

### Annexure III Pests and diseases of Crops

District: Kullu									
1	2	3	4	5	6	7	8	9	10
Host	Insect/ animal	Scientific name	Local name	Habitat	Time/ season of attack	Management mechanism	Associated TK	Other details	Community knowledge holder
Maize	Black cutworm	<i>Agrotis ipsilon</i>	Katua Keet/ Toka	<ul style="list-style-type: none"> <li>• Found during day time hiding in soil close to stems.</li> <li>• Larva cut the seedling plants and feed.</li> </ul>	April-June & Oct-Nov	<ul style="list-style-type: none"> <li>• Hand picking and destruction of larvae.</li> <li>• Apply chlorpyrifos 20 EC @ 2 litres/ ha.</li> </ul>	-	-	-
	Common cutworm	<i>A. segetum</i>	Katua Keet/ Toka	<ul style="list-style-type: none"> <li>• Found during day time hiding in soil close to stems.</li> <li>• Larva cut the seedling plants and feed.</li> </ul>	April-June & Oct-Nov	<ul style="list-style-type: none"> <li>• Hand picking and destruction of larvae.</li> <li>• Apply chlorpyrifos 20 EC @ 2 litres/ ha.</li> </ul>	-	-	-
	Termites	<i>Microtermes obesi</i> <i>Odontotermes obesus</i>	Deemak	<ul style="list-style-type: none"> <li>• Build tall (2-4 m), cylindrical mounds or termitarium.</li> <li>• workers damage roots.</li> </ul>	Regular	<ul style="list-style-type: none"> <li>• Locating and destroying termite nests.</li> <li>• Use well decomposed FYM.</li> <li>• Applying chlorpyrifos 20 EC @ 2 litres/ ha after mixing with 20-25 kg of sand.</li> </ul>	-	-	-
	Maize Stem Borer	<i>Chilo partellus</i>	Tane ki sundi	<ul style="list-style-type: none"> <li>• larvae first feed on the leaves, making a few shot holes.</li> <li>• Central shoot withers and leading to dead heart.</li> </ul>	July	<ul style="list-style-type: none"> <li>• Remove the dead-hearts and infested plants.</li> <li>• Apply 2 g phorate (Thimmet 10G) per meter of row length.</li> </ul>	-	-	-
	Corn leaf aphid	<i>Rhopalosiphum maidis</i>	Tela	<ul style="list-style-type: none"> <li>• Aphids infest leaves, leaf sheaths and inflorescences.</li> </ul>	September	<ul style="list-style-type: none"> <li>• Foliar spray of imidacloprid 200SL or</li> </ul>	-	-	-

				<ul style="list-style-type: none"> <li>• Most severe damage occurs to the tassel.</li> </ul>		thiamethoxam 25 WDG @ 0.005%.			
<b>Paddy</b>	Grasshopper	<i>Hieroglyphus</i> spp., <i>Chrotogonus</i> spp.	Tidda	Damage germinating crop by cutting the plants in nursery and in the fields. The adults are often serious and attack the periphery of the <b>panicles</b> .	Regular	<ul style="list-style-type: none"> <li>• Clean cultivation by removing weeds</li> <li>• Bunds must be cleared off grasses and weeds</li> <li>• Spray 1250 ml Chloropyriphos 20 EC per 500 L water/ha on appearance of pest.</li> </ul>	Dusting of wood ash		Local people
	Leaf folder	<i>Cnaphalocrocis medinalis</i>		Caterpillars infest leaves of young plants by fastening the edges of the leaf together and live inside rolled leaf. Occasionally cause serious damage at vegetative stage	Occasional / at vegetative stage	<ul style="list-style-type: none"> <li>• Clip-off the affected leaves.</li> <li>• Remove weeds especially graminaceous ones</li> <li>• Spray 1250 ml chloropyriphos 20 EC (per 500 L water/ha on pest appearance.</li> </ul>	Clip-off the affected leaves		Local people
	Stem borer	<i>Scirpophaga innotata</i>		Damage is caused by feeding of the larvae within the stem. The damaged plants result in `dead heart' and `white head' formation	Occasional at vegetative stage	<ul style="list-style-type: none"> <li>• Apply carbofuran (Furadan 3 G) by broadcasting in 3-4 cm deep standing water @ 1 kg/ha (a.i.) 10 days after transplanting, if necessary.</li> <li>• Spray 500 ml methyl parathion (Metacid 50 EC) in 500 L water/ha. Repeat after 45 days.</li> </ul>			Local people

	Leaf Hopper	<i>Nilaparvata lugens</i>		Nymphs and adults of hoppers cause heavy damage to this crop by sucking the sap from various parts of the plant during July-September. Cause 'hopper burn' symptoms	Regular	<ul style="list-style-type: none"> <li>• Spray 1250 ml Chloropyriphos 20 EC or 1500 g carbaryl 50 WP per 500 L water/ha on appearance of pest.</li> </ul>			
<b>Wheat</b>	Termite	<i>Odontotermis obesus, Microtermis obesi</i>	Deemak	Infest crop at germination stage. Cause yellowing and patchy growth of wheat visible from seedlings to maturity	Regular	<ul style="list-style-type: none"> <li>• Remove stubbles of previous crop before sowing.</li> <li>• Termite mound should be destroyed in vicinity of crop</li> <li>• Seed treatment with chlorpyriphos 20 EC (4ml/kg seed)</li> <li>• Soil application of 2lt.chlorpyriphos 20 EC mixed in 25 kg sand per ha at the time of sowing</li> </ul>			
	Grasshopper	<i>Hieroglyphus spp., Chrotogonus spp.</i>	Tidda	Feed on foliage and soft stem of young plants	Regular	<ul style="list-style-type: none"> <li>• Bunds must be cleared off grasses and weeds</li> <li>• Collect and destroy the insect</li> <li>• Dust Folidol 2% @ 20-25 kg/ha It is better to dust the grass on bunds and in waste land near the field before germination of wheat and barley as hopper migrate</li> </ul>	Dusting of wood ash		Local people

						to germinating crop from these sources.			
	Aphid	<i>Rhopalosiphum maidis, Sitobion avenae</i>	Tela	Suck sap from soft leaves, stem and developing grains from December till crop maturity and ultimately inhibiting grain formation	Regular	<ul style="list-style-type: none"> <li>Follow common cultural, mechanical and biological practices</li> <li>Spray 750 ml methyl demeton 25 EC or dimethoate 30EC in 750 l water/ ha</li> <li>Generally, natural enemies present in the field help in controlling the population of this pest</li> </ul>	Dusting of wood ash		Local people
<b>Mash</b>	Blister beetle	<i>Mylabris pustulata</i>	Ghodi	Adults feed voraciously on flowers	Regular/ at flowering and pod bearing stage	<ul style="list-style-type: none"> <li>Collect and destroy beetle</li> <li>Spray 625 ml methyl parathion (Metacid 50 EC) in 625 L water/ha at the tasselling stage, if required.</li> </ul>	Collect and destroy beetles		Local people
	Hairy caterpillar	<i>Spilosoma obliqua</i>	Jhan	Feed gregariously on foliage and soft stems of young plants	Occasional at vegetative stage	<ul style="list-style-type: none"> <li>Collect and destroy the congregating caterpillars</li> </ul>			
<b>Rapeseed-mustard</b>	Cabbage aphid	<i>Brevicoryne brassicae</i>	Tela		Rabi	<ul style="list-style-type: none"> <li>Spray methyl demeton 25EC or dimethoate 30EC @ 1ml/l.</li> <li>If crop is meant for 'Sag' purpose, then spray malathion</li> </ul>			

						50EC @ 1ml/l and observe 1 week waiting period			
	Mustard aphid	<i>Lipaphis erysimi</i>	Tela		-do-	• -do-			
	Green peach aphid	<i>Myzus persicae</i>	Tela		-do-	• -do-			
	Mustard saw fly	<i>Athalia lugens proxima</i>	-		-do-	• Spray malathion 50EC @ 1ml/l			
	Cabbage butterfly	<i>Pieris brasscae</i>	-		-do-	• -do-			
	Pea leaf miner	<i>Chromatomyia horticola</i>	-		-do-	• Spray methyl demeton 25EC or dimethoate 30EC @ 1ml/l. in crop meant for seed			
	Painted bug	<i>Bagrada hilaris</i>	-		-do-	• -do-			
<b>Potato</b>	Greasy cutworm	<i>Agrotis ipsilon</i>	Katua Keet/ Toka	<ul style="list-style-type: none"> <li>• Found during day time hiding in soil close to stems</li> <li>• Newly hatched larvae first feed on haulms and then drop from plants and feed underground on stems and tubers</li> </ul>	April-June & Oct-Nov	<ul style="list-style-type: none"> <li>• Forking the soil exposes the larvae to avian predators</li> <li>• Apply chlorpyrifos 20 EC @ 2 liters/ ha after mixing with 20-25 kg of sand</li> </ul>			
	Black cutworm	<i>A. segetum</i>							
	White grubs	<i>Brahmina coriacea</i> <i>Holotrichia longipennis</i>	Safed Gidar	<ul style="list-style-type: none"> <li>• Soil dwelling grubs are present in soil at a depth of 5-20 cm</li> <li>• Grubs make large, shallow, and circular holes in tubers</li> </ul>	June-Oct	<ul style="list-style-type: none"> <li>• Ploughing to expose grubs, pupa and newly formed adults to birds</li> <li>• Beetle collection at night and killing in water mixed with kerosene</li> <li>• Chlorpyrifos 20 EC @ 2 litres/ ha after mixing with 20-25 kg of sand</li> </ul>			

						<ul style="list-style-type: none"> <li>• Insecticide application should occur soon after adult emergence, and should coincide with egg laying or egg hatching</li> </ul>			
	Green Peach aphid	<i>Myzus persicae</i> (Sulzer)	Tela	<ul style="list-style-type: none"> <li>• Aphids can injure a potato plant directly by sap feeding and indirectly by transmitting several important potato viruses</li> </ul>	Regular	<ul style="list-style-type: none"> <li>• Seed plots must be kept free of aphids</li> <li>• Selection and rouging of plants infected with a virus</li> <li>• Foliar sprays of dimethoate @ 1ml/L of water/ha</li> <li>• Imidacloprid and thiamethoxam also provide effective protection</li> </ul>			
	Red ants	<i>Dorylus orientalis</i> <i>D. labiatus</i>	Cheenti	<ul style="list-style-type: none"> <li>• Live in colonies, there may be one or several queens</li> <li>• Damages potato stems and tubers by chewing holes</li> </ul>	Minor	<ul style="list-style-type: none"> <li>• Applying a spray with chlorpyrifos to the soil as a pre-planting dust formulation or as a post-planting spray</li> </ul>			