Effect of acaricides on yellow mite, *Polyphagotarsonemus latus* infestation in jute and its response to fibre yield

Sohanur Rahman, Sahin Polan, Nazrul Islam and Arifur Rahman

Abstract

The experiment was carried out at Entomology department, Bangladesh Jute Research Institute (BJRI), Dhaka, Bangladesh for dose fixation and in the field of the two different locations viz: Jute Agriculture Experimental Station (JAES), Manikganj and Jute Research Sub-Station, Tarabo, Narayanganj were selected for evaluation of nine acaricides against jute yellow mite during the jute growing season (April-August) 2018 & 2019 following Randomized Complete Block Design (RCBD) with three replications. Revenge 1.8EC(Abamectin 1.8%), Power Prid 95SP (Cartap 92% + Acetamiprid 3%), Lock 12SC(Chlorphenpyr 10%+ Emamectin Benzoate 2%), Parker 75 WG (Acetamiprid 50% + Buprofezin 25%), Brinka 24 SC (Spirodiclofen 24%), Guardian 40WDG(Emamectin Benzoate 20% + Thiamethoxam 20%), Aceto 40WDG(Acetamiprid 40%), Flame38WDG(Abamectin 2%+ Imidacloprid 36%), Aim Zox 10EC(Hexythiazox 10%EC) @ 600ml/ha, 600ml/ha, 600ml/ha, 500ml/ha, 600ml/ha, 600ml/ha, 600ml/ha, 600ml/ha, 500ml/ha, 500ml/ha, 225gm/ha, 600ml/ha, 600ml/ha, 500ml/ha, 280gm/ha and 30gm/ha respectively were found effective and economic in the pot experiment for controlling jute yellow mite at 3rd day after spray. Among these insecticides, the highest percent reduction of jute yellow mite in 2018 (97.12%) as well as more yield (3.17 ton/ha) over control was found in plot treated with Revenge 1.8EC (Abamectin 1.8%) in Manikganj. In 2019, the highest percent reduction of jute yellow mite (96.45%) was found in plot treated with Lock 12SC (Chlorphenpyr 10%+ Emamectin Benzoate 2%) and highest in Manikganj and highest yield (3.20ton/ha) was found in Aim Zox 10EC (Hexythiazox 10%EC) treated plot in Narayanganj. Overall, All tested insecticides were found effective significantly giving more than 88% reduction of infestation and more than 2.45 ton/ha fibre yields at both field experiments at two years.

Keywords: Jute, yellow mite, acaricides and infestation

Introduction

Jute is an important renewable natural fibre crop next to cotton [9]. Among the natural fibre crops, jute is the most important bast fibre crop [17]. It is mainly cultivated in India, Bangladesh, China, Nepal and Thailand [7]. Jute fibre is used for making bags, decoratives, textiles and geotextiles. It has many advantages over synthetics and it is eco-friendly to the environment.

India ranks first in area coverage and production of jute accounting for 62.00% of the world’s production. Yellow mite, *Polyphagotarsonemus latus* Banks is one of the major destructive pests of jute [22] and the loss caused by *P. latus* is reported to the extent of 10.00 - 42.00% depending on the level of infestation [18]. It has more than 250 hosts crossing family border in plants of agricultural and horticultural importance [24].

Its production and productivity is hampered by number of abiotic and biotic stresses [4]. Among them yellow mite, *Polyphagotarsonemus latus* (Banks) is devastating and often causing yield losses [23]. Yellow mite is the most economically important pest of jute causing leaf curl through sucking cell sap from tender epical leaf. The pest is reported from almost all the jute growing countries affecting equally both the cultivated species of jute with the estimated fibre yield loss of 42% [18]. Yellow mite (*Polyphagotarsonemus latus*), is one of the most common and destructive pests of jute (*Corchorus olitorius L*). Both yield and quality of fibre are reduced due to the attack of this pest. Due to the attack of this pest, the vertical growth of the internodes is suppressed thereby side branches are enhanced [16]. The yellow mite, *Polyphagotarsonemus latus* (Banks) (Acari: Tarsenomidae), is extremely polyphagous, and is found on more than 60 plant families [10].
The softer portions of the plants such as cotton [8], eggplant [21], jute [14] and grape [13] was attacked by this pest. The mites are usually found on the upper part of the plant, feeding on the apical shoots and the abaxial side of young leaves. Yellow mites are believed to be cell feeders, having styliform simple chelicerae that are only slightly reversible [15], with an approximate extended length of 43 microns [12]. In general, plant growth is inhibited [19]. Usually, the young apical leaves are heavily damaged, seem distorted, more rigid, and their edges curl downwards. The fruits, if any appear, may be cracked and sometimes reticulated [9]. Furthermore, farmers will have a chance to choose acaricides according to availability and cost. So, an attempt was taken considering the above mentioned aspect to conduct an experiment with the objectives was (i), to evaluate the efficacy of nine acaricides against jute yellow mite under natural condition at field level and compare with a standard chemical acaricide, (ii), to select effective and economic doses of these chemical acaricides for the jute grower’s use.

Materials and Methods
Considering the above mentioned objectives, the experiment was conducted at three different locations. Pot experiment was conducted to dose fixation at Entomology department of Bangladesh Jute Research Institute (BJRI), Dhaka, Bangladesh and field experiment was conducted at Jute Agriculture Experimental Station (JAES), Manikganj and Jute Research Sub-Station, Tarabo, Narayanganj during the jute growing season (April-August) 2018 & 2019. Nine acaricides of different generic groups were used in this experiment which as follows Revenge 1.8EC(Abamectin 1.8%), Power Prid 95SP (Cartap 92% + Acetamiprid 3%), Lock 12SC(Chlorfenpyrin 10%+ Emamectin Benzoate 2%), Parker 75 WG (Acetamiprid 50% + Buprofezin 25%), Brinka 24 SC (Spiridiclofen 24%), Guardian 40WDG(Emamectin Benzoate 20% + Thiamethoxam 20%), Aceto 40WDG(Acetamiprid 40%), Flame38WDG(Imidacloprid 36%), Aim Zox 10EC(Hexythiazox 10%EC) and Sunnnect 1.8 EC (Abamectin 1.8%) was used as standard.

Pot experiment: Tossa Jute variety O-9897 was grown in earthen pot at roof of Entomology department at Bangladesh Jute Research Institute (BJRI), Dhaka, Bangladesh. Seeds were sown in pots and pots were set following Randomized Complete Block Design (RCBD) with three replications. There were 5-6 plants in each pot allowed to grow. After 50 days of sowing, when natural infestation was found nine acaricides such as Revenge 1.8EC(Abamectin 1.8%), Power Prid 95SP (Cartap 92% + Acetamiprid 3%), Lock 12SC(Chlorfenpyrin 10%+ Emamectin Benzoate 2%), Parker 75 WG (Acetamiprid 50% + Buprofezin 25%), Brinka 24 SC (Spiridiclofen 24%), Guardian 40WDG(Emamectin Benzoate 20% + Thiamethoxam 20%), Aceto 40WDG(Acetamiprid 40%), Flame38WDG(Acetamiprid 2%+ Imidacloprid 36%), Aim Zox 10EC(Hexythiazox 10%EC) and Sunnnect 1.8 EC (Abamectin 1.8%) was used as standard.

Control pots were kept untreated. Population of yellow mite per square cm on leaf was recorded before spray and at 4th and 7th day after spray under Electronic microscope. Data of% mortality at 4th and 7th day after spray were taken. After calculating of the data considering the effectiveness at lowest doses following doses of acaricides namely Revenge 1.8EC(Abamectin 1.8%), Power Prid 95SP (Cartap 92% + Acetamiprid 3%), Lock 12SC(Chlorfenpyrin 10%+ Emamectin Benzoate 2%), Parker 75 WG (Acetamiprid 50% + Buprofezin 25%), Brinka 24 SC (Spiridiclofen 24%), Guardian 40WDG(Emamectin Benzoate 20% + Thiamethoxam 20%), Aceto 40WDG(Acetamiprid 40%)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the Acaricides</th>
<th>Dose/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Power Prid 95SP (Cartap 92% + Acetamiprid 3%)</td>
<td>250gm/ha</td>
</tr>
<tr>
<td></td>
<td></td>
<td>225gm/ha</td>
</tr>
<tr>
<td>3</td>
<td>Lock 12SC (Chlorfenpyrin 10%+ Emamectin Benzoate 2%)</td>
<td>600 ml/ha</td>
</tr>
<tr>
<td>4</td>
<td>Parker 75 WG (Acetamiprid 50% + Buprofezin 25%)</td>
<td>400ml/ha</td>
</tr>
<tr>
<td>5</td>
<td>Brinka 24 SC (Spiridiclofen 24%)</td>
<td>550ml/ha</td>
</tr>
<tr>
<td>6</td>
<td>Guardian 40WDG (Emamectin Benzoate 20% + Thiamethoxam 20%)</td>
<td>350ml/ha</td>
</tr>
<tr>
<td>7</td>
<td>Aceto 40WDG (Acetamiprid 40%)</td>
<td>150gm/ha</td>
</tr>
<tr>
<td>8</td>
<td>Flame38WDG (Abamectin 2%+ Imidacloprid 36%)</td>
<td>120gm/ha</td>
</tr>
<tr>
<td>9</td>
<td>Aim Zox 10EC(Hexythiazox 10%EC)</td>
<td>300ml/ha</td>
</tr>
</tbody>
</table>

Table 1: Three different doses of each insecticide tested for dose fixation.
Field experiment: Field experiment was conducted in two different locations viz., in JAES, Manikganj and Sub-Station, Tarabo, Narayanganj. The jute variety O-9897 was grown in unit plot size of 2 x 2.1 m² with three replications following Randomized Complete Block Design (RCBD). Fourteen new acaricides along with one standard acaricide such as Revenge 1.8EC(Abamectin 1.8%), Actos 1.8EC (Abamectin 1.8%), World 1.8EC (Abamectin 1.8%), H-aba 1.8% (Abamectin 1.8%), Lock 12SC (Chlorphenpyr 10%+ Emamectin Benzoate 2%), Himectin 1.8EC (Abamectin 1.8%), Bio-mectin 1.8EC (Abamectin 1.8%), Best Albatin 1.8EC (Abamectin 1.8%), Power Prid 95SP (Cartap 92% + Acetamiprid 3%), KB Mite 1.8EC(Abamectin 1.8%), Brinka 24 SC (Spirodiclofen 24%), Power 25EC (Abamectin 1.8%), Parker 75 WG (Acetamiprid 50% + Buprofezin 25%) and Sunmectin 1.8 EC (Abamectin 1.8%) @ 600ml/ha, 225gm/ha, 500ml/ha, 600ml/ha, 120gm/ha, 100gm/ha, 600ml/ha, 650ml/ha, 750gm/ha, 100gm/ha, 600ml/ha respectively were sprayed after 60 days of sowing when sufficient yellow mite infestation was found in the plot naturally. No acaricide was sprayed in control plots. Population of yellow mite infested plant was recorded before spray and at 4th and 7th days after spray.

Percent reduction of infestation over control was calculated following Handerson Tilton formula given below:

\[ \% \text{ Reduction over control} = \frac{\text{No. of yellow mite infested plant in control plot}}{\text{No. of yellow mite infested plant in treated plot}} \times 100 \]

Statistical analysis

Data were analyzed by statistix 10 software and means were separated LSD test.

Results and Discussion

Three doses of all insecticides were applied at roof pot condition where the second one was proposed by respective companies and the other two doses were higher one and lower one from the proposed dose. It was found from the results that the higher doses were little more effective than proposed dose or similarly effective in respect of mortality but these doses were not cost effective and lower doses were less effective than the proposed doses. So, proposed doses were selected for the field trial. Detailed results are given in (table 2).

Table 2: Preliminary dose fixation trial at Entomology department of Bangladesh Jute Research Institute (BJRI), Dhaka, Bangladesh.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Acaricides</th>
<th>Dose/ha</th>
<th>No. of yellow mite/sq.cm before spray(Average)</th>
<th>Percent mortality of yellow mite/sq.cm after spray (Average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Revenge 1.8EC (Abamectin 1.8%)</td>
<td>650ml/ha</td>
<td>64.00</td>
<td>73.30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>600ml/ha</td>
<td>66.33</td>
<td>69.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>550ml/ha</td>
<td>60.67</td>
<td>63.45</td>
</tr>
<tr>
<td>2</td>
<td>Power Prid 95SP (Cartap 92% + Acetamiprid 3%)</td>
<td>250gm/ha</td>
<td>70.33</td>
<td>71.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>225gm/ha</td>
<td>62.67</td>
<td>67.79</td>
</tr>
<tr>
<td></td>
<td></td>
<td>200gm/ha</td>
<td>66.33</td>
<td>63.81</td>
</tr>
<tr>
<td>3</td>
<td>Lock 12SC (Chlorphenpyr 10%+ Emamectin Benzoate 2%)</td>
<td>550 ml/ha</td>
<td>62.67</td>
<td>72.12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>500ml/ha</td>
<td>69.00</td>
<td>67.63</td>
</tr>
<tr>
<td></td>
<td></td>
<td>450ml/ha</td>
<td>68.00</td>
<td>64.63</td>
</tr>
<tr>
<td>4</td>
<td>Parker 75 WG (Acetamiprid 50% + Buprofezin 25%)</td>
<td>40gm/ha</td>
<td>63.00</td>
<td>72.11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30gm/ha</td>
<td>60.00</td>
<td>68.89</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20gm/ha</td>
<td>60.00</td>
<td>63.89</td>
</tr>
<tr>
<td>5</td>
<td>Brinka 24 SC (Spirodiclofen 24%)</td>
<td>500ml/ha</td>
<td>67.00</td>
<td>72.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>450ml/ha</td>
<td>65.00</td>
<td>69.23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>400ml/ha</td>
<td>57.00</td>
<td>64.91</td>
</tr>
<tr>
<td>6</td>
<td>Guardian 40WDG(Emamectin Benzoate 20% + Thiamethoxam 20%)</td>
<td>150gm/ha</td>
<td>69.00</td>
<td>70.53</td>
</tr>
<tr>
<td></td>
<td></td>
<td>120gm/ha</td>
<td>55.00</td>
<td>66.06</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100gm/ha</td>
<td>80.00</td>
<td>63.33</td>
</tr>
<tr>
<td>7</td>
<td>Aceto 40WDG (Acetamiprid 40%)</td>
<td>800gm/ha</td>
<td>80.00</td>
<td>75.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>750gm/ha</td>
<td>75.00</td>
<td>71.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>700gm/ha</td>
<td>72.00</td>
<td>65.74</td>
</tr>
<tr>
<td>8</td>
<td>Flame38WDG (Abamectin 2%+ Imidaclorpid 36%)</td>
<td>150gm/ha</td>
<td>80.00</td>
<td>72.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100gm/ha</td>
<td>76.00</td>
<td>69.74</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50gm/ha</td>
<td>78.00</td>
<td>65.81</td>
</tr>
<tr>
<td>9</td>
<td>Aim Zox 10EC(Hexythiazox 10%EC)</td>
<td>650ml/ha</td>
<td>72.00</td>
<td>71.30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>550ml/ha</td>
<td>74.00</td>
<td>62.61</td>
</tr>
</tbody>
</table>
Effect of acaricides on mite population and yield at two locations in two years

In case of 2018 at Manikganj at 7DAS (DAS= Days after Spraying), the highest percent reduction of jute yellow mite (97.12%) was obtained from the plot treated with Revenge 1.8EC (Abamectin 1.8%) which was statistically similar to all other acaricides except Flame38WDG (Abamectin 2% + Imidacloprid 36%) and Sunmectin 1.8 EC (Abamectin 1.8%) (Standard). Goldsmith and James [11] reported that abamectin gave satisfactory control against this mite. Piao [12] found maximum percent mortality of *P. latus* on jute after application of Abamectin 1.8 @ 0.5 ml/L. The lowest percent reduction was obtained in control plot that was statistically different from others. At 7DAS in Manikganj, the highest yield (3.17 t/ha) was found in the plot treated with Revenge 1.8EC (Abamectin 1.8%) which was statistically similar to all other acaricides except Brinka 24 SC (Spriodiclofen 24%), Aceto 40WDG (Acetamiprid 40%) and Flame38WDG (Abamectin 2% + Imidacloprid 36%). Among the treated plots at Narayanganj at 7DAS in 2018, the highest percent reduction of jute yellow mite (96.36%) was obtained from the plot treated with Power Prid 95SP (Cartap 92% + Acetamiprid 3%) which was statistically similar to Revenge 1.8EC (Abamectin 1.8%), Lock 12SC (Chlorphenpyr 10% + Emamectin Benzoate 2%), Brinka 24 SC (Spriodiclofen 24%), Guardian 40WDG (Emamectin Benzoate 20% + Thiamethoxam 20%), Aceto 40WDG (Acetamiprid 40%) and Aim Zox 10EC (Hexythiazox 10% EC) and standard. Highest yield (2.98 t/ha) was found in the plot treated with Power Prid 95SP (Cartap 92% + Acetamiprid 3%) which was statistically similar to Revenge 1.8EC (Abamectin 1.8%), Parker 75 WG (Acetamiprid 50% + Buprofezin 25%) and Guardian 40WDG (Emamectin Benzoate 20% + Thiamethoxam 20%). At 7DAS all the acaricides showed 80% reduction of infestation of jute crops (Table 3).

### Table 3: Effect of insecticides on mite population and yield at two locations in 2018

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Dose/ha</th>
<th>Manikganj, 2018</th>
<th></th>
<th>Narayanganj, 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total plant</td>
<td>Infested plant before spray</td>
<td>% reduction</td>
</tr>
<tr>
<td>T1</td>
<td>600ml/ha</td>
<td>208.33</td>
<td>103.33</td>
<td>86.70A</td>
</tr>
<tr>
<td>T2</td>
<td>225gm/ha</td>
<td>209.33</td>
<td>86.67</td>
<td>81.30AB</td>
</tr>
<tr>
<td>T3</td>
<td>500ml/ha</td>
<td>234.33</td>
<td>76.83</td>
<td>81.46AB</td>
</tr>
<tr>
<td>T4</td>
<td>30gm/ha</td>
<td>210.00</td>
<td>79.33</td>
<td>82.14AB</td>
</tr>
<tr>
<td>T5</td>
<td>450ml/ha</td>
<td>213.33</td>
<td>90.00</td>
<td>79.58AB</td>
</tr>
<tr>
<td>T6</td>
<td>120gm/ha</td>
<td>220.00</td>
<td>86.67</td>
<td>81.66AB</td>
</tr>
<tr>
<td>T7</td>
<td>750gm/ha</td>
<td>218.00</td>
<td>73.33</td>
<td>86.39AB</td>
</tr>
<tr>
<td>T8</td>
<td>100mg/ha</td>
<td>209.67</td>
<td>90.00</td>
<td>83.04AB</td>
</tr>
<tr>
<td>T9</td>
<td>600ml/ha</td>
<td>211.33</td>
<td>70.00</td>
<td>83.73AB</td>
</tr>
<tr>
<td>T10</td>
<td>600ml/ha</td>
<td>195.33</td>
<td>80.00</td>
<td>77.67A</td>
</tr>
<tr>
<td>T11</td>
<td>600ml/ha</td>
<td>209.67</td>
<td>74.33</td>
<td>28.98C</td>
</tr>
<tr>
<td>LSD (5%)</td>
<td></td>
<td>8.74</td>
<td>5.33</td>
<td>0.5599</td>
</tr>
<tr>
<td>CV 6.62</td>
<td></td>
<td>3.50</td>
<td>12.14</td>
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</tr>
</tbody>
</table>

N.B. T1 = Revenge 1.8EC (Abamectin 1.8%) T2 = Power Prid 95SP (Cartap 92% + Acetamiprid 3%) T3 = Lock 12SC (Chlorphenpyr 10% + Emamectin Benzoate 2%) T4 = Parker 75 WG (Acetamiprid 50% + Buprofezin 25%) T5 = Brinka 24 SC (Spriodiclofen 24%) T6 = Guardian 40WDG (Emamectin Benzoate 20% + Thiamethoxam 20%) T7 = Aceto 40WDG (Acetamiprid 40%) T8 = Flame38WDG (Abamectin 2% + Imidacloprid 36%) T9 = Aim Zox 10EC (Hexythiazox 10% EC) T10 = Control T11 = Sunmectin 1.8 EC (Abamectin 1.8%)

In case of Manikganj in 2019 at 7DAS (DAS= Days After Spraying), the highest percent reduction of jute yellow mite (96.45%) was obtained from the plot treated with Lock 12SC (Chlorphenpyr 10% + Emamectin Benzoate 2%) which was statistically similar to all other acaricides except Guardian 40WDG (Emamectin Benzoate 20% + Thiamethoxam 20% and Flame38WDG (Abamectin 2% + Imidacloprid 36%). A. Rahman found higher reduction of mite infestation after 7 and 10 days of spraying with the acaricide causing a reduction of (72.25% and 80.15%) pest infestation in jute plant respectively [11]. The lowest percent reduction was obtained in the plot that was sprayed with Guardian 40WDG (Emamectin Benzoate 20% + Thiamethoxam 20%) that was statistically similar to Flame 38 WDG (Abamectin 2% + Imidacloprid 36%). Ajit pratap singh reported that thiamethoxam and imidacloprid showed moderate infestation on chilli mite [2]. In case of yield in Manikganj, the highest yield (3.19 t/ha) was found in the plot treated with Parker 75 WG (Acetamiprid 50% + Buprofezin 25%) which was statistically similar to all other acaricides except Treatment 6, 7, 8 & 10. Lowest yield (2.27 t/ha) was found in the plot treated with treatment 8 that was statistically similar to treatment 6, 7 &10. Among the treated plots at Narayanganj at 7DAS in 2019, the highest percent reduction of jute yellow mite (96.21%) was obtained from the plot treated with Aim Zox 10EC (Hexythiazox 10% EC) which was statistically similar to all treatment except treatment 8. Highest yield (3.20t/ha) was found in the plot treated with Aim Zox 10EC (Hexythiazox 10% EC) which was statistically similar to all other treatments except treatment 1. At 7 DAS all the acaricides showed 80% reduction of infestation of jute crops (Table 4).
Table 4: Effect of insecticides on mite population and yield at two locations in 2019

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Dose/ha</th>
<th>Manikganj, 2019</th>
<th>Narayanganj, 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total plant before spray</td>
<td>Infested plant</td>
<td>% reduction</td>
</tr>
<tr>
<td></td>
<td>3DAS</td>
<td>7DAS</td>
<td></td>
</tr>
<tr>
<td>T1 600ml/ha</td>
<td>190.67</td>
<td>83.33</td>
<td>80.00AB</td>
</tr>
<tr>
<td>T2 225gm/ha</td>
<td>193.33</td>
<td>84.67</td>
<td>78.99B</td>
</tr>
<tr>
<td>T3 250ml/ha</td>
<td>193.33</td>
<td>84.67</td>
<td>82.25AB</td>
</tr>
<tr>
<td>T4 30gm/ha</td>
<td>186.00</td>
<td>90.67</td>
<td>83.00A</td>
</tr>
<tr>
<td>T5 450ml/ha</td>
<td>213.33</td>
<td>71.00</td>
<td>80.88AB</td>
</tr>
<tr>
<td>T6 120gm/ha</td>
<td>206.67</td>
<td>68.33</td>
<td>81.47AB</td>
</tr>
<tr>
<td>T7 750gm/ha</td>
<td>191.33</td>
<td>78.33</td>
<td>81.30AB</td>
</tr>
<tr>
<td>T8 100gm/ha</td>
<td>209.00</td>
<td>65.00</td>
<td>82.58AB</td>
</tr>
<tr>
<td>T9 600ml/ha</td>
<td>204.67</td>
<td>83.33</td>
<td>81.79AB</td>
</tr>
<tr>
<td>T10 600ml/ha</td>
<td>184.67</td>
<td>81.67</td>
<td>81.21AB</td>
</tr>
<tr>
<td>T11 600ml/ha</td>
<td>185.00</td>
<td>72.00</td>
<td>18.50C</td>
</tr>
<tr>
<td>LSD (5%)</td>
<td></td>
<td></td>
<td>3.8449</td>
</tr>
<tr>
<td>CV</td>
<td></td>
<td></td>
<td>2.98</td>
</tr>
</tbody>
</table>

N.B.
T1= Revenge 1.8EC (Abamectin 1.8%)
T2= Power Prid 95SP (Cartap 92% + Acetamiprid 3%)
T3= Lock 12SC (Chlorphenyr 10%+ Emamectin Benzoate 2%)
T4= Parker 75 WG (Acetamiprid 50% + Buprofezin 25%)
T5= Brinka 24 SC (Spirodiclofen 24%)
T6= Guardian 40WDG (Emamectin Benzoate 20% + Thiamethoxam20%)
T7= Aceto 40WDG (Acetamiprid 40%)
T8= Flame38WDG (Abamectin 2%+ Imidacloprid 36%)
T9= Aim Zox 10EC (Hexythiazox 10%EC)
T10= Control
T11= Sunmectin 1.8 EC (Abamectin 1.8%)

Percent reduction of yellow mite infestation in 7 DAS at two locations in two years

From the graph, it revealed that all the acaricides showed different percent reduction of infestation. Among all the acaricides, highest (97.12%) reduction of infestation was found in the plot that was treated with Revenge 1.8EC (Abamectin 1.8%) in Manikganj 2018 at 7DAS and lowest (88.69%) reduction of infestation was found in the plot that was treated with Flame38WDG (Abamectin 2%+Imidacloprid 36%) in Narayanganj 2018 at 7DAS. All acaricides including standard gave more than 88% reduction of yellow mite infestation in field condition (Fig. 1). S. Jeyarani (20) conducted similar experiment on chilli and found more or less similar infestation on chilli spraying some new acaricide molecules. But the plot that was untreated/controlled showed different level of percent reduction of infestation giving 41.84% highest reduction of infestation in Manikganj 2018 at 7DAS. So it is normally revealed that acaricides have important effect on yellow mite reduction of infestation. B.S. Goyatal (16) said that acaricides significantly reduced the mite infestation in jute, but abamectin followed by dicofol (18.5 EC) and fenazaquin (10 EC) gave better protection of mites. Since all the acaricides showed more than 80% reduction of P. latus, so all acaricides can be recommended for farmer’s use to control yellow mite.

Fig 1: Percent reduction of yellow mite infestation in 7DAS at two locations in two years ~ 1087~
Conclusion
From the results of this two-year experiment, it was observed that yellow mite of jute caused by *Polyphagotarsonemus latus* is a major pest of jute (*C. olitorius*) in Bangladesh that results in economic losses. The performance of all tested acaricides considering percent reduction of infestation over control (> 88%) and yield (>2.45 ton/ha) were more or less similar to the standard and better than control. So, all the acaricides were suggested to recommend for the farmer’s use for controlling jute yellow mite at field level.

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References