Sertifikat

Diberikan kepada

Parluhutan Siahaan

sebagai

PEMAKALAH

Dalam kegiatan Seminar Nasional
"*Diseminasi Hasil-hasil Penelitian Dosen* FMIPA UNSRAT"
yang diselenggarakan secara daring pada:

Jumat, 4 Desember 2020

Ketua Lembaga Penelitian dan Pengabdian Masyarakat
Universitas Sam Ratulangi

Prof. Dr. Charles L. Kaunang, MS
NIP. 195910181986031002

Dekan Fakultas MIPA
Universitas Sam Ratulangi

Prof. Dr. Benny Pinontoan, MSc.
NIP. 196606041995121001

Seminar Nasional
"Diseminasi Hasil-hasil Penelitian Dosen FMIPA Universitas Sam Ratulang"

Keragaman dan Kelimpahan Serangga di Pertanaman Padi Sawah (*Oryza sativa* L.) di Kecamatan Tondano Timur, Kabupaten Minahasa

PARLUHUTAN SIAHAAN

Saroyo Sumarto; & Marnix L. D. Langoy

Biology Department, Sam Ratulangi University

Introduction

Rice Field
(*Oryza Sativa*)

Insect attack

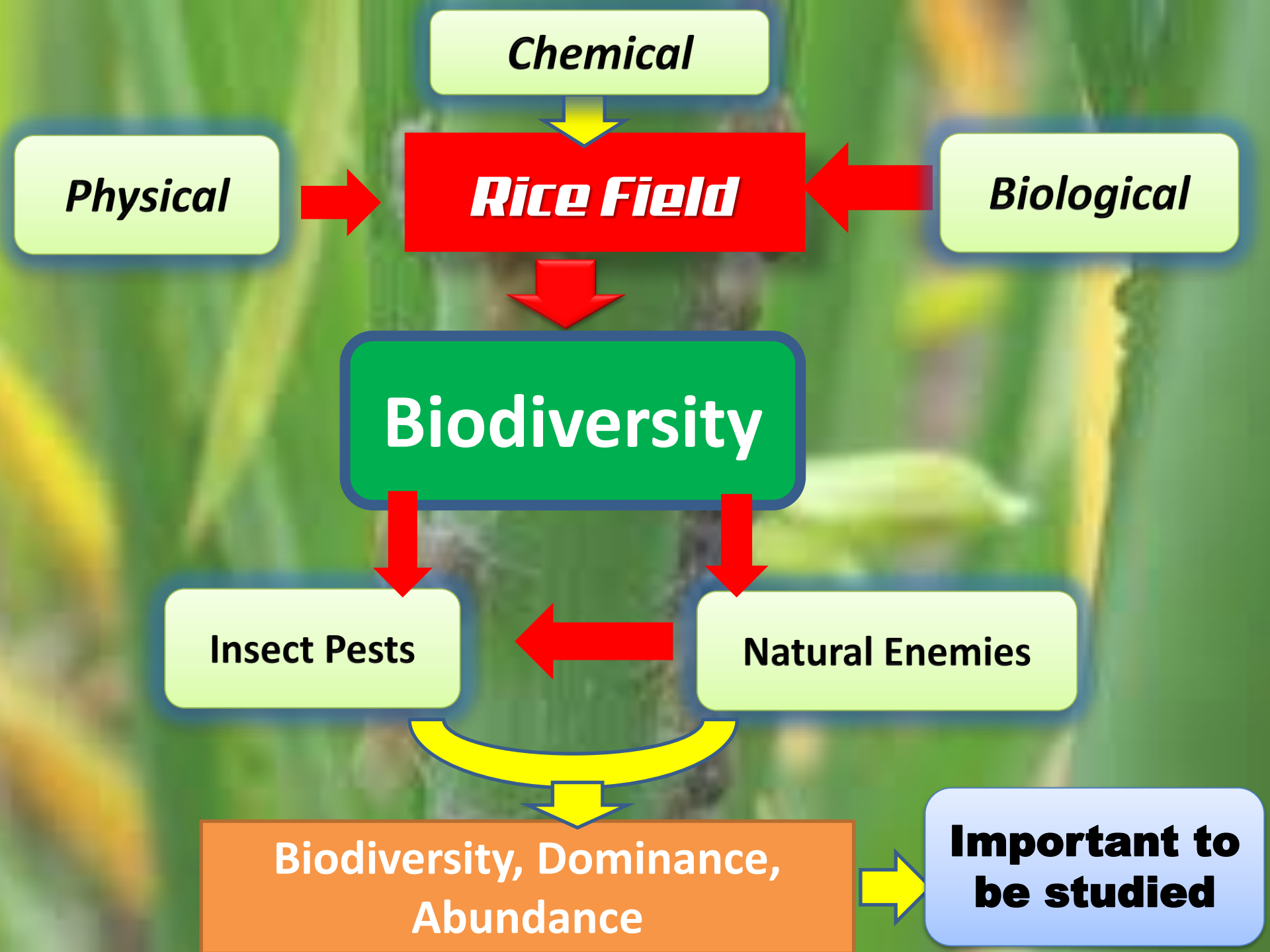
synthetic pesticides

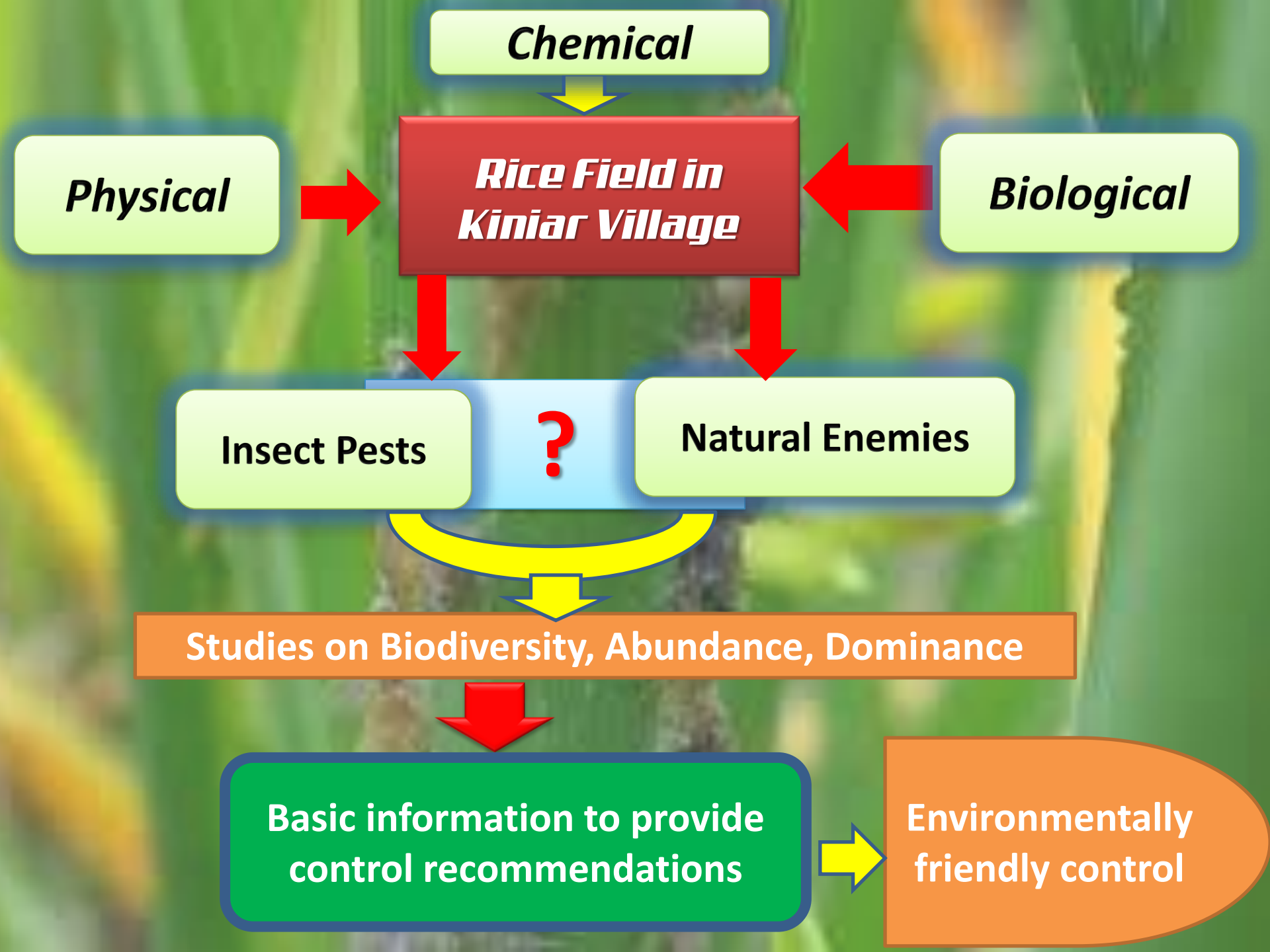
Low production

Import

Rice Field Ecosystem

Pests and Natural Enemies


Chemical
Physical
Rice Field
Biological
Biodiversity
Insect Pests
Natural Enemies
Biodiversity, Dominance, Abundance
Important to be studied


Chemical
Physical
Rice Field in Kiniar Village
Biological
Insect Pests
?
Natural Enemies
Studies on Biodiversity, Abundance, Dominance
Basic information to provide control recommendations
Environmentally friendly control

METHODS

Rice Fields
(3 Location)

- **Location → Purposive random sampling**
- **10 Plots 1x1 m / Location**
- **Sweep net**
- **Repeat 3 X**

collected, identified and counted

Diversiy: → Shannon-Wiener

$$H' = -\sum_{n=1}^{s} pi\ lnpi$$

Abundance: →

$$\text{Relative Abundance (\%)} = \frac{\text{Total no. of each species}}{\text{Total no. of all species}} \times 100$$

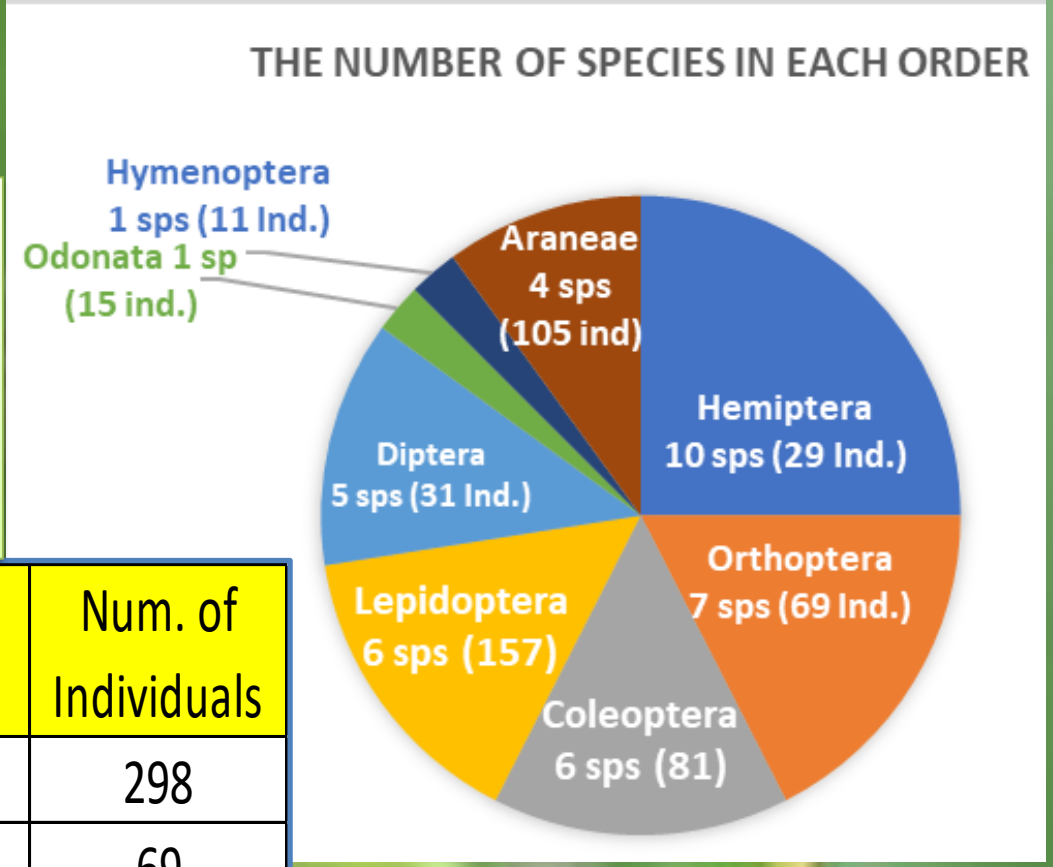
Dominance: →

$$D = \Sigma(ni/\mathrm{N})^2$$

Results & Discussion

Order = 8
Family = 29
Species = 40
Individuals = 803

Ordo	Num. of Family	Num. of Species	Num. of Individuals
Hemiptera	7	10	298
Orthoptera	4	7	69
Coleoptera	4	6	81
Lepidoptera	3	6	157
Diptera	5	5	31
Odonata	1	1	15
Hymenoptera	1	1	11
Araneae	4	4	105

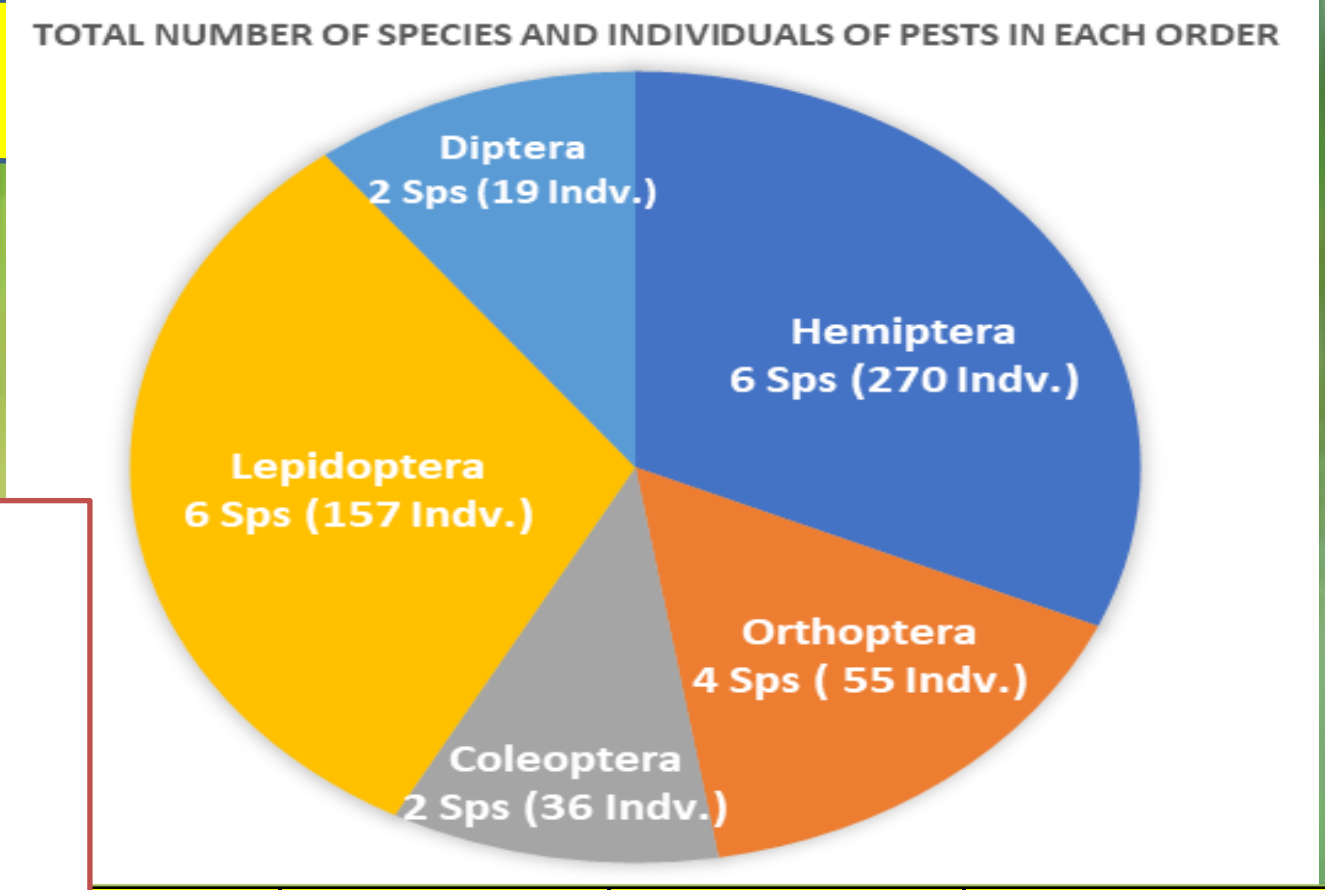


Total Number, Average of Individuals / m2 and Abundance of Insects and Spiders in Rice Fields in Kiniar Village

Order	Family	Spesies	Number of Individual	Average/m^2	Abundance (%)
Hemiptera	Pentatomidae	*Eurydema pulchrum*	20	0,67	2,61
		Scotinophara coarctata	43	1,43	5,61
		Nezara viridula	14	0,47	1,83
		Zicrona Sp.	2	0,07	0,26
	Alydidae	*Leptocorisa acuta.*	155	5,17	20,21
	Cicadellidae	*Nephotetix virescens*	37	1,23	4,82
	Rhyparochromidae	*Pamera bilobata*	4	0,13	0,52
	Lygaeidae	*Lygaeus* Sp.	1	0,03	0,13
	Reduviidae	*Rhinocoris* Sp.	2	0,07	0,26
	Gerridae	*Gerris adelaidis*	20	0,67	2,61
Orthoptera	Tettigoniidae	*Ruspolia* Sp.	4	0,13	0,52
		Conocephalus longipennis	3	0,10	0,39
	Acrididae	*Locusta migratoria*	9	0,30	1,17
		Valangan nigricornis	6	0,20	0,78
		Oxya chinensis	25	0,83	3,26
	Pyrgomorphidae	*Atracomorpha crenulata*	15	0,50	1,96
	Gryllidae	*Gryllus* Sp.	7	0,23	0,91

Order	Family	Spesies	Number of Individual	Average/m^2	Abundance (%)
Coleoptera	Coccinellidae	*Coccinella* Sp.	24	0,80	3,13
		Cheilomenes sexmaculata	3	0,10	0,39
	Chrysomelidae	*Aulacophora dorsalis*	32	1,07	4,17
		Aulacophora similis	4	0,13	0,52
	Staphyllinidae	*Paederus fuscipes*	17	0,57	2,22
	Cerambycidae	*Pterolophia uniformis*	1	0,03	0,13
Lepidoptera	Crambidae	*Cnaphalocrocis medinalis*	14	0,47	1,83
		Schircophaga incertulas	18	0,60	2,35
		Schircophaga inotata	15	0,50	1,96
		Nyimphula depunctalis	104	3,47	13,56
	Nymphalidae	*Melanitis leda*	4	0,13	0,52
	Lycaenidae	*Lampides boeticus*	2	0,07	0,26
Diptera	Muscidae	*Atherigona oryzae*	15	0,50	1,96
	Syrphidae	*Episyrphus* Sp.	2	0,07	0,26
	Sciomyzidae	*Sepedon* Sp.	4	0,13	0,52
	Ephydridae	*Hydrellia philippina*	4	0,13	0,52
	Asilidae	*Hymenia* Sp.	6	0,20	0,78
Odonata	Agrionidae	*Agriocnemis femina oryzae*	15	0,50	1,96
Hymenoptera	Formicidae	*Dolichoderus* Sp.	11	0,37	1,43
Araneae	Tetragnathidae	*Tetraghnata* Sp.	74	2,47	9,65
	Oxyopidae	*Oxyopes javanus*	13	0,43	1,69
	Linyphiidae	*Atypena* Sp.	11	0,37	1,43
	Araneidae	*Argiope cetunulata*	7	0,23	0,91

PEST



5 Orders
13 Families
19 Spesies
537 Individuals

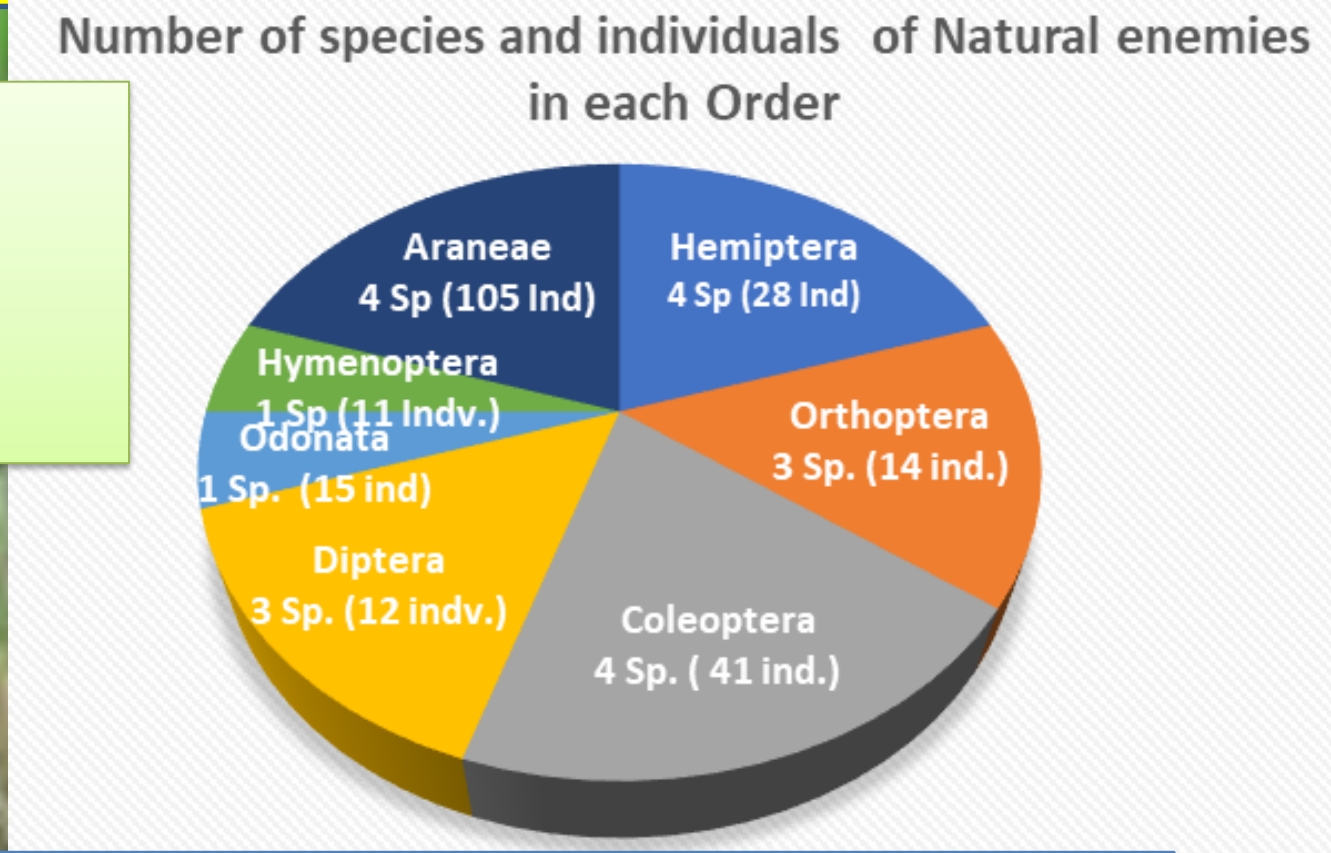
Order	Num. of Family	Num. of Spesies	Num. of Individuals
Hemiptera	4	6	270
Orthoptera	2	3	55
Coleoptera	2	2	36
Lepidoptera	3	6	157
Diptera	2	2	19

Total Number, Average of Individuals / m2 and Abundance of Pests in Rice Fields in Kiniar Village

Ordo	Family	Spesies	Jumlah Individu	Rata-rata	A(%)
Hemiptera	Pentatomidae	*Eurydema pulchrum*	20	0,67	3,72
		Scotinophara coarctata	43	1,43	8,01
		Nezara viridula	14	0,47	2,61
	Alydidae	*Leptocorisa acuta*	155	5,17	28,86
	Cicadellidae	*Nephotetix virescens*	37	1,23	6,89
	Lygaeidae	*Lygaeus* Sp.	1	0,03	0,19
Orthoptera	Acrididae	*Locusta migratoria*	9	0,30	1,68
		Valangan nigricornis	6	0,20	1,12
		Oxya chinensis	25	0,83	4,66
	Pyrgomorphidae	*Atracomorpha crenulata*	15	0,50	2,79
Coleoptera	Chrysomelidae	*Aulacophora dorsalis*	32	1,07	5,96
		Aulacophora similis	4	0,13	0,74
Lepidoptera	Crambidae	*Cnaphalocrocis medinalis*	14	0,47	2,61
		Schircophaga incertulas	18	0,60	3,35
		Schircophaga inotata	15	0,50	2,79
		Nyimphula depunctalis	104	3,47	19,37
	Nymphalidae	*Melanitis leda*	4	0,13	0,74
	Lycaenidae	*Lampides boeticus*	2	0,07	0,37
Diptera	Muscidae	*Atherigona oryzae*	15	0,50	2,79
	Ephydridae	*Hydrellia philippina*	4	0,13	0,74

Natural Enemies

Order = 7
Family = 22
Species = 20
Individuals = 230



Order	Num. of Family	Num. of Spesies	Num. of Individuals
Hemiptera	4	4	28
Orthoptera	2	3	14
Coleoptera	3	4	41
Diptera	3	3	12
Odonata	1	1	15
Hymenoptera	1	1	11
Araneae	4	4	105

Order	Family	Spesies	Number of Individuals	Average /m^2	A (%)
Hemiptera	Pentatomidae	*Zicrona* Sp.	2	0,07	0,87
	Rhyparochromidae	*Pamera bilobata*	4	0,13	1,74
	Reduviidae	*Rhinocoris* Sp.	2	0,07	0,87
	Gerridae	*Gerris adelaidis*	20	0,67	8,70
Orthoptera	Tettigoniidae	*Ruspolia* Sp.	4	0,13	1,74
		Conocephalus longipennis	3	0,10	1,30
	Gryllidae	*Gryllus* Sp.	7	0,23	3,04
Coleoptera	Coccinellidae	*Coccinella* Sp.	24	0,80	10,43
		Cheilomenes sexmaculata	3	0,10	1,30
	Staphyllinidae	*Paederus fuscipes*	17	0,57	7,39
	Cerambycidae	*Pterolophia uniformis*	1	0,03	0,43
Diptera	Syrphidae	*Episyrphus* Sp.	2	0,07	0,87
	Sciomyzidae	*Sepedon* Sp.	4	0,13	1,74
	Asilidae	*Hymenia* Sp.	6	0,20	2,61
Odonata	Agrionidae	*Agriocnemis femina oryzae*	15	0,50	6,52
Hymenoptera	Formicidae	*Dolichoderus* Sp.	11	0,37	4,78
Araneae	Tetragnathidae	*Tetraghnata* Sp.	74	2,47	32,17
	Oxyopidae	*Oxyopes javanus*	13	0,43	5,65
	Linyphiidae	*Atypena* Sp.	11	0,37	4,78
	Araneidae	*Argiope catenulata*	7	0,23	3,04

Table 4. Comparison of Community Composition between Pests and Natural Enemies

	Total	Pest	Natural Enemy
Number of Order	8	5	7
Number of Family	29	12	18
Number of Spesies	40	20	20
Total Number of Individuals	803	573	230
Average indiv./m^2	25,57	17,9	7,67
Diversity Index	2,99	2,36	2,42
Dominance Index	0,08	0,14	0,14

Conclussion

- There are 40 species of insects and spiders from 29 families, and eight orders which are divided into two classes in the present village rice fields with a composition of 20 species of pests and 20 species of natural enemies.
- The diversity index obtained was 2.99 for all species, 2.36 for insect pests and 2.42 for natural enemies.
- Abundance index shows *Leptocorisa acuta* as a pest with the highest index value of 28.86% while *Tetraghnata* Sp. as a natural enemy with the highest index value, namely 32.17%.
- The dominance index obtained is 0.08, so there are no insect species that dominate the rice fields of Kiniar Village.

THANK YOU