives3/2/83)

### Abstract

Thiamethoxam 25 WG, 2-4 D and urea compatibility can be known by two experiments - field experiment and laboratory experiments. In field experiment mixture of Thiamethoxam + urea, Thiamethoxam+2,4D and urea +2,4D is applied on paddy Jaya. However, there is no significant increase in the yield because there was no incidence of insect -pests or weeds on the field crops. In laboratory experiments PH, emulsion stability and active ingredient values after testing at regular intervals are verified hence, these two combinations are compatible with each other.

**Keywords :** Thiamethoxam 2,4D, Urea, Insecticide and paddy Jaya.

Received 10.01.2023

Revised 20.05.2023

Accepted 24.06.2023

### Introduction

In modern agriculture system, is given on high yield of crop to meet out the emerging demand due to increase in population. To get more production different type of insecticides, herbicides and fertilizers are used. It is well known that insecticides are used to control the unwanted insects, herbicides to remove beats and fertilizers to remove minerals deficiency. Work of Jain and Agnihotri (1981) has shown that stable mixtures of fertilizers and pesticides can be easily prepared for commercial use to increase crop yield. There are various factors known to affect the yielding potential of the crops, the nutritional deficiency in the in the soils, insect pest specification, and weeds which grow with main crops. It was there for plan to conduct studies on cooperative effect of insecticides, weedicides and fertilizers.

In earlier work, Agnihotri and Jain (1983), supported that organo chlorine insecticides formed more stable mixture of fertilizers in comparison to organo Phosphorus insecticides. Lokesh and Setty (1996) concluded that D.A.P. with muriate of potash remained highly compatible with Apron fungicide in persisting the efficiency of fungicide against Bajara downy Mildew. Singh and Chauhan (2001) concluded that endosulphan was compatible with urea showing no adverse effects on yield. In present studies we used thiamethoxam 25 WG to find out its compatibility with urea and 2,4-D. Urea being nitrogenous compound has its own specific influence on plant growth whereas Thiamethoxam 25 WG the insect -pests and 2,4-D used to kill weeds which is harmful to main crops.

### Material and Methods

The present study is divided into two parts, field experiments and laboratory experiments. Field experiments were carried out at the Khair agriculture farm Aligarh on

paddy Jaya. It was grown in kharif season, to find out optimum requirements of Insecticides, Thiamethoxam 25WG with urea and 2,4-D. Thiamethoxam 25WG spray mixed with urea and 2,4-D applied on paddy Jaya crops, in sept, 2021 in different combinations. paddy Jaya crops was harvested and threshed on wooden table on 20 nov, 2021 and weighted. Laboratory experiment was also performed to test emulsion stability, PH and active ingredient of thiamethoxam. The emulsion was prepared by mixing the desired concentration of Thiamethoxam 25WG and urea , 2,4-D and Thiamethoxam in tap water.

Thiamethoxam.	0.5%	1.0%
2,4-D.	100 ppm.	200 ppm
Urea.	2.0%	4.0%

The observations regarding the change in PH, emulsion stability and active ingredient were made after regular intervals.

### Determination of thiamethoxam

Thiamethoxam is determined as 20 g and 40 g of thiamethoxam 25WG was weighted separately and transfer into two beakers. It was diluted up to 1.5 liter, by adding tap water. Then 500 mL emulsion was put into v car for laboratory observations .20 mL emulsion each from top and bottom was taken in conical flasks after required intervals of time separately from each breaker, 40mL methanol and 10g sodium hydroxide pellets were introduced in each conical flask. The contents of flask were neutralized with 5N sulfuric acid, added in excess. It was titrated immediately with N/20 iodine, using starch as indicator.

### Result and Discussion

It is well known that compatibility of pesticides/ Insecticides with other pesticides or insecticides and other

agro-chemicals can be decided on the basis of their positive effect in crop yield and some of their chemical properties of combination viz. emulsion stability, PH and other pesticides in combination.

In present investigation, table 1 indicates that at field rate application of thiamethoxam 25 WG did not increase the

yield of paddy Jaya significantly when applied with urea. Defect was that there is no incidence of insect pests. This finding also reveals that Thiamethoxam 25 WG did not show any growth promoting property. On the other hand, by application of 2,4 D, there was no effect on yield over control but increase in yield in combination with urea.

**Table 1 :** Grain Yield, Jaya (Kg/plot and Q./ha.) under sprays of Thiamethoxam 25 WG, urea and 2,4-D

S.No.	Treatments	Mean yield (Kg* /plot)	Yield (Q./ha.)
1.	T1	7.00	35.00
2.	T2	8.062	40.32
3.	T3	7.00	35.00
4.	T4	7.687	38.75
5.	T5	7.00	35.00
6.	T6	8.062	40.32
7.	Control	7.00	35.00

T<sub>1</sub> = Thiamethoxam 25 WG @ 1.5lit/ha.

T<sub>2</sub> = Urea @ 20 Kg/ha.

T<sub>1</sub> = 2,4-D @ 100 g/ha.

T<sub>1</sub> = Thiamethoxam 25 WG +Urea

T<sub>1</sub> = Thiamethoxam 25 WG +2,4-D

T<sub>1</sub> = Urea + 2,4-D

\*plot size =5x4 m (sq.m)

**Table 2 :** Emulsion stability of Thiamethoxam 25 WG with urea

S. No.	Combination	After 30 minutes		After one hour		After two hour	
		Top (ml)	Bottom (ml)	Top (ml)	Bottom (ml)	Top (ml)	Bottom (ml)
1.	A+X	0.1	Nil	0.1	Nil	0.2	Nil
2.	B+X	0.2	Nil	0.2	1	0.3	5
3.	A+Y	0.1	Nil	0.2	Nil	0.2	Nil
4.	B+Y	0.2	Nil	0.2	2	0.3	5

A = 0.25% Thiamethoxam 25 WG in 50mL

B = 0.5% Thiamethoxam 25 WG EC in 50mL

X = 2% urea in 50mL Y = 4% urea in 50mL

**Table 3 :** Emulsion stability of Thiamethoxam 25 WG with 2,4-D

S. No.	Combination	After 30 minutes		After one hour		After two hour	
		Top (ml)	Bottom (ml)	Top (ml)	Bottom (ml)	Top (ml)	Bottom (ml)
1.	A+P	0.1	Nil	0.2	Nil	0.3	Nil
2.	B+P	0.2	Nil	0.2	Nil	0.3	Nil
3.	A+Q	0.1	Nil	0.2	Nil	0.3	Nil
4.	B+Q	0.2	Nil	0.2	Nil	0.3	Nil

P = 50mL of 100 ppm 2,4-D

Q = 50mL of 200 ppm 2,4-D

**Table 4 :** Change in pH of Thiamethoxam 25 WG with urea

S. No.	Combination	After one hour	After 1.5 hours	After two hours	After 18 hours
1.	A+X	7.6	7.8	8.0	8.4
2.	B+X	7.6	7.8	8.0	8.4
3.	A+Y	7.6	7.8	8.0	8.4
4.	B+Y	7.6	7.8	8.0	8.4

A = 0.25% Thiamethoxam 25 WG in 50mL

B = 0.5% Thiamethoxam 25WG in 50mL

X = 2% urea in 50mL

Y = 4% urea in 50mL

**Table 5** : Change in ph of Thiamethoxam 25 WG with 2,4-D

S. No.	Combination	After one hour	After 1.5 hours	After two hours	After 18 hours
1.	A+X	7.6	7.8	8.0	8.4
2.	B+X	7.6	7.8	8.0	8.4
3.	A+Y	7.6	7.8	8.0	8.4
4.	B+Y	7.6	7.8	8.0	8.4

P = 50mL of 100 ppm 2,4-D

Q = 50mL of 200 ppm 2,4-D

**Table 6** : Distribution of active ingredients in 20 ml Thiamethoxam 25 WG emulsion (gm) .

S. No.	Combinationsn	After 30 minutes		After one hour		After two hour		After four hour	
		Top (mL)	Bottom (mL)	Top (mL)	Bottom (mL)	Top (mL)	Bottom (mL)	Top (mL)	Bottom (mL)
1.	$\alpha$	0.190	0.204	0.190	0.210	0.578	0.228	0.160	0.234
2.	$\beta$	0.019	0.020	0.018	0.022	0.017	0.023	0.016	0.024

 $\alpha$  = 16 g of Thiamethoxam 25 WG 35 EC equivalent to 5g actual dissolved in 500 mL tap water $\beta$  = 3.2 g of Thiamethoxam 25 WG 35 EC equivalent to 5g actual dissolved in 50 mL tap water

### Conclusion

Conclusion on the basis of above discussion and given tables indicate that Thiamethoxam 25 and urea as well as 2,4-D weedicide are compatible with each other. However these combinations were not showing significant positive effect on the yield but chemical properties of these favor's the compatibility.

### Acknowledgement

The author is thankful to principal as well as head department of chemistry D.S. College, Aligarh for providing all necessary facilities.

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Cite this article-

Veena Chauhan, 2023"Effect of Insecticide Thiamethoxam 25 Wg, 2, 4 D With Urea On The Crops Paddy Jaya" *Journal of Science Innovations and Nature of Earth*, Vol. 3(2), Page- 49-51

www.doi.org/10.59436/jsiane.com/archives3/2/83