

Activity: Efficacy trial of different insecticides against leaf miner on chickpea (Mustapha)

Title	:	Efficacy of essential oils and bio- and chemical insecticides against chickpea leaf miner under field condition																																															
Objectives		Investigate the efficacy of essential oils against chickpea leaf miner																																															
Expected outcomes		Efficacy of essential oils to control chickpea leaf miner studied																																															
Method of evaluation		<p>Four essential oils <i>Mentha pulegium</i>, <i>Eucalyptus globulus</i>, <i>Rosmarinus officinalis</i>, <i>Ocimum basilicum</i> were used with and without adjuvant, their efficacy compared with two bio-insecticides <i>Azadirachtin</i> and <i>Spinetoram</i> and one chemical insecticide Abamectin.. Evaluation of leaf miner damage in the chickpea was rated using a scale of 1-9 (1 = no damage, 9 = severe damage etc.), leaf miner damage %, infestation will be estimated from five selected plants per plot one and three days after treatment.</p> <p>Table 1: Characteristics of insecticides used in the field trials</p> <table> <tr> <th>Trade name</th><th>Active ingredients</th><th>Chemical class</th><th>Dose</th><th>Company</th></tr> <tr> <td>Tina</td><td>Abamectin (18 g/l)</td><td>Avermectin</td><td>25 cc/hl</td><td>AGREVA</td></tr> <tr> <td>Neemix 4,5</td><td>Azadirachtin (45 g/l)</td><td>Biological insecticide</td><td>40 cc/hl</td><td>AGRO SPRAY TECHNIC</td></tr> <tr> <td>Radiant120 SC</td><td>Spinetoram (120 g/l)</td><td>Biological insecticide</td><td>25 cc/hl</td><td>Promagri</td></tr> <tr> <td><i>Eucalyptus globulus oil</i></td><td>Essential oil</td><td>Essential oil</td><td>5ml/1l</td><td>NOUVELLE PHARMAC, Morc</td></tr> <tr> <td><i>Mentha pulegium oil</i></td><td>Essential oil</td><td>Essential oil</td><td>10ml/1l</td><td>NOUVELLE PHARMAC, Morc</td></tr> <tr> <td><i>Rosmarinus officinalis oil</i></td><td>Essential oil</td><td>Essential oil</td><td>10ml/1l</td><td>NOUVELLE PHARMAC, Morc</td></tr> <tr> <td><i>Ocimum basilicum oil</i></td><td>Essential oil</td><td>Essential oil</td><td>10ml/1l</td><td>NOUVELLE PHARMAC, Morc</td></tr> <tr> <td>Heliosol</td><td>Terpene alcohols</td><td>Botanical adjuvant</td><td>200cc/hl</td><td>Univers horticole</td></tr> </table>			Trade name	Active ingredients	Chemical class	Dose	Company	Tina	Abamectin (18 g/l)	Avermectin	25 cc/hl	AGREVA	Neemix 4,5	Azadirachtin (45 g/l)	Biological insecticide	40 cc/hl	AGRO SPRAY TECHNIC	Radiant120 SC	Spinetoram (120 g/l)	Biological insecticide	25 cc/hl	Promagri	<i>Eucalyptus globulus oil</i>	Essential oil	Essential oil	5ml/1l	NOUVELLE PHARMAC, Morc	<i>Mentha pulegium oil</i>	Essential oil	Essential oil	10ml/1l	NOUVELLE PHARMAC, Morc	<i>Rosmarinus officinalis oil</i>	Essential oil	Essential oil	10ml/1l	NOUVELLE PHARMAC, Morc	<i>Ocimum basilicum oil</i>	Essential oil	Essential oil	10ml/1l	NOUVELLE PHARMAC, Morc	Heliosol	Terpene alcohols	Botanical adjuvant	200cc/hl	Univers horticole
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Genotype		Garbanzo																																															
Results		<p>Results showed that the chemical insecticide Abamectin (25 cc / hl) was the most effective insecticide in both trials. This active ingredient allows more than 50% reduction of leaflets infestation in all applications. The bio-insecticide, Azadirachtin (40 cc/hl) was second most efficient, it reduced the main infestation levels by leaf miner especially after the second and third spray.</p> <p>For both trials <i>Mentha pulegium</i> was the best essential oil, followed by <i>Eucalyptus globulus</i>. The addition of adjuvants did affect the performance of two oils. The efficacy of oils to reduce leaf miner infestation was enhanced by the addition of the adjuvant. The two oils showed a moderate to good level of reduction throughout the trials.</p>																																															