Table 1: Natural enemy species introduced on water hyacinth, into South Africa.

Family	Species	Common name	Year of introduction
Curculionidae	*Neochetina eichhorniae* Warner	Water hyacinth weevil	1974
Curculionidae	*Neochetina bruchi* Hustache	Chevroned hyacinth weevil	1990
Pyralidae	*Niphograpta albiguttalis* Warren	Water hyacinth moth	1990
Miridae	*Eccritotarsus catarinensis* Carvalho	Water hyacinth sap-sucking bug	1996
Acarina: Galumnidae	*Orthogalumna terebrantis* Wallwork	Water hyacinth mite	1989
Pathogen	*Cercospora piaropi & C. rodmanii* Tharp	Cercospora	1986

Table 2: The different parameters of the water hyacinth plant and the biological control insects collected at Hammarsdale Dam per individual plant, per sample.

Plant parameters	Biological control insect parameters
Wet weight	Number *Neochetina eichhorniae* and *N. bruchi* present, male and female
Maximum petiole length	Presence of the *Neochetina eichhornia* and *N. bruchi* larvae
Root length	Number of weevil feeding scars on leaf 2
Leaf 2 petiole length	Number of *E.catarinensis* frass marks on leaf 3
Area of leaf 2	Number of *E.catarinensis* nymphs
Number of daughter plants	Number of *E.catarinensis* adult
Number of petioles above water surface	Number of *O.terebrantis* on leaf 4
Number of petioles below water surface	The estimated percentage of the leaf damaged by the mite

Table 3a : One-way analysis of variance (ANOVA) on the plant parameters and pH, N and P for the three sites at Hammarsdale Dam.

Site	Mean wet weight per plant (kg)	Mean maximum petiole length per plant (mm)	Mean root length per plant (mm)	Shoot: Root ratio per plant	Petiole leaf 2 per plant (mm)	Leaf 2 area per plant	Daughter plants per plant	pH	N mg/*l*	P mg/*l*
1	0.716 b	573.3 a	322.7 b	1: 1.901a	402.5a	125.6 a	2.487 a	7.123 c	0.418 c	0.399 b
2	0.835 a	589.4 a	324.4 b	1: 1.958a	418.1a	129.6 a	2.633 a	7.579 b	1.561 a	0.731 a
3	0.571 c	577.1 a	344.4 a	1: 1.868a	396.3a	97.2 b	0.933 b	7.638 a	0.968 b	0.207 c
SEM *	0.025	9.09	7.12	0.06	13.35	3.44	0.140	0.025	0.054	0.021
F Probability	$p< 0.001$	$p= 0.423$	$p= 0.057$	$p= 0.558$	$p= 0.493$	$p< 0.001$	$p< 0.001$	$p< 0.001$	$p< 0.001$	$p< 0.001$
LSD (5%) +	0.069	-	-	-	-	3.44	0.390	0.069	0.151	0.060

*SEM is the standard error of the mean

+ Means were seperated using Fishers protected t-test, least significant difference at the 5% level.

Means per column with different letters were significantly different at the 5% level as indicated.

Table 3b: One-way analysis of variance (ANOVA) on the insect parameters for the three sites at Hammarsdale Dam.

Site	Mean number of insects per plant				Number of weevil feeding scars	*Eccritotarsus catarinensis* frass marks on leaf 3	*E. catarinensis* nymphs on plant	*E. catarinensis* adults on plant
	Neochetina eichhorniae Male	*N.eichhorniae* Female	*N. bruchi* Male	*N. bruchi* Female				
1	0.271 b	0.245 b	0.044 c	0.061 b	3.405 b	2.753 b	0.824 b	0.684a
2	0.165 c	0.149 c	0.091 b	0.095 b	2.595 c	2.490 c	0.793 b	0.506 b
3	0.454 a	0.394 a	0.212 a	0.199 a	4.424 a	3.312 a	1.088 a	0.763 a
SEM *	0.064	0.035	0.023	0.024	0.096	0.129	0.094	0.076
F Probability	p< 0.001	p< 0.001	p< 0.001	p< 0.001	p< 0.001	p< 0.001	p= 0.052	p= 0.048
LSD (5%) +	0.101	0.096	0.064	0.065	0.267	0.361	-	0.209

*SEM is the standard error of the mean

+means were seperated using Fishers protected t-test, least significant difference at the 5% level.

Means per column with different letters were significantly different at the 5% level as indicated.

Table 4a: One-way analysis of variance (ANOVA) on the different applications of the laboratory study when measuring plant parameters

Concentration	Mean wet weight per plant (kg)	Mean maximum petiole length per plant (mm)	Mean root length per plant (mm)	Petiole leaf 2 per plant (mm)	Number of leaves per plant	Leaf 2 area per plant	Daughter plants per plant	Log of feeding damage #
Low	0.128 a	423 a	471 a	355 a	36.17 a	129.3 a	5.58 a	5.69 a (296)
Medium	0.108 a	417 a	414 a	363 a	35.58 a	107.9 a	3.92 ab	5.89 a (361)
High	0.119 a	433 a	437 a	378 a	36.58 a	114.0 a	3.25 b	5.90 a (365)
SEM *	0.903	22	18.7	24.7	0.802	8.55	0.625	0.183
F Probability	p=0.314	p=0.879	p=0.120	p=0.794	p=0.680	p=0.211	P=0.041	p=0.674
LSD + (5%)	-	-	-	-	-	-	1.833	-
CV%	26.4%	18%	14.7 %	23.4 %	7.7%	25.3 %	51 %	9.4 %
Grand mean	118.3	424	441	365	36.11	117.1	4.25	5.83

Means were used. Actual values in ( ). Ln Damage: y = ln x and transferred value $x = e^{y}$

* SEM is the standard error of the mean

+ means were seperated using Fishers protected t-test, least significant difference at the 5% level.

Means per column with different letters were significantly different at the 5% level as indicated.

Table 4b: One-way analysis of variance (ANOVA) on the insects parameters of the laboratory study

Natural enemy	Mean wet weight per plant (kg)	Mean maximum petiole length per plant (mm)	Mean root length per plant (mm)	Length, petiole leaf 2 per plant (mm)	Mean number of leaves per plant	Leaf 2 area per plant	Number of daughter plants per plant	Log of damage per plant #
Neochetina eichhorniae	111.6 a	366 b	414 b	302 b	33.33 b	90.8 c	3.78 a	5.33 b (296)
N. bruchi	120.9 a	377 b	460 ab	297 b	35.11 b	92.5 c	3.56 a	5.15 b (172)
Eccritotarsus catarinensis	99.8 a	461 a	401 b	419 a	35.78 b	124.6 b	3.89 a	7.00 a (1097)
Control	140.8 a	494 a	487 a	443 a	40.22 a	160.4 a	5.78 a	No damage
SEM	10.42	25.4	21.6	28.5	0.926	9.87	0.722	0.183
F Probability	P=0.066	p=0.003	p=0.034	p=0.001	p<0.001	p< 0.001	p=0.139	p< 0.001
LSD (5%)	-	74.5	-	83.5	2.715	28.96	-	0.547
CV%	26.4%	18 %	14.7 %	23.4%	7.7 %	25.3 %	51 %	9.4 %
Grand mean	118.3	424	441	365	36.11	117.1	4.25	5.83

Means were used. Actual values in ( ). Ln Damage: $y = \ln x$ and transferred value $x = e^{y}$

*SEM is the standard error of the mean

+ Means were seperated using Fishers protected t-test, least significant difference at the 5% level

Means per column with different letters were significantly different at the 5% level as indicated

Table 5: The different concentrations used in the laboratory study and the mean values for the different nutrients throughout the study period.

Concentration	N (mg/l)	Classification according to Water Quality Guidelines (DWAF, 1996)	P (mg/*l*)	Classification according to Water Quality Guidelines (DWAF, 1996)
Low	9.59	Eutrophic	20,29	Eutrophic
Medium	51,9	Hypertrophic	132	Hypertrophic
High	101,4	Hypertrophic	241,8	Hypertrophic