

Table 1: Total Arthropod individuals in observed ecosystem

Sl. No.	Ecosystems	Arachnids			Insecta		
		Percentage	Nos. of family	Total individuals	Percentage	Nos. of family	Total individuals
1	Silvicultural ecosystem	36%	18	1001	56%	54	413
2	Horticultural ecosystem	26%	13	1010	10.8%	12	78
3	Rice ecosystem	22%	11	615	12.4%	8	90
4	Maize ecosystem	8%	4	103	8.5%	6	62
5	Potato ecosystem	8%	4	567	11.6%	5	84
		Total	50	3296	Total	85	727

%, Based on Total individuals

Table 2: Diversity of Hexapods in Silvicultural ecosystem, Horticultural ecosystem, Agricultural ecosystem at species level

Sl. No.	Order	Family	Species	Total individuals
1	Lepidoptera	Gracillariidae	<i>Phyllocnistis citrella</i>	12
			<i>Phthorimaea operculei</i>	9
		Papilionidae	<i>Papilo demoleus</i>	15
			Zygaenidae	<i>Trypanophora semihyalina</i>
				<i>Pingasa</i> spp.
		Geometridae	<i>Ascotis selenaria</i>	7
			<i>Hyposidra talaca</i>	9
			<i>Artaxa guttata</i>	8
		Erebidae	<i>Orgyia postica</i>	6
			<i>Calliteara pudibunda</i>	4
			<i>Lymantria</i> spp.	6
			<i>Helicoverpa armigera</i>	6
			<i>Agrotis ipsilon</i>	14
			<i>Sesamia inferens</i>	4
			<i>Mythimna separata</i>	8
		Noctuidae	<i>Spodoptera exigua</i>	8
			<i>Sesamia inferens</i>	9
			<i>Mythimna separata</i>	6
			<i>Acacia mangium</i>	9
			<i>Symbrenthia hippolus</i>	7
		Nymphalidae	<i>Euploea sylvester</i>	12
			<i>Parantica aglaea</i>	5
			<i>Tarucus nara</i>	6
			<i>Cepora nadina nadina</i>	9
		Pieridae	<i>Pieris brassicae</i>	5
			<i>Pieris canidia</i>	6
			<i>Pieris napi montana</i>	4
Melarbelidae	<i>Inderbela</i> spp.	5		
Cossidae	<i>Zeuzera multistrigata</i>	5		
Lymantriidae	<i>Lymantria concolor</i>	7		
Limacodidae	<i>Belippa horrida</i>	7		
Arctiidae	<i>Caeneressa</i> spp.	5		
	<i>Nyctemera arctala</i>	5		
Pyralidae	<i>Scirpophaga incertulas</i>	7		
	<i>Nymphula depunctalis</i>	6		

			<i>Chilo partellus</i>	10
			<i>Chilo suppressalis</i>	7
2	Coleoptera	Lamiidae	<i>Anoplophora versteegi</i>	10
			<i>Anomala dimidiata</i>	9
			<i>Popilia</i> spp.	5
		Scarabaeidae	<i>Phyllophaga</i> spp.	5
			<i>Anomala orientalis</i>	5
			<i>Holotrichea</i> spp.	14
			<i>Aristobia testudo</i>	3
		Cerambycidae	<i>Melanaustor beryllinus</i>	4
			<i>Aristobia testudo</i>	3
			<i>Monohammus versteegi</i>	7
		Melyridae	<i>Collops quadrimaculatus</i>	4
			<i>Arthrotus flavocincta</i>	2
		Chrysomellidae	<i>Altica</i> spp.	2
			<i>Dicladispa armigera</i>	6
			<i>Aspidomorpha dorsata</i>	4
		Tenebrionidae	<i>Lagria villosa</i>	2
		Lampyridae	<i>Luciola ovalis</i>	3
			<i>Luciola praeusta</i>	2
			<i>Epilachna varivestis</i>	2
			<i>Harmonia</i> spp.	3
		Coccinellidae	<i>Coccinella septempunctata</i>	4
			<i>Oenopia kirbyi</i>	3
			<i>Oenopia sexareata</i>	3
		Curculionidae	<i>Otiorhynchus</i> spp.	1
			<i>Episomus lacterna</i>	3
			<i>Agabus bipustulatus</i>	2
		Dytiscidae	<i>Cybister lateralimarginalis</i>	2
		Hydrophilidae	<i>Hydrophilus</i> spp.	2
3	Hemiptera	Aleyrodidae	<i>Aleurocanthus woglumi</i>	4
			<i>Taxoptera citricidus</i>	3
		Aphididae	<i>Aphis pomi</i>	4
			<i>Rhopalosiphum maidis</i>	8
			<i>Myzus persicae</i>	35
		Pseudococcidae	<i>Planococcus citri</i>	8
		Diaspididae	<i>Lepidosaphes beckii</i>	4
		Psyllidae	<i>Diaphorina citri</i>	4
		Alydidae	<i>Alydus</i> spp.	5
		Monophlebidae	<i>Icerya seychellarum</i>	5
		Miridae	<i>Helopeltis bradyi</i>	4
			<i>Dysdercus Koenigii</i>	4
		Pyrrhocoridae	<i>Melamphaus rubrocinctus</i>	3
			<i>Pyrrhocoris</i> spp.	5
		Flatidae	<i>Ormenoides venusta</i>	4
		Coreidae	<i>Anoplocnemis phasiana</i>	3
			<i>Leptocorisa acuta</i>	5
		Pentatomidae	<i>Halyomorpha</i> spp.	3
			<i>Coridius chinensis</i>	2
		Cercopidae	<i>Homalostethus tabulatus</i>	4
		Membracidae	<i>Otinotus</i> spp.	4
		Reduviidae	<i>Cosmolestes</i> spp.	3

		Nepidae	<i>Ranatra</i> spp.	5
			<i>Lethocerus</i> spp.	4
		Belostomatidae	<i>Belostoma</i> spp.	3
		Fulgoridae	<i>Pyrops candelaria</i>	3
		Cicadellidae	<i>Nephotettix nigropictus</i>	5
		Delphacidae	<i>Nilaparvata lugens</i>	6
		Psyllidae	<i>Diaphornia citri</i>	7
4	Diptera	Tephritidae	<i>Bactrocera dorsalis</i>	7
		Syrphidae	Unidentified	2
		Tipulidae	<i>Tipulodina</i> spp.	3
		Tachinidae	<i>Tachina</i> spp.	4
		Cecidomyiidae	<i>Orseolia oryzae</i>	4
5	Orthoptera	Muscidae	<i>Atherigona orientalis</i>	5
			<i>Trilophida annulata</i>	4
		Acrididae	<i>Herioglyphus banian</i>	4
			<i>Hieroglyphus nigrorepletus</i>	5
			<i>Hexacentrus mundus</i>	5
		Tettigoniidae	<i>Mecopoda elongata</i>	3
			<i>Holochlora indica</i>	2
6	Hymenoptera	Gryllidae	<i>Gryllus bimaculatus</i>	3
		Braconidae	<i>Cotesia</i> spp.	3
		Chalcididae	<i>Brachymeria perflavipes</i>	2
			<i>Apis cerana indica</i>	3
		Apidae	<i>Xylocopa</i> spp.	5
			<i>Bombus orientalis</i>	3
7	Dermeptera	Forficulidae	<i>Forficula</i> spp.	4
8	Dictyoptera	Mantidae	<i>Mantis</i> spp.	7
			<i>Statilia maculata</i>	2
9	Odonata	Calopterygidae	<i>Calopteryx maculata</i>	5
			<i>Neurobasis chinensis</i>	3
			<i>Neurothemis fulvia</i>	25
			<i>Orthetrum sabina</i>	15
		Libellulidae	<i>Orthetrum chrysis</i>	20
			<i>Orthetrum triangulare</i>	13
10	Isoptera	Termitidae	<i>Odontotermis</i> spp.	10
			<i>Macrotermis</i> spp.	6
11	Ephimeroptera	Unidentified	Unidentified	2
12	Neuroptera	Chrysopidae	Unidentified	3
13	Phasmatodea	Phasmatidae	Unidentified	2
			Total	727

Table 3: Arachnids diversity at familial and generic level in observed ecosystems viz., Silvicultural ecosystem, Horticultural ecosystem, Agricultural ecosystem

Sl. No.	Family	Genus	Species	Ecosystem				
				Silvicultural ecosystem	Horticultural ecosystem	Agricultural ecosystem		
						Maize ecosystem	Potato ecosystem	Rice ecosystem
1	Araneidae	<i>Erovixia</i>	<i>Erovixia lagalaizei</i>	13	30	45	0	0
			<i>Erovixia excelsa</i>	8	8	13	0	0
			<i>Erovixia</i> spp.	0	0	15	0	0
		<i>Nephila</i>	<i>Nephila clavata</i>	11	0	0	0	0
			<i>Nephila pilipes</i>	10	0	0	0	0
			<i>Nephila kuhlii</i>	10	0	0	0	0
			<i>Nephila</i> spp.1	8	0	0	0	0
			<i>Nephila</i> spp. 2	8	0	0	0	0
			<i>Cyclosa spirifera</i>	0	14	55	0	0
			<i>Cyclosa quinqueguttata</i>	3	16	55	0	0
			<i>Cyclosa simoni</i>	0	0	30	0	0
			<i>Cyclosa insulana</i>	0	23	36	0	7
			<i>Cyclosa bifida</i>	10	14	31	0	0
		<i>Cyclosa</i>	<i>Cyclosa sundaica</i>	8	45	8	0	0
			<i>Cyclosa hexatuberculata</i>	0	15	0	0	11
			<i>Cyclosa confraga</i>	0	0	0	0	19
			<i>Cyclosa</i> spp. 1	6	9	16	0	17
			<i>Cyclosa</i> spp. 2	6	12	14	0	0
			<i>Thelacantha brevispina</i>	21	49	34	0	0
			<i>Argiope ameula</i>	8	12	0	0	0
		<i>Argiope</i>	<i>Argiope pulchella</i>	21	12	0	0	8
			<i>Argiope caesarea</i>	23	0	0	0	0
			<i>Argiope shillongensis</i>	21	0	0	0	0
			<i>Argiope</i> spp.	9	14	0	0	9
		<i>Araneus</i>	<i>Araneus nympha</i>	9	8	0	0	0
			<i>Araneus mitificus</i>	17	7	0	0	8
			<i>Araneus</i> spp.	0	0	0	0	10
		<i>Neoscona</i>	<i>Neoscona chrysanthusi</i>	11	0	0	0	0
			<i>Neoscona vigilans</i>	7	0	0	0	0
			<i>Neoscona nautical</i>	9	39	32	0	0
<i>Neoscona theisi</i>	13		0	0	0	21		
<i>Neoscona mukerjei</i> 1	11		10	0	0	22		

		<i>Neoscona muketjei</i> 2	10	0	0	0	13
		<i>Neoscona muketjei</i> 3	10	0	0	0	0
		<i>Neoscona muketjei</i> 4	7	0	0	0	0
		<i>Neoscona muketjei</i> 5	16	0	0	0	0
		<i>Neoscona muketjei</i> 6	12	0	0	0	0
		<i>Neoscona muketjei</i> 7	8	0	0	0	0
		<i>Neoscona bengalensis</i> 1	18	0	0	0	30
		<i>Neoscona bengalensis</i> 2	13	0	0	0	0
		<i>Neoscona bengalensis</i> 3	20	0	0	0	0
		<i>Neoscona</i> spp.	0	11	19	0	19
	<i>Gasteracantha</i>	<i>Gasteracantha hasselti</i>	2	0	2	0	0
	<i>Gibbaranea</i>	<i>Gibbaranea bituberculata</i>	3	0	0	0	0
	<i>Parawixia</i>	<i>Parawixia dehaani</i>	7	0	0	0	0
		<i>Cyrtophora citricola</i>	0	35	0	0	0
	<i>Cyrtophora</i>	<i>Cyrtophora moluccensis</i>	3	0	0	0	0
	<i>Phintella</i>	<i>Phintella versicolor</i>	0	0	7	0	0
	<i>Neoga</i>	<i>Neoga nocticolor</i>	6	0	27	0	0
	<i>Larinia</i>	<i>Larinia</i> spp.	0	19	0	0	3
	<i>Herennia</i>	<i>Herennia multipuncta</i>	2	0	0	0	0
2	Linyphiidae	<i>Neriere sundaica</i>	11	36	0	0	0
		<i>Neriere birmanica</i>	5	4	0	0	0
		<i>Neriere</i> spp.	2	0	24	0	0
3	Tetragnathidae	<i>Mesida culta</i>	13	26	27	0	0
		<i>Mesida</i> spp. 1	1	22	19	0	0
		<i>Mesida</i> spp. 2	3	20	6	0	0
	<i>Opadomet</i>	<i>Opadometa fastigata</i>	4	0	0	0	0
	<i>Tetragnatha</i>	<i>Tetragnatha</i> spp.	18	30	0	0	41
		<i>Leucauge decorata</i> 1	25	38	0	0	0
		<i>Leucauge decorata</i> 2	6	0	0	0	0
	<i>Lecaue</i>	<i>Leucauge celebesiana</i>	23	0	0	0	0
		<i>Leucauge</i> spp.	6	5	26	0	0
	<i>Dolicogantha</i>	<i>Dolicogantha</i> spp.	5	0	0	0	0
	<i>Tylorida</i>	<i>Tylorida ventralis</i>	9	0	13	0	0
		<i>Tylorida</i> spp.	0	0	7	0	9
	<i>Guizygiella</i>	<i>Guizygiella</i> spp. 1	4	0	0	0	11
		<i>Guizygiella</i> spp. 2	0	0	0	0	15
4	Theridiidae	<i>Nihonhimea</i>	23	29	0	0	7

		<i>Nihuonhimea</i> spp.	9	0	0	0	0
	<i>Argyrodus</i>	<i>Argyrodus</i> spp.	5	0	0	0	0
	<i>Theridion</i>	<i>Theridion</i> sp.	6	5	0	0	0
	<i>Parasteatoda</i>	<i>Parasteatoda</i> sp.	12	10	0	0	0
	<i>Ruborridion</i>	<i>Ruborridion</i> spp.1	0	0	0	0	5
5	Oxyopidae	<i>Ruborridion</i> spp. 2	0	0	0	0	9
		<i>Oxyopes bharatae</i>	11	7	0	0	31
	<i>Oxyopes</i>	<i>Oxyopes bimanicus</i>	0	11	0	0	20
		<i>Oxyopes</i> spp.	0	0	0	0	26
6	Thomisidae	<i>Hamadruas</i>	0	0	5	0	0
		<i>Oxytate</i>	1	8	0	0	8
		<i>Diaea</i>	0	0	0	0	2
7	Lycosidae	<i>Indoxysticus</i>	6	10	0	0	0
		<i>Lycosa</i>	14	18	0	0	39
		<i>Lycosa</i> spp.	18	15	0	0	31
		<i>Hippasa agelenoides</i>	11	7	0	0	0
	<i>Hippasa</i>	<i>Hippasa greenalliae</i>	8	11	0	0	0
		<i>Hippasa</i> spp.	3	0	0	0	0
	<i>Wadicosa</i>	<i>Wadicosa</i> spp.	6	5	0	0	0
		<i>Pardosa birmanica</i>	23	16	9	5	18
		<i>Pardosa mysorensis</i>	12	14	0	8	0
	<i>Pardosa</i>	<i>Pardosa sumatrana</i>	35	15	0	6	23
		<i>Pardosa</i> spp.	10	12	0	0	0
8	Salticidae	<i>Plexippus</i>	24	36	11	15	8
		<i>Plexippus</i> spp.	0	0	0	0	13
	<i>Rhene</i>	<i>Rhene flavicomans</i>	12	7	0	0	0
	<i>Evarcha</i>	<i>Evarcha flavocincta</i>	10	0	0	12	0
	<i>Epocilla</i>	<i>Epocilla</i> spp.	34	12	0	8	0
	<i>Hasarius</i>	<i>Hasarius adansoni</i>	3	0	0	0	10
	<i>Thiania</i>	<i>Thiania bhamoensis</i>	15	0	21	0	0
		<i>Thiana</i> spp.	0	0	8	0	0
	<i>Telamonia</i>	<i>Telamonia dimidiata</i>	14	0	0	0	0
	<i>Phintella</i>	<i>Phintella versicolor</i>	4	15	0	0	0
	<i>Myrmarache</i>	<i>Myrmarache</i> spp.	0	23	0	0	0
	<i>Marpissa</i>	<i>Marpissa</i> spp.	13	15	0	0	2
9	Mimetidae	<i>Mimetus</i>	3	0	0	0	5
10	Clubionidae	<i>Clubiona</i>	3	3	0	0	11
11	Ganophosidae	<i>Callilepis</i>	0	13	0	0	6
		<i>Drassodes</i>	10	11	0	0	4
		<i>Sosticus</i>	13	12	0	7	0

		<i>Zelotes</i>	<i>Zelotes</i> spp.	0	16	0	0	0	0
		<i>Drassyllus</i>	<i>Drassyllus</i> spp.	6	5	0	0	0	9
		<i>Ganophosa</i>	<i>Ganophosa</i> spp.	10	14	0	9	0	0
		<i>Haplodrassus</i>	<i>Haplodrassus</i> spp.	15	14	0	16	0	0
12	Sparassidae	<i>Olios</i>	<i>Olios</i> spp.	2	0	0	0	0	0
		<i>Spariolenus</i>	<i>Spariolenus</i> spp.	7	0	0	0	0	0
13	Cheiracanthiidae	<i>Cheriacanthium</i>	<i>Cheriacanthium</i> spp.	3	5	0	3	0	0
14	Corinnidae	<i>Castianeira</i>	<i>Castianeira albopicta</i>	7	12	0	0	0	0
15	Uloboridae	<i>Uloborus</i>	<i>Uloborus</i> spp.	0	0	0	0	0	7
16	Philodromidae	<i>Philodromus</i>	<i>Philodromus</i> spp.	6	0	0	0	0	0
17	Zodariidae	<i>Acanthinozodium</i>	<i>Acanthinozodium</i> sp.	6	8	0	8	0	0
		<i>Nostera</i>	<i>Nostera lynx</i>	3	6	0	0	0	0
		<i>Storena</i>	<i>Storena cyanea</i>	3	7	0	6	0	0
18	Pholcidae	<i>Crossopriza</i>	<i>Crossopriza lyoni</i>	1	0	0	0	0	0
19	Pisauridae	<i>Dolomedes</i>	<i>Dolomedes</i> spp.	8	0	0	0	0	0
		Sub total		1001	1010	615	103		567
								Total	3296

Table 4: Overall Arthropod diversity in terms of total individuals in observed ecosystems viz., Silvicultural ecosystem, Horticultural ecosystem, Agricultural ecosystem

Ecosystems	Species level					Familial level					Ordinal level				
	SE	HE	ME	PE	RE	SE	HE	ME	PE	RE	SE	HE	ME	PE	RE
Shannon wiener index	3.409	3.332	2.091	2.193	2.644	1.887	1.919	0.939	1.416	1.869	1.152	0.322	0.412	1.221	1.682
Simpsons D	18.06	20.136	5.055	8.858	10.42	4.343	4.698	1.851	3.874	4.912	1.91	1.142	1.229	2.443	3.699
Species number	58	41	15	10	24	18	13	6	5	11	14	5	5	6	14
Margelef D	8.25	5.782	2.18	1.942	3.638	2.461	1.735	0.779	0.863	1.582	1.787	0.568	0.623	0.942	1.829
Equitability J	0.811	0.792	0.497	0.522	0.629	0.641	0.652	0.319	0.481	0.635	0.436	0.122	0.156	0.462	0.637
Berger Parker index	0.165	0.147	0.398	0.184	0.189	0.418	0.398	0.714	0.34	0.354	0.712	0.935	0.899	0.609	0.448
MacIntosch U	0.788	0.8	0.577	0.723	0.718	0.536	0.555	0.276	0.538	0.571	0.284	0.066	0.102	0.385	0.494
Brillouin level	3.295	3.241	2.037	2.027	2.556	1.85	1.888	0.919	1.336	1.825	1.131	0.314	0.399	1.168	1.657
Fisher Alpha	13.421	8.593	2.777	2.734	5.11	3.119	2.107	0.923	1.1	1.944	2.151	0.644	0.745	1.163	2.219
Q Statistic	18.948	15.566	4.612	6.561	6.789	4.062	3.07	1.256	2.419	2.939	2.525	2.392	0.901	1.904	2.118

SE; Silvicultural ecosystem, **HE;** Horticultural ecosystem, **ME;** Maize ecosystem, **PE;** Potato ecosystem, **RE;** Rice ecosystem

Table 5: Overall Arachnids diversity in terms of total individuals in observed ecosystems viz., Silvicultural ecosystem, Horticultural ecosystem, Agricultural ecosystem

Ecosystem	Species level					Familial level					Ordinal level				
	SE	HE	ME	PE	RE	SE	HE	ME	PE	RE	SE	HE	ME	PE	RE
Shannon wiener index	3.253	3.217	3.045	2.276	2.815	1.745	1.465	1.039	1.262	1.543	1.115	0.339	0.394	1.097	0.767
Simpsons D	46.960	31.011	23.574	16.465	19.634	4.683	3.540	2.181	3.812	4.071	2.050	1.200	1.244	2.487	1.587
Species number	46	32	25	11	21	10	8	5	4	7	10	4	3	5	5
Margelef D	9.017	6.341	5.312	3.352	4.911	1.859	1.363	0.893	1.018	1.619	1.723	0.657	0.473	1.004	0.943
Equitability J	0.722	0.667	0.631	0.472	0.584	0.593	0.498	0.353	0.428	0.524	0.420	0.136	0.149	0.416	0.291
Berger Parker index	0.078	0.083	0.098	0.182	0.132	0.381	0.449	0.646	0.408	0.374	0.684	0.917	0.896	0.597	0.791
MacIntosch U	0.895	0.874	0.859	0.853	0.852	0.578	0.504	0.355	0.580	0.571	0.318	0.092	0.112	0.419	0.227
Brillouin level	3.013	2.834	2.660	1.732	2.352	1.593	1.357	0.960	1.041	1.353	1.023	0.317	0.359	0.944	0.681
Fisher Alpha	25.912	13.999	11.663	10.553	12.666	2.686	1.809	1.151	1.562	2.437	2.307	0.843	0.634	1.434	1.246
Q Statistic	29.753	18.848	14.224	7.105	9.331	2.707	2.124	1.507	3.007	4.216	2.900	1.395	0.241	1.547	1.576

SE; Silvicultural ecosystem, **HE;** Horticultural ecosystem, **ME;** Maize ecosystem, **PE;** Potato ecosystem, **RE;** Rice ecosystem

Table 6: Beta diversity from 27th SMW of July, 2019 onwards till 06th SMW of February, 2020 in observed ecosystems viz., Silvicultural ecosystem, Horticultural ecosystem, Agricultural ecosystem

Ecosystems	Species level					Familial level					Ordinal level				
	SE	HE	ME	PE	RE	SE	HE	ME	PE	RE	SE	HE	ME	PE	RE
Whittaker Bw	1.17	1	0.128	0.343	0.487	0.87	0.733	0.154	0.25	0.231	0.418	0.212	0.579	0.111	0.297
Cody Bc	77.5	42.5	4.5	1.5	11	11	7	0.5	0.5	2.5	7	1.5	1.5	0.5	2
Routledge Br	0.117	0.153	0.008	0	0.039	0.102	0.199	0	0	0	0	0	0.19	0	0
Routledge Bi	0.504	0.549	0.085	0.223	0.295	0.434	0.444	0.134	0.149	0.158	0.192	0.169	0.289	0.088	0.168
Routledge Be	1.656	1.732	1.089	1.25	1.343	1.543	1.558	1.144	1.16	1.171	1.211	1.185	1.335	1.092	1.183
Wilson & Shmida Bt	1.699	1.328	0.181	0.134	0.442	1.143	0.933	0.115	0.125	0.308	0.709	0.364	0.474	0.111	0.432

SE; Silvicultural ecosystem, **HE;** Horticultural ecosystem, **ME;** Maize ecosystem, **PE;** Potato ecosystem, **RE;** Rice ecosystem