



*An integrated pest management
program for asparagus and
artichokes in Peru*



ica, peru

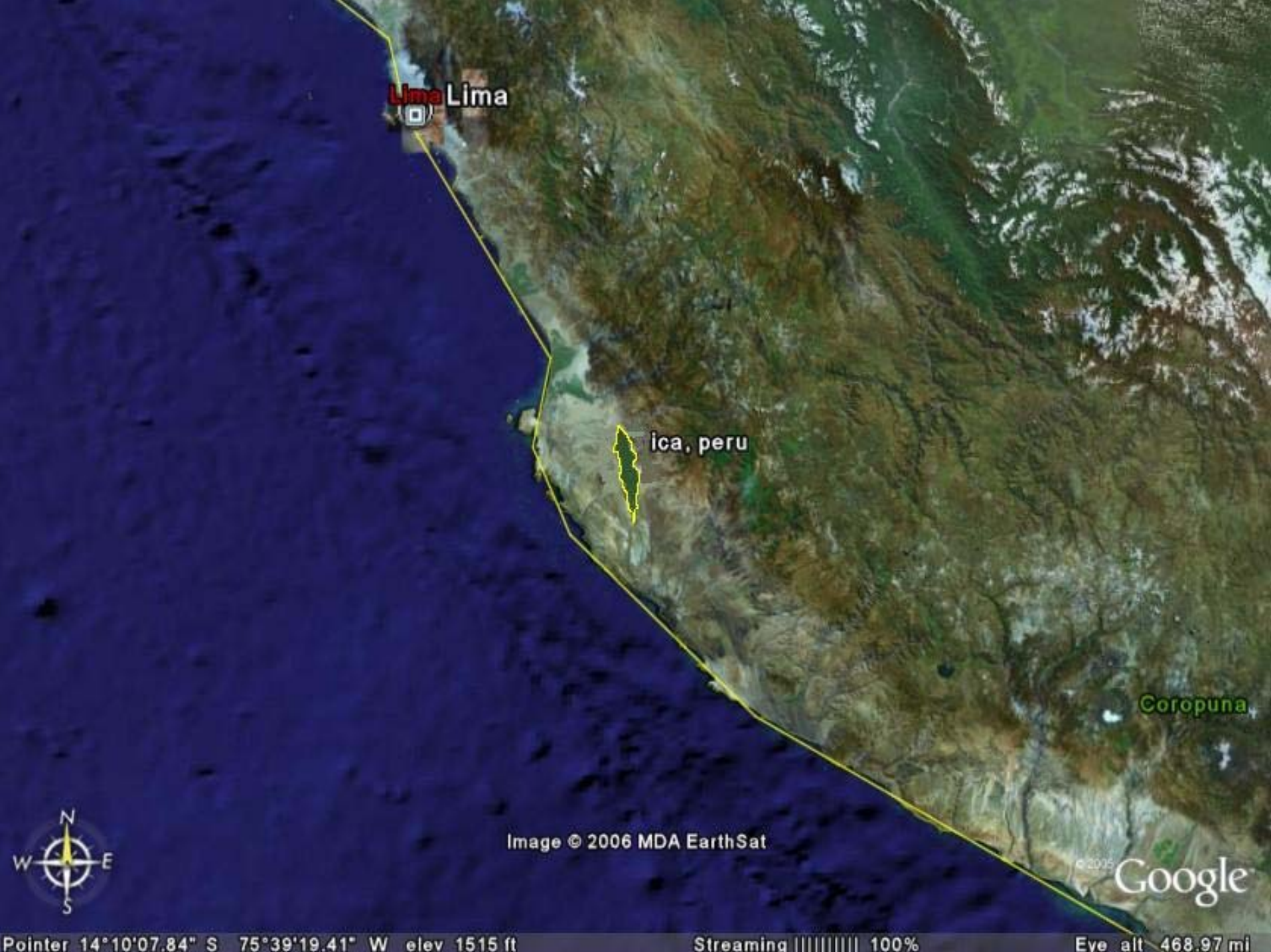
Image © 2006 MDA EarthSat

© 2005 Google

Pointer 14°10'07.84" S 75°39'19.41" W

Streaming ||||| 100%

Eve alt 3349.14 mi



Lima Lima

ica, peru

Coropuna

Image © 2006 MDA EarthSat

© 2005 Google



Pointer 14°10'07.84" S 75°39'19.41" W elev 1515 ft

Streaming ||||| 100%

Eve alt 468.97 mi



ica, peru

Ica

Image © 2006 MDA EarthSat
Image © 2006 DigitalGlobe

© 2006 Google



Pointer 14°10'07.84" S 75°39'19.41" W elev 1403 ft

Streaming ||||| 100%

Eye alt 51.76 mi

os Tajahuana

La Casimira

Panteon de Los Chinos



Image © 2006 DigitalGlobe

© 2005 Google

Pointer 14°11'58.40" S 75°42'08.55" W

Streaming 100%

Eve alt 25839 ft

harvest



One week after harvest



Two weeks after harvest



Four weeks after harvest



INTEGRATED PEST MANAGEMENT

1. SCOUTING
2. USE OF LIGHT AND COLOR TRAPS
3. MANUAL WEED CONTROL
4. USE OF ORGANIC AND MINERAL FUNGICIDES
5. EXCLUSIVE USE OF WATER FROM OUR WELLS
6. USE OF BENEFICIAL INSECTS

SCOUTING



SCOUTING



PLAGAS/N.-		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total	Prom	Porc	Max
Thrips	N° Individuos	24	8	27	14	8	10	9	2	3	9	8	3	9	1	4	8	4	3	7	2	163	2.71		
Mosca Blanca	Grado (0-5)	2	3	3	2	1	3	2	2	1	1	3	2	2	1	2	2	2	1	1	1	37	1.87		
Araña Roja	Grado (0-5)	1																							
Pulgón	Grado (0-5)																								
Copitarcia	Posturas/Pta																		1			2	0.1		
	Pequeñas		1																1			1	0.01		
	Medianas																					1	0.01		
	Grandes																								
Heliothis	% Incid. de daño																								
	Posturas/Pta																								
	Pequeñas																								
	Medianas																								
Spodoptera	Grandes																								
	% Incid. de daño																								
	Posturas/Pta																								
	Pequeñas																								
Minadores	Medianas																								
	Grandes																								
	% Incid. de daño																								
	Area afec. (Grado)																								
Scarabidos	N - de Adultos																								
	% Incid. de daño																								
	Capitulo																								
	Hoja / Cogollo																								
Gusano de Tierra	Suelo																								
	% Incid. de daño														1										
	Larvas N° de Indiv.																					1	0.01		
	% Incid. de daño																								
Euchistus																									

INSECTOS BENEFICOS

Chrysopas	Adultos/Pta																								
	Posturas/Pta																								
	Individ. /Pta																								
Nabis Punctipennis	Nº Ind./Pta																								
Metacanthus tenellus	Nº Ind./Pta																								
Geocoris annulepis	Nº Ind./Pta																								
Orius insidiosus	Nº Ind./Pta																								
Arañas	Nº Ind./Pta																								
Tijeretas	Nº Ind./Pta	4	4	6	3	2	4	4	2		1	3	3	4	5	2	2	4	6	3	3	68	1.13		
Coccinellidos	Nº Ind./Pta																								

ENFERMEDADES

Oidium	Tercio Superior(G)																								
	Tercio Medio (G)																								
	Tercio Inferior(G)																								
Pudrición	Cogollo																								
	Cuello - peciolo																								
	Otros																								
Nematodos	° Grado																								
Estado de Crecimiento	Nº Hijuelos/Pta																								
	Nº Capítulos/Pta																								

Cosecha

Total de Capítulos																									
Capítulos sanos																									
Capítulos dañados																									
Trips/Capt																									
Scarabidos																									
Lepidopteros																									
Deficiencia																									
Fotos																									

Observaciones: Se observa encharcamiento en zonas no bien drenadas, a la que se observa pudrición de plantas.

7 3 2006

LIGHT TRAPS



COLOR TRAPS



COLOR TRAPS



1 3 2006

MANUAL WEED CONTROL



MINERAL FUNGICIDES



MINERAL FUNGICIDES



EXCLUSIVE USE OF WATER FROM OUR WELLS



EXCLUSIVE USE OF WATER FROM OUR WELLS



LABORATORY



LABORATORY



LABORATORY



LABORATORY





1º <i>Chrysoperla externa</i>	Plagas que controla	Estadio de la plaga	Nº de Ind. A liberar/ ha
	Copitarsia consueta	Huevos, Larvas I y II estadio.	5 millares /ha (2 a 3 liberaciones)
	Spodoptera Frujiperda	Huevos, Larvas I y II estadio.	5 millares /ha (2 a 3 liberaciones)
	Bemisia tabaci (Mosca Blanca)	Huevos y Ninfas	3 millares/ha



2° <i>Chrysoperla asoralis</i>	Plagas que controla	Estadio de la plaga	Nº de Ind. A liberar/ ha
	<i>Prodiplosis longifilia</i>	Huevos y Larvas	4 millares /ha (2 a 3 liberaciones)
	<i>Aphis gossipii</i>	Ninfas	2 millares / ha
	<i>Mizus persicae</i> (pulgon)		



3° <i>Trichogramma spp</i>	Plagas que Controla	Estadio de la plaga	N° de Ind. A liberar/ ha
	<i>Copitarsia consueta</i>	Huevos	50 pulg /ha (2 Liberaciones)



4º <i>Podisus sp</i>	Plagas que controla	Estadio de la plaga	Nº de Ind. A liberar/ ha
	<i>Copitarsia consueta</i>	Larvas I,II,III	2 mil Und./ha
	<i>Spodoptera frujiperda</i>	Larvas I,II,III	2 mil Und./ha
	<i>Heliothis virescens</i>	Larvas I,II,III	2 mil Und./ha



5°	Plagas que controla	Estadio de la plaga	N° de Ind. A liberar/ ha
Orius sp	<i>Thrips spp</i>	Huevos y Ninfas	No estipulado
	<i>Spodoptera frujiperda</i>	Huevos	No estipulado



<i>6° Navis sp</i>	Plagas que Controla	Estadio de la plaga	Nº de Ind. A liberar/ ha
	<i>Copitarsia consueta</i>	Huevos y Larvas I	No especificado
	<i>Spodoptera frujiperda</i>	Huevos y Larvas I	No especificado

Deploying beneficial insects



Deploying beneficial insects



Deploying beneficial insects



Beneficial insects in action



Beneficial insects in action



Beneficial insects in action



Beneficial insects in action



PESTICIDE USE REDUCTION ON OUR ASPARAGUS CROPS

COMPANY NAME : IQF DEL PERU S.A.
 FARM NAME : TACARACA
 CROP AREA: 100 hectares = 247 acres

YEAR 2000
Quantity

YEAR 2001
Quantity

YEAR 2002
Quantity

YEAR 2003
Quantity

YEAR 2004
Quantity

YEAR 2005
Quantity

INSECTICIDES

Chlorpyrifos	lt.	869.40	92.75	14.00	14.30	0.00	39.68
Chlorpyrifos	kg.	11,970.00	1,200.00	275.00	315.50	150.00	1,520.00
Cypermethrin	lt.	0.00	0.00	4.24	80.57	43.74	138.39
Dimethoate	lt.	46.75	119.40	3.78	0.00	0.00	87.55
Methomyl	kg.	114.63	94.72	38.50	2.60	1.50	14.70
Tebufenozide	lt.	0.00	1.45	6.50	15.30	19.62	42.67

REDUCTION
2001/2000

REDUCTION
2002/2000

REDUCTION
2003/2000

REDUCTION
2004/2000

REDUCTION
2005/2000

89%
90%

98%
98%

98%
97%

100%
99%

95%
87%

17%

92%
66%

100%
98%

100%
99%

87%



PLANT HEALTH DEPARTMENT
JAN - 2006

PESTICIDE USE REDUCTION ON OUR ASPARAGUS CROPS

COMPANY NAME : IQF DEL PERU S.A.
 FARM NAME : TACARACA
 CROP AREA: 100 hectares = 247 acres

YEAR 2000 Quantity	YEAR 2001 Quantity	YEAR 2002 Quantity	YEAR 2003 Quantity	YEAR 2004 Quantity	YEAR 2005 Quantity
-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

FUNGICIDES

Fosetyl-Al	kg.	87.00	145.50	136.00	53.00	117.35	72.55
Mancozeb	kg.	3,204.25	2,337.75	1,480.10	1,803.10	1,848.20	1,894.68
Propineb	kg.	0.00	0.00	0.00	366.80	30.90	384.10
Sulfur	kg.	153,947.00	56,088.00	7,997.00	9,102.00	7,646.00	8,780.00



REDUCTION 2001/2000	REDUCTION 2002/2000	REDUCTION 2003/2000	REDUCTION 2004/2000	REDUCTION 2005/2000
27%	54%	39%	42%	17%
64%	95%	44%	95%	41%

PLANT HEALTH DEPARTMENT
 JAN - 2006

PESTICIDE USE REDUCTION ON OUR ASPARAGUS CROPS

COMPANY NAME : IQF DEL PERU S.A.
 FARM NAME : TACARACA
 CROP AREA: 100 hectares = 247 acres

YEAR 2000 Quantity	YEAR 2001 Quantity	YEAR 2002 Quantity	YEAR 2003 Quantity	YEAR 2004 Quantity	YEAR 2005 Quantity
-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	-----------------------

HERBICIDES

Fluazifop-butyl	lt.	32.40	38.25	14.20	0.00	0.00	11.00
Glyphosate	lt.	2,349.70	1,606.00	1,085.00	778.10	1,095.00	2,055.95
Linuron	lt.	0.00	11.84	43.61	4.13	45.66	56.75
Metribuzin	lt.	47.90	84.50	143.30	81.15	98.49	103.18
Metribuzin	kg.	36.30	0.00	0.00	0.00	0.00	0.00
Paraquat	lt.	677.50	1,030.00	0.00	23.00	8.00	11.00



REDUCTION 2001/2000	REDUCTION 2002/2000	REDUCTION 2003/2000	REDUCTION 2004/2000	REDUCTION 2005/2000
------------------------	------------------------	------------------------	------------------------	------------------------

32%	56%	100%	100%	66%
	54%	67%	53%	13%
100%	100%	100%	100%	100%
	100%	97%	99%	98%

PLANT HEALTH DEPARTMENT
 JAN - 2006

Success in Pesticide Reduction

- 90% Reduction in Pesticide use.
- 90% Reduction in Fungicide use.
- 75% Reduction in Herbicide use.