

APPENDIX 1. SURVEY PARTICIPANTS

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APPENDIX 2. ITINERARY

Day	Date	Route	Overnight
1	1 Apr	<i>Pakistani team cross Taftan/Mirjaveh border</i> Zahedan-Saravan	Saravan
2	2 Apr	Saravan (<i>checked SPOT-VGT points</i>)	Saravan
3	3 Apr	Iranshahr (<i>checked SPOT-VGT points</i>)	Iranshahr
4	4 Apr	Iranshahr (<i>checked SPOT-VGT points</i>)	Iranshahr
5	5 Apr	Iranshahr (<i>checked SPOT-VGT points</i>)	Iranshahr
6	6 Apr	Iranshahr to Chabahar (<i>checked SPOT-VGT points</i>)	Chabahar
7	7 Apr	Chabahar (<i>checked SPOT-VGT points, Dashtiari</i>)	Chabahar
8	8 Apr	Chabahar (<i>checked SPOT-VGT points, Kahir & coast</i>)	Chabahar
9	9 Apr	Chabahar (<i>checked SPOT-VGT points, Vashnum & Gowatar</i>)	Chabahar
10	10 Apr	Chabahar to Jask (<i>checked SPOT-VGT points, Zarabad & Jask</i>)	Jask
11	11 Apr	Jask to Bandar Abbas (<i>checked SPOT-VGT points and survey</i>)	Bandar
12	12 Apr	Bandar to Kahnoj and Jazmurian (<i>checked SPOT-VGT points, Jaz</i>)	Iranshahr
13	13 Apr	Iranshahr to Zahedan	Zahedan
14	14 Apr	<i>Prepare the first part survey results</i>	Zahedan
15	15 Apr	<i>Prepare the first part results and Summary to send by e-mail</i>	Zahedan
16	16 Apr	<i>I.R Iran and Pakistan teams cross Taftan border</i> (<i>checked SPOT-VGT points, Taftan</i>)	Dalbandin
17	17 Apr	Dalbandin to Nushki (<i>checked SPOT-VGT points</i>)	Nushki
18	18 Apr	Nushki to Kharan (<i>checked SPOT-VGT points, Kharan</i>)	Kharan
19	19 Apr	Nushki (<i>checked SPOT-VGT points, Norooz Kalat</i>)	Kharan
20	20 Apr	Kharan to Panjgur (<i>checked SPOT-VGT points</i>)	Panjgur
21	21 Apr	Panjgur to Turbat	Turbat
22	22 Apr	Turbat (<i>checked SPOT-VGT points</i>)	Turbat
23	23 Apr	Turbat to Pasni	Pasni
24	24 Apr	Pasni (<i>survey breeding areas</i>)	Gwadar
25	25 Apr	Gwadar (<i>survey breeding areas</i>)	Gwadar
26	26 Apr	Gwadar to Turbat via Shooli (<i>survey breeding areas, Shooli</i>)	Turbat
27	27 Apr	Turbat to Khuzdar	Khuzdar
28	28 Apr	Khuzdar to Quetta	Quetta
29	29 Apr	<i>Halt at Quetta</i>	Quetta
30	30 Apr	Quetta to Taftan	Taftan
	1 May	<i>Iranian team cross into I.R. Iran at Mirjaveh</i>	

APPENDIX 3. DESERT LOCUST SURVEY RESULTS

FAO DESERT LOCUST SURVEY FORM

SURVEY STOP	1	2	3	4	5
date	01/04/02	01/04/02	01/04/02	01/04/02	01/04/02
name	Morad abad	Mehrabad1	Mehrabad2	Poshtkooh1	Poshtkooh2
latitude (N)	27 21 82	27 25 92	27 25 83	27 29 34	27 29 05
longitude (E or W)	61 52 41	61 48 87	61 48 84	61 41 71	61 42 30
ECOLOGY					
area (ha) of survey	200	10	60	10	400
habitat (wadi, plains, dunes, crops)	Plain	Plain	Plain	Plain	Plain
date of last rain	27/03/02	27/03/02	27/03/02	27/03/02	27/03/02
rain amount (mm or Low Moderate High)	L	L	L	L	L
vegetation (dry, greening, green, drying)	Green	Green	Dry	Green	Dry
vegetation density (Low Medium Dense)	M	M	L	M	L
soil moisture (wet/dry)	D	W	D	W	D
LOCUSTS					
present or absent	A	A	A	A	A
area infested (ha)					
HOPPERS					
hopper stages (H123456F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G
hopper density (/site or /m2)					
BANDS					
band stage (H12345F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
band density (/m2 or Low Medium High)					
band sizes (m2 or ha)					
number of bands					
ADULTS					
maturity (immature, mature)	I M	I M	I M	I M	I M
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G
adult density (/transect or /ha)					
breeding (copulating, laying)	C L	C L	C L	C L	C L
SWARMS					
maturity (immature, mature)	I M	I M	I M	I M	I M
swarm density (/m2 or Low Medium High)					
swarm size (km2 or ha)					
number of swarms					
breeding (copulating, laying)	C L	C L	C L	C L	C L
flying (direction, time passing)					
flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H
CONTROL					
pesticide name & formulation					
application rate (l/ha or kg/ha)					
quantity (l)					
area treated (ha)					
ground or air	G A	G A	G A	G A	G A
estimated % kill					
COMMENTS					
	RH:35% Datepalm Wheat	RH:25% Datepalm Wheat Alfalfa	RH:25% (Plain near the orchard)	RH:17% Datepalm Wheat	RH:10% (Plain near the field)

Was a GPS used to determine locations?

YES

country : Iran- Saravan

Locust Officer : joint locust survey Iran,Pakistan

date : _____

cleared by : _____

date : _____

Apr-02

FAO DESERT LOCUST SURVEY FORM

SURVEY STOP	s	2	3	4	5	6
date	01/04/02	01/04/02				
name	Nokjoo1	Nokjoo2				
latitude (N)	27 12 89	27 13 38				
longitude (E or W)	61 44 23	61 44 52				
ECOLOGY						
area (ha) of survey	10	800				
habitat (wadi, plains, dunes, crops)	plain	plain				
date of last rain	27/03/02	27/03/02				
rain amount (mm or Low Moderate High)	L	L	L M H	L M H	L M H	L M H
vegetation (dry, greening, green, drying)	Green	Greening				
vegetation density (Low Medium Dense)	M	L	L M D	L M D	L M D	L M D
soil moisture (wet/dry)	W	D	W D	W D	W D	W D
LOCUSTS						
present or absent	A	A	P A	P A	P A	P A
area infested (ha)						
HOPPERS						
hopper stages (H123456F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
hopper density (/site or /m2)						
BANDS						
band stage (H123456F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
band density (/m2 or Low Medium High)						
band sizes (m2 or ha)						
number of bands						
ADULTS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
adult density (/transect or /ha)						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
SWARMS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
swarm density (/m2 or Low Medium High)						
swarm size (km2 or ha)						
number of swarms						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
flying (direction, time passing)						
flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
CONTROL						
pesticide name & formulation						
application rate (l/ha or kg/ha)						
quantity (l)						
area treated (ha)						
ground or air	G A	G A	G A	G A	G A	G A
estimated % kill						
COMMENTS						
	RH:16% Datepalm Leutib Fabae Wheat	RH:18%				

Was a GPS used to determine locations?

YES

country : **Iran- Saravan**

Locust Officer : joint locust survey Iran,Pakistan

date : _____

cleared by : _____

date : Apr-02

FAO DESERT LOCUST SURVEY FORM

SURVEY STOP	1	2	3	4	5	6
date	02/04/02	02/04/02	02/04/02	02/04/02	02/04/02	02/04/02
name	Markook1	Seeb	Maguz1	Maguz2	Rigjiae1	Rigjiae2
latitude (N)	27 20 56	27 14 21	27 16 33	27 16 23	27 21 71	27 21 71
longitude (E or W)	62 03 36	62 05 30	62 00 98	62 00 92	61 55 21	61 55 20
ECOLOGY						
area (ha) of survey	7	10	20	20	40	40
habitat (wadi, plains, dunes, crops)	wadi	Wadi	Wadi	Wadi	Plain	Sandy dune
date of last rain	27/03/02	27/03/02	27/03/02	27/03/02	27/03/02	27/03/02
rain amount (mm or Low Moderate High)	L	L	L	L	L	L
vegetation (dry, greening, green, drying)	Green	Green	Green	Green	Green	Dry
vegetation density (Low Medium Dense)	L	M	L	M	L	L
soil moisture (wet/dry)	W	W	W	D	W	D
LOCUSTS						
present or absent	A	A	A	A	A	A
area infested (ha)						
HOPPERS						
hopper stages (H123456F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
hopper density (/site or /m2)						
BANDS						
band stage (H12345F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
band density (/m2 or Low Medium High)						
band sizes (m2 or ha)						
number of bands						
ADULTS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
adult density (/transect or /ha)						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
SWARMS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
swarm density (/m2 or Low Medium High)						
swarm size (km2 or ha)						
number of swarms						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
flying (direction, time passing)						
flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
CONTROL						
pesticide name & formulation						
application rate (l/ha or kg/ha)						
quantity (l)						
area treated (ha)						
ground or air	G A	G A	G A	G A	G A	G A
estimated % kill						
COMMENTS						
	RH:28% Date palm,fabae alfalfa	RH:28% Date palm,fabae alfalfa Wheat	RH:50% Date palm,fabae alfalfa Wheat Barely	RH:50% Date palm,fabae	RH:15% Wheat,alfalfa Barley	RH:15 Sandy dunes near the wadi

Was a GPS used to determine locations?

YES

Locust Officer : joint locust survey Iran,Pakistan
cleared by : _____

country : Iran- Saravan

date : _____
date : Apr-02

FAO DESERT LOCUST SURVEY FORM

SURVEY STOP	1	2	3	4	5	6
date	02/04/02	02/04/02	02/04/02	02/04/02	02/04/02	02/04/02
name	Sarkahooran1	Sarkahooran2	Motor Amiri1	Motor Amiri2	Motor davari1	Motor davari2
latitude (N)	27 09 59	27 09 46	27 10 39	27 10 66	27 07 95	27 07 95
longitude (E or W)	60 45 98	60 46 29	60 46 96	60 47 07	60 43 97	60 43 88
ECOLOGY						
area (ha) of survey	60	400	40	1000	100	500
habitat (wadi, plains, dunes, crops)	plain	plain	plain	plain	plain	sandy dune
date of last rain	10/03/02	10/03/02	10/03/02	10/03/02	10/03/02	10/03/02
rain amount (mm or Low Moderate High)	L	L	L	L	L	L
vegetation (dry, greening, green, drying)	Green	Dry	Green	Dry	Green	Dry
vegetation density (Low Medium Dense)	M	L	D	L	M	L
soil moisture (wet/dry)	W	D	W	Dry	W	D
LOCUSTS						
present or absent	A	A	A	A	A	A
area infested (ha)						
HOPPERS						
hopper stages (H123456F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
hopper density (/site or /m2)						
BANDS						
band stage (H123456F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
band density (/m2 or Low Medium High)						
band sizes (m2 or ha)						
number of bands						
ADULTS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
adult density (/transect or /ha)						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
SWARMS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
swarm density (/m2 or Low Medium High)						
swarm size (km2 or ha)						
number of swarms						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
flying (direction, time passing)						
flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
CONTROL						
pesticide name & formulation						
application rate (l/ha or kg/ha)						
quantity (l)						
area treated (ha)						
ground or air	G A	G A	G A	G A	G A	G A
estimated % kill						
COMMENTS						
	RH:22% Date palm Wheat Barely alfalfa	RH:16%	RH:30% Wheat water melon	RH:24%	RH:18% Alfalfa Wheat Barely	RH:18%

Was a GPS used to determine locations?

YES

Locust Officer : joint locust survey Iran,Pakistan
cleared by : _____

country : Iran-Iranshahr
date : _____
date : Apr-02

FAO DESERT LOCUST SURVEY FORM

SURVEY STOP	1	2	3	4	5	6
date	03/04/02	03/04/02	03/04/02	03/04/02	03/04/02	03/04/02
name	Chahali1	Chahali2	Mand1	Mand2	Baghnil1	Baghnil2
latitude (N)	27 06 07	27 06 09	27 06 64	27 06 59	27 05 54	27 05 09
longitude (E or W)	59 42 49	59 42 45	59 32 75	59 32 64	59 21 96	59 22 13
ECOLOGY						
area (ha) of survey	50	400	200	300	200	800
habitat (wadi, plains, dunes, crops)	plain	sandy dune	wadi	sandy dune	plain	plain
date of last rain	10/03/02	10/03/02	10/03/02	10/03/02	10/03/02	10/03/02
rain amount (mm or Low Moderate High)	L	L	L	L	L	L
vegetation (dry, greening, green, drying)	Green	Dry	Green	Dry	Green	Dry
vegetation density (Low Medium Dense)	M	L	M	L	M	L
soil moisture (wet/dry)	W	D	D	D	D	D
LOCUSTS						
present or absent	A	A	A	A	A	A
area infested (ha)						
HOPPERS						
hopper stages (H123456F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
hopper density (/site or /m2)						
BANDS						
band stage (H12345F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
band density (/m2 or Low Medium High)						
band sizes (m2 or ha)						
number of bands						
ADULTS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
adult density (/transect or /ha)						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
SWARMS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
swarm density (/m2 or Low Medium High)						
swarm size (km2 or ha)						
number of swarms						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
flying (direction, time passing)						
flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
CONTROL						
pesticide name & formulation						
application rate (l/ha or kg/ha)						
quantity (l)						
area treated (ha)						
ground or air	G A	G A	G A	G A	G A	G A
estimated % kill						
COMMENTS						
	RH:55% Datepalm wheat	RH:24%	RH:57% Datepalm	RH:21%	RH:41% Datepalm	RH:32%

Was a GPS used to determine locations?

YES

country : **Iran-Iranshahr**

Locust Officer : joint locust survey Iran,Pakistan

date : _____

cleared by : _____

date : Apr-02

FAO DESERT LOCUST SURVEY FORM

SURVEY STOP	1	2	3	4	5	6
date	04/04/02	04/04/02	04/04/02	04/04/02	04/04/02	
name	Tavakol abad1	Tavakol abad2	Emdad khomeini	chah hashem	Magiri	
latitude (N)	27 03 96	27 04 05	27 02 40	27 05 71	27 09 27	
longitude (E or W)	59 18 15	59 18 07	59 10 19	59 06 00	59 09 95	
ECOLOGY						
area (ha) of survey	20	600	120	300	150	
habitat (wadi, plains, dunes, crops)	plain	plain	plain	plain	plain	
date of last rain	10/03/02	10/03/02	10/03/2002	10/03/02	10/03/02	
rain amount (mm or Low Moderate High)	L	L	M	L	L	
vegetation (dry, greening, green, drying)	Green	Dry	Green	Green	Green	
vegetation density (Low Medium Dense)	L	L	M	L	L	
soil moisture (wet/dry)	D	D	W	W	D	
LOCUSTS						
present or absent	A	A	A	A	A	
area infested (ha)						
HOPPERS						
hopper stages (H123456F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
hopper density (/site or /m2)						
BANDS						
band stage (H12345F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
band density (/m2 or Low Medium High)						
band sizes (m2 or ha)						
number of bands						
ADULTS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
adult density (/transect or /ha)						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
SWARMS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
swarm density (/m2 or Low Medium High)						
swarm size (km2 or ha)						
number of swarms						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
flying (direction, time passing)						
flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
CONTROL						
pesticide name & formulation						
application rate (l/ha or kg/ha)						
quantity (l)						
area treated (ha)						
ground or air	G A	G A	G A	G A	G A	G A
estimated % kill						
COMMENTS						
	RH:47% Datepalm Wheat	RH:32%	RH:59% Water melon Lime	RH:26% Datepalm Wheat Lime alfalfa	RH:26% Datepalm	

Was a GPS used to determine locations?

YES

Locust Officer : joint locust survey Iran,Pakistan
 cleared by : _____

country : **Iran-Iranshahr**

date : _____
 date : **Apr-02**

FAO DESERT LOCUST SURVEY FORM

SURVEY STOP	1	2	3	4	5	6
date	05/04/02	05/04/02	05/04/02	05/04/02	05/04/02	05/04/02
name	Sard gal 1	Sard gal 2	Behesht abad	Motor kiani	Seied abad	Azmen
latitude (N)	27 15 25	27 15 21	27 09 00	27 07 00	27 10 33	27 15 12
longitude (E or W)	60 22 99	60 22 89	60 10 00	60 45 00	60 22 46	60 51 45
ECOLOGY						
area (ha) of survey	300	1000	500	1000	100	500
habitat (wadi, plains, dunes, crops)	plain	plain	plain	plain	Wadi	plain
date of last rain	10/03/02	10/03/02	10/03/02	10/03/02	10/03/02	10/03/02
rain amount (mm or Low Moderate High)	L	L	L	L	L	L
vegetation (dry, greening, green, drying)	Green	Dry	Dry	Dry	Green	Dry
vegetation density (Low Medium Dense)	D	L	L	L	L	L
soil moisture (wet/dry)	D	D	D	D	W	D
LOCUSTS						
present or absent	A	A	A	A	A	A
area infested (ha)						
HOPPERS						
hopper stages (H123456F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
hopper density (/site or /m2)						
BANDS						
band stage (H12345F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
band density (/m2 or Low Medium High)						
band sizes (m2 or ha)						
number of bands						
ADULTS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
adult density (/transect or /ha)						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
SWARMS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
swarm density (/m2 or Low Medium High)						
swarm size (km2 or ha)						
number of swarms						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
flying (direction, time passing)						
flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
CONTROL						
pesticide name & formulation						
application rate (l/ha or kg/ha)						
quantity (l)						
area treated (ha)						
ground or air	G A	G A	G A	G A	G A	G A
estimated % kill						
COMMENTS						
	RH:42% wheat canola Barley	RH:41%	RH:44% no crops	RH:66%	RH:56% Tamrix Datepalm Alhaji	RH:71%

Was a GPS used to determine locations?

YES

Locust Officer : joint locust survey Iran,Pakistan
cleared by : _____

country : **Iran-Irانشahr**

date : _____
date : **Apr-02**

FAO DESERT LOCUST SURVEY FORM

SURVEY STOP	1	2	3	4	5	6
date	06/04/02	06/04/02	07/04/02	07/04/02	07/04/02	07/04/02
name	Pat	Ganjabad	Bono	Bibanzehi	Kalat	Auraky
latitude (N)	25 40 51	25 39 86	25 40 88	25 42 15	25 43 67	25 43 82
longitude (E or W)	61 20 41	61 20 65	60 56 96	60 565 06	60 54 41	60 56 80
ECOLOGY						
area (ha) of survey	500	500	200	300	500	1000
habitat (wadi, plains, dunes, crops)	wadi	wadi	Plain	Plain	Plain	Plain
date of last rain	19/03/02	19/03/02	19/03/02	19/03/02	19/03/02	19/03/02
rain amount (mm or Low Moderate High)	M	M	L	L	L	L
vegetation (dry, greening, green, drying)	Green	Green	Green	Green	Green	Green
vegetation density (Low Medium Dense)	M	M	D	M	M	L M D
soil moisture (wet/dry)	D	D	W	D	D	W
LOCUSTS						
present or absent	A	A	A	A	A	A
area infested (ha)						
HOPPERS						
hopper stages (H123456F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
hopper density (/site or /m2)						
BANDS						
band stage (H12345F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
band density (/m2 or Low Medium High)						
band sizes (m2 or ha)						
number of bands						
ADULTS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
adult density (/transect or /ha)						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
SWARMS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
swarm density (/m2 or Low Medium High)						
swarm size (km2 or ha)						
number of swarms						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
flying (direction, time passing)						
flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
CONTROL						
pesticide name & formulation						
application rate (l/ha or kg/ha)						
quantity (l)						
area treated (ha)						
ground or air	G A	G A	G A	G A	G A	G A
estimated % kill						
COMMENTS						
	RH:28% Tamarix Alhaji	RH:65%	RH:40% Kekar Tamarix	RH:18 Kekar Tamarix	RH:19% Kekar Tamarix Euphorbia	RH Banana Onion Tomato

Was a GPS used to determine locations?

YES

country : **Iran-chabahar**

Locust Officer : joint locust survey Iran,Pakistan

date : _____

cleared by : _____

date : **Apr-02**

FAO DESERT LOCUST SURVEY FORM

SURVEY STOP	1	2	3	4	5	6
date	08/04/02	08/04/02	08/04/02	08/04/02	08/04/02	08/04/02
name	Talemishan	Kuden	Bir 1	Bir 2	Beheshti port	Tiss
latitude (N)	25 33 21	25 37 88	25 29 25	25 27 95	25 17 70	25 21 90
longitude (E or W)	60 07 02	60 08 97	59 47 32	59 48 32	560 36 87	60 36 49
ECOLOGY						
area (ha) of survey	50	250	150	300	-	-
habitat (wadi, plains, dunes, crops)	wadi	wadi	wadi	plain	coast	coast
date of last rain	19/03/02	19/03/02	19/03/02	19/03/02	19/03/02	19/03/02
rain amount (mm or Low Moderate High)	L	L	L	L	L	L
vegetation (dry, greening, green, drying)	Green	Green	Green	Green	-	-
vegetation density (Low Medium Dense)	M	L	L	L	-	-
soil moisture (wet/dry)	W	D	D	D	-	-
LOCUSTS						
present or absent	A	A	A	A	A	A
area infested (ha)						
HOPPERS						
hopper stages (H123456F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
hopper density (/site or /m2)						
BANDS						
band stage (H12345F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
band density (/m2 or Low Medium High)						
band sizes (m2 or ha)						
number of bands						
ADULTS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
adult density (/transect or /ha)						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
SWARMS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
swarm density (/m2 or Low Medium High)						
swarm size (km2 or ha)						
number of swarms						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
flying (direction, time passing)						
flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
CONTROL						
pesticide name & formulation						
application rate (l/ha or kg/ha)						
quantity (l)						
area treated (ha)						
ground or air	G A	G A	G A	G A	G A	G A
estimated % kill						
COMMENTS						
	RH:54% Banana Citrus	RH:41% Mosopis Acacia Kekar Tamarix Calotropis	RH:86% Kekar Tamarix Morringa	RH:86%	RH:92%	RH:91% (The advised point inside the sea)

Was a GPS used to determine locations?

YES

country : **Iran-chabahar**

Locust Officer : joint locust survey Iran,Pakistan

date : _____

cleared by : _____

date : **Apr-02**

FAO DESERT LOCUST SURVEY FORM

SURVEY STOP	1	2	3	4	5	6
date	09/04/02	09/04/02	09/04/02	09/04/02	09/04/02	09/04/02
name	Vashnam	Dasht Brijdar	Ramine	Lipar	Dasht bris	Govatr
latitude (N)	25 25 01	25 25 77	25 16 18	25 15 59	25 10 88	25 09 82
longitude (E or W)	60 47 51	60 41 00	60 47 47	60 49 88	61 07 86	61 29 56
ECOLOGY						
area (ha) of survey	500	1000	800	500	600	mangrove
habitat (wadi, plains, dunes, crops)	plain	plain	Dune	wadi	Dune	coast
date of last rain	19/03/02	19/03/02	19/03/02	19/03/02	19/03/02	19/03/02
rain amount (mm or Low Moderate High)	L	L	L	L	L	L
vegetation (dry, greening, green, drying)	Green	Greening	Dry	Green	Dry	Green
vegetation density (Low Medium Dense)	L	L	L	M	L	D
soil moisture (wet/dry)	D	D	D	D	D	W
LOCUSTS						
present or absent	A	A	A	A	A	A
area infested (ha)						
HOPPERS						
hopper stages (H123456F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
hopper density (/site or /m2)						
BANDS						
band stage (H12345F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
band density (/m2 or Low Medium High)						
band sizes (m2 or ha)						
number of bands						
ADULTS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
adult density (/transect or /ha)						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
SWARMS						
maturity (immature, mature)	I M	I M	I M	I M	I M	I M
swarm density (/m2 or Low Medium High)						
swarm size (km2 or ha)						
number of swarms						
breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
flying (direction, time passing)						
flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
CONTROL						
pesticide name & formulation						
application rate (l/ha or kg/ha)						
quantity (l)						
area treated (ha)						
ground or air	G A	G A	G A	G A	G A	G A
estimated % kill						
COMMENTS						
	RH:56% Acacia Kekar	RH:40% Acacia	RH:60% Alhaji	RH45% Datepalm Muringa Acacia Alhaji	RH:61% Alhaji	RH:35% Sphaerocoma Aucheri

Was a GPS used to determine locations?

YES

country : **Iran-chabahar**

Locust Officer : joint locust survey Iran,Pakistan

date : _____

cleared by : _____

date : **Apr-02**

FAO DESERT LOCUST SURVEY FORM

SURVEY STOP	1	2	3	4	5
date	11/04/02	11/04/02	11/04/02	11/04/02	11/04/02
name	Garok	Dehnou	Sarrig	Gajin 1	Gajin 2
latitude (N)	26 36 68	27 21 09	27 18 11	27 03 97	27 03 63
longitude (E or W)	57 04 94	56 31 62	56 15 72	55 47 25	55 47 74
ECOLOGY					
area (ha) of survey	600	500	600	300	100
habitat (wadi, plains, dunes, crops)	Dune	Dune	Plain	Wadi	Wadi
date of last rain	23/03/02	23/03/02	23/03/02	23/03/02	23/03/02
rain amount (mm or Low Moderate High)	L	L	L	L	L
vegetation (dry, greening, green, drying)	Green	Green	Green	Green	Green
vegetation density (Low Medium Dense)	M	H	M	M	M
soil moisture (wet/dry)	D	D	D	W	D
LOCUSTS					
present or absent	A	A	A	A	A
area infested (ha)					
HOPPERS					
hopper stages (H123456F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G
hopper density (/site or /m2)					
BANDS					
band stage (H12345F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
band density (/m2 or Low Medium High)					
band sizes (m2 or ha)					
number of bands					
ADULTS					
maturity (immature, mature)	I M	I M	I M	I M	I M
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G
adult density (/transect or /ha)					
breeding (copulating, laying)	C L	C L	C L	C L	C L
SWARMS					
maturity (immature, mature)	I M	I M	I M	I M	I M
swarm density (/m2 or Low Medium High)					
swarm size (km2 or ha)					
number of swarms					
breeding (copulating, laying)	C L	C L	C L	C L	C L
flying (direction, time passing)					
flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H
CONTROL					
pesticide name & formulation					
application rate (l/ha or kg/ha)					
quantity (l)					
area treated (ha)					
ground or air	G A	G A	G A	G A	G A
estimated % kill					
COMMENTS					
	RH:44% Date palm,Acacia Euphorbia Polygonia	RH:48% Acacia Graminae Alhagi	RH:43% Eggplants Acacia Tomato Tamarix Graminae	RH:36% Tamarix Salsola	RH:37% Tamarix Salsola

Was a GPS used to determine locations? **Yes**

Locust Officer : joint locust survey Iran,Pakistan
 cleared by : _____

country : Iran - Minab

date : _____

date : **Apr-02**

FAO DESERT LOCUST SURVEY FORM

SURVEY STOP	1	2	3	4	5
date	12/04/02	12/04/02	12/04/02	12/04/02	12/04/02
name	Tomkaran	Salmanieh	Solan	Chaheshagh	Motoresfandiar
latitude (N)	27 21 00	27 11 07	27 11 00	27 12 45	27 04 54
longitude (E or W)	58 02 99	58 15 03	58 34 10	58 43 82	59 04 27
ECOLOGY					
area (ha) of survey	200	300	500	500	400
habitat (wadi, plains, dunes, crops)	Plain	Plain	Dune	Dune	Dune
date of last rain	10/03/02	10/03/02	10/03/02	10/03/02	10/03/02
rain amount (mm or Low Moderate High)	L	L	L	L	L
vegetation (dry, greening, green, drying)	Green	Green	Green	Green	Green
vegetation density (Low Medium Dense)	ML	M	L	M	M
soil moisture (wet/dry)	D	D	D	D	D
LOCUSTS					
present or absent	A	A	A	A	A
area infested (ha)					
HOPPERS					
hopper stages (H123456F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G
hopper density (/site or /m2)					
BANDS					
band stage (H12345F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
band density (/m2 or Low Medium High)					
band sizes (m2 or ha)					
number of bands					
ADULTS					
maturity (immature, mature)	I M	I M	I M	I M	I M
appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G
behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G
adult density (/transect or /ha)					
breeding (copulating, laying)	C L	C L	C L	C L	C L
SWARMS					
maturity (immature, mature)	I M	I M	I M	I M	I M
swarm density (/m2 or Low Medium High)					
swarm size (km2 or ha)					
number of swarms					
breeding (copulating, laying)	C L	C L	C L	C L	C L
flying (direction, time passing)					
flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H
CONTROL					
pesticide name & formulation					
application rate (l/ha or kg/ha)					
quantity (l)					
area treated (ha)					
ground or air	G A	G A	G A	G A	G A
estimated % kill					
COMMENTS					
	RH:65% Date palm,fabae Wheat,Hena Tamarix Barley	RH:53% Datepalm,Hena Tamarix	RH:25% Datepalm Tamarix	RH:26% Tamarix Acacia	RH:25% Datepalm Tamarix cucumber watermelon

Was a GPS used to determine locations? **Yes**

Locust Officer : joint locust survey Iran,Pakistan
 cleared by : _____

country : Iran- Jazmurian

date : _____

date : Apr-02

FAO DESERT LOCUST AND CONTROL FORM

1	SURVEY STOP	1	2	3	4	5	6
1-1	date	16/04/02	16/04/02	16/04/02			
1-2	name	Shah Rak	Tahlab 1	Tahlab 2			
1-3	latitude (N)	28 53 04	28 44 16	28 43 76			
1-4	longitude (E or W)	61 35 69	61 44 15	61 44 78			
2 ECOLOGY							
2-1	area (ha) of survey	100	100	200			
2-2	habitat (wadi, plains, dunes, crops)	plain	plain	Dunes			
2-3	date of last rain	14/04/02	14/04/02	14/04/02			
2-4	rain amount (mm or Low Moderate High)	L	L	L	L M H	L M H	L M H
2-5	vegetation (dry, greening, green, drying)	Drying	Drying	Drying			
2-6	vegetation density (Low Medium Dense)	L	L	L	L M D	L M D	L M D
2-7	soil moisture (wet/dry)	D	D	D	W D	W D	W D
3 LOCUSTS							
3-1	present or absent	A	A	A	P A	P A	P A
3-2	area infested (ha)						
4 HOPPERS							
4-1	hopper stages (H123456F)	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6 F
4-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
4-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
4-4	hopper density (/site or /m2)						
5 BANDS							
5-1	band stage (H12345F)	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6 F
5-2	band density (/m2 or Low Medium High)						
5-3	band sizes (m2 or ha)						
5-4	number of bands						
6 ADULTS							
6-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
6-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
6-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
6-4	adult density (/transect or /ha)						
6-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7 SWARMS							
7-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
7-2	swarm density (/m2 or Low Medium High)						
7-3	swarm size (km2 or ha)						
7-4	number of swarms						
7-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7-6	flying (direction, time passing)						
7-7	flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
8 CONTROL							
8-1	pesticide name & formulation						
8-2	application rate (l/ha or kg/ha)						
8-3	quantity (l)						
8-4	area treated (ha)						
8-5	ground or air	G A	G A	G A	G A	G A	G A
8-6	estimated % kill						
9 COMMENTS							
		RH:25% Tamarix	RH:25% Tamarix Date palm	RH:24% Tamarix			

Was a GPS used to determine locations?

Yes

country : **Pakistan -Taftan**

Locust Officer : _____ Desert locust joint survey 2002

date : _____

cleared by : _____

date : Apr-02

FAO DESERT LOCUST AND CONTROL FORM

1	SURVEY STOP	1	2	3	4	5	6
1-1	date	17/04/02	17/04/02	17/04/02	17/04/02	17/04/02	17/04/02
1-2	name	Pishak	Nokeha	Dodag	Ahmad well	Sadal karez	Nushki
1-3	latitude (N)	28 56 79	28 56 75	28 59 19	29 23 99	29 31 23	29 34 15
1-4	longitude (E or W)	64 42 40	65 50 44	65 15 17	65 55 15	65 58 07	66 00 20
2		ECOLOGY					
2-1	area (ha) of survey	500	1000	200	300	700	200
2-2	habitat (wadi, plains, dunes, crops)	Dunes	Dunes	Dunes	Dunes	Dunes	Dunes
2-3	date of last rain	14/04/02	14/04/02	14/04/02	14/04/02	14/04/02	14/04/02
2-4	rain amount (mm or Low Moderate High)	L	L	L	L	L	L
2-5	vegetation (dry, greening, green, drying)	Dry	Dry	Green	Dry	Green	Dry
2-6	vegetation density (Low Medium Dense)	L	L	L	L	L	L
2-7	soil moisture (wet/dry)	D	D	D	D	D	D
3		LOCUSTS					
3-1	present or absent	A	A	A	A	A	A
3-2	area infested (ha)						
4		HOPPERS					
4-1	hopper stages (H123456F)	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
4-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
4-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
4-4	hopper density (/site or /m2)						
5		BANDS					
5-1	band stage (H12345F)	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
5-2	band density (/m2 or Low Medium High)						
5-3	band sizes (m2 or ha)						
5-4	number of bands						
6		ADULTS					
6-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
6-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
6-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
6-4	adult density (/transect or /ha)						
6-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7		SWARMS					
7-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
7-2	swarm density (/m2 or Low Medium High)						
7-3	swarm size (km2 or ha)						
7-4	number of swarms						
7-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7-6	flying (direction, time passing)						
7-7	flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
8		CONTROL					
8-1	pesticide name & formulation						
8-2	application rate (l/ha or kg/ha)						
8-3	quantity (l)						
8-4	area treated (ha)						
8-5	ground or air	G A	G A	G A	G A	G A	G A
8-6	estimated % kill						
9		COMMENTS					
		RH:18%	RH:37%	RH:34%	RH:32% Sezame (crop near dune)	RH:32% (Dunes near Onion crops)	RH:33%

Was a GPS used to determine locations? **Yes**

Locust Officer : Desert Locust joint survey 2002
cleared by : _____

country : **Pakistan-Nushki**

date : Apr-02
date : _____

FAO DESERT LOCUST AND CONTROL FORM

1	SURVEY STOP	1	2	3	4	5	6
1-1	date	17/04/02	18/04/02	18/04/02	18/04/02	18/04/02	18/04/02
1-2	name	Kili Badini	Noroz Kalat	Bopo Reck 1	Bopo Reck 2	Jeltak	Kili Bahadarja
1-3	latitude (N)	29 34 64	28 42 82	28 34 91	28 35 83	28 35 82	28 38 39
1-4	longitude (E or W)	65 58 64	65 37 07	65 17 58	65 13 94	65 16 23	65 10 55
2		ECOLOGY					
2-1	area (ha) of survey	200	150	500	500	200	400
2-2	habitat (wadi, plains, dunes, crops)	crops	wadi	Dunes	crops	crops	Dunes
2-3	date of last rain	14/04/02	10/03/02	10/03/02	10/03/02	10/03/02	10/03/02
2-4	rain amount (mm or Low Moderate High)	L	L	L	L	L	L
2-5	vegetation (dry, greening, green, drying)	Green	Green	Dry	Green	Green	Drying
2-6	vegetation density (Low Medium Dense)	M	L	H	H	H	L
2-7	soil moisture (wet/dry)	W	D	W	W	W	D
3		LOCUSTS					
3-1	present or absent	A	A	A	A	A	A
3-2	area infested (ha)						
4		HOPPERS					
4-1	hopper stages (H123456F)	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
4-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
4-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
4-4	hopper density (/site or /m2)						
5		BANDS					
5-1	band stage (H12345F)	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
5-2	band density (/m2 or Low Medium High)						
5-3	band sizes (m2 or ha)						
5-4	number of bands						
6		ADULTS					
6-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
6-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
6-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
6-4	adult density (/transect or /ha)						
6-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7		SWARMS					
7-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
7-2	swarm density (/m2 or Low Medium High)						
7-3	swarm size (km2 or ha)						
7-4	number of swarms						
7-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7-6	flying (direction, time passing)						
7-7	flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
8		CONTROL					
8-1	pesticide name & formulation						
8-2	application rate (l/ha or kg/ha)						
8-3	quantity (l)						
8-4	area treated (ha)						
8-5	ground or air	G A	G A	G A	G A	G A	G A
8-6	estimated % kill						
9		COMMENTS					
		RH:16% Sezame Wheat	RH:33% Tamarix Date Palm	RH:26% (crop near dunes) Wheat Zea Onion	RH:23% (Dunes near crops) Onion Wheat Zeera	RH:32% (Dunes near crops) Onion Zeera Wheat	RH:25%

Was a GPS used to determine locations? **Yes**

Locust Officer : Desert Locust joint survey 2002
cleared by : _____

country : **Pakistan-Nushki**

date : Apr-02
date : _____

FAO DESERT LOCUST AND CONTROL FORM

1	SURVEY STOP	1	2	3	4	5	6
1-1	date	19/04/02	19/04/02	19/04/02	19/04/02	19/04/02	19/04/02
1-2	name	Sherozi	Pag	Taghazi	Kanian	Tagap1	Tagap2
1-3	latitude (N)	28 33 65	28 31 38	28 29 11	28 33 64	28 23 38	28 33 00
1-4	longitude (E or W)	65 25 99	65 22 94	65 25 33	65 34 04	65 29 78	65 28 00
2		ECOLOGY					
2-1	area (ha) of survey	100	200	300	200	250	300
2-2	habitat (wadi, plains, dunes, crops)	Plain	Dunes	Dunes	crops	crops	Plain
2-3	date of last rain	10/03/02	10/03/02	10/03/02	10/03/02	10/03/02	10/03/02
2-4	rain amount (mm or Low Moderate High)	L	L	L	L	L	L
2-5	vegetation (dry, greening, green, drying)	Dry	Green	Green	Green	Green	Dry
2-6	vegetation density (Low Medium Dense)	L	L	L	H	H	L
2-7	soil moisture (wet/dry)	D	D	D	W	W	D
3		LOCUSTS					
3-1	present or absent	A	A	A	A	A	A
3-2	area infested (ha)						
4		HOPPERS					
4-1	hopper stages (H123456F)	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
4-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
4-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
4-4	hopper density (/site or /m2)						
5		BANDS					
5-1	band stage (H12345F)	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
5-2	band density (/m2 or Low Medium High)						
5-3	band sizes (m2 or ha)						
5-4	number of bands						
6		ADULTS					
6-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
6-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
6-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
6-4	adult density (/transect or /ha)						
6-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7		SWARMS					
7-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
7-2	swarm density (/m2 or Low Medium High)						
7-3	swarm size (km2 or ha)						
7-4	number of swarms						
7-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7-6	flying (direction, time passing)						
7-7	flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
8		CONTROL					
8-1	pesticide name & formulation						
8-2	application rate (l/ha or kg/ha)						
8-3	quantity (l)						
8-4	area treated (ha)						
8-5	ground or air	G A	G A	G A	G A	G A	G A
8-6	estimated % kill						
9		COMMENTS					
		RH:27% Tamarix Wheat	RH:36% Tamarix	RH:32% Tamarix	RH:28% Wheat Zeera	RH:26% Barley	RH:43%

Was a GPS used to determine locations? **Yes**

Locust Officer : Desert Locust joint survey 2002
 cleared by : _____

country : **Pakistan-Kharan**
 date : Apr-02
 date : _____

FAO DESERT LOCUST AND CONTROL FORM

1	SURVEY STOP	1	2	3	4	5	6
1-1	date	20/04/02	20/04/02	22/04/02	22/04/02	22/04/02	
1-2	name	Zandey Das	Benistan	Bulede	Alando	Aabsar	
1-3	latitude (N)	27 00 13	26 56 03	28 18 34	26 16 28	26 00 18	
1-4	longitude (E or W)	64 11 19	64 02 01	63 09 45	63 01 82	63 06 60	
2		ECOLOGY					
2-1	area (ha) of survey	100	100	500	300	100	
2-2	habitat (wadi, plains, dunes, crops)	Wadi	crops	Wadi	Plain	crops	
2-3	date of last rain	21/03/02	21/03/02	10/03/02	10/03/02	10/03/02	
2-4	rain amount (mm or Low Moderate High)	L	L	L	L	L	
2-5	vegetation (dry, greening, green, drying)	Green	Green	Green	Green	Green	
2-6	vegetation density (Low Medium Dense)	D	D	D	D	D	
2-7	soil moisture (wet/dry)	D	W	W	W	W	
3		LOCUSTS					
3-1	present or absent	A	A	A	A	A	
3-2	area infested (ha)						
4		HOPPERS					
4-1	hopper stages (H123456F)	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
4-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
4-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
4-4	hopper density (/site or /m2)						
5		BANDS					
5-1	band stage (H12345F)	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
5-2	band density (/m2 or Low Medium High)						
5-3	band sizes (m2 or ha)						
5-4	number of bands						
6		ADULTS					
6-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
6-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
6-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
6-4	adult density (/transect or /ha)						
6-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7		SWARMS					
7-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
7-2	swarm density (/m2 or Low Medium High)						
7-3	swarm size (km2 or ha)						
7-4	number of swarms						
7-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7-6	flying (direction, time passing)						
7-7	flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
8		CONTROL					
8-1	pesticide name & formulation						
8-2	application rate (l/ha or kg/ha)						
8-3	quantity (l)						
8-4	area treated (ha)						
8-5	ground or air	G A	G A	G A	G A	G A	G A
8-6	estimated % kill						
9		COMMENTS					
		RH:45% Wild Date Palm	RH:25% Date palm Wheat	RH:32% Tamarix	RH:30% Date Palm	RH:22% Date Palm Alfalfa Onion Tamarix Acacia	

Was a GPS used to determine locations? **Yes**

Locust Officer : Desert Locust joint survey 2002
cleared by : _____

country : **Pakistan-Kharan, Panjgur**
date : Apr-02 - **Turbat**
date : _____

FAO DESERT LOCUST AND CONTROL FORM

1	SURVEY STOP	1	2	3	4	5	6
1-1	date	24/04/02	24/04/02	24/04/02	24/04/02	24/04/02	
1-2	name	Kolanch gano	Kalag 1	Kalag 2	Shadi kalat1	Shadi kalat2	
1-3	latitude (N)	25 27 90	25 26 60	25 27 15	25 30 41	25 28 73	
1-4	longitude (E or W)	63 06 72	62 55 22	62 53 88	63 25 56	62 26 06	
2		ECOLOGY					
2-1	area (ha) of survey	3	30	25	100	15	
2-2	habitat (wadi, plains, dunes, crops)	Dunes	Wadi	Plain	Wadi	crops	
2-3	date of last rain	21/02/02	21/02/02	21/02/02	10/03/02	10/03/02	
2-4	rain amount (mm or Low Moderate High)	L	L	L	L	L	
2-5	vegetation (dry, greening, green, drying)	Green	Green	Green	Green	Green	
2-6	vegetation density (Low Medium Dense)	M	M	L	M	H	
2-7	soil moisture (wet/dry)	D	D	W	D	W	
3		LOCUSTS					
3-1	present or absent	A	A	A	A	A	
3-2	area infested (ha)						
4		HOPPERS					
4-1	hopper stages (H123456F)	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
4-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
4-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
4-4	hopper density (/site or /m2)						
5		BANDS					
5-1	band stage (H12345F)	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
5-2	band density (/m2 or Low Medium High)						
5-3	band sizes (m2 or ha)						
5-4	number of bands						
6		ADULTS					
6-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
6-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
6-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
6-4	adult density (/transect or /ha)						
6-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7		SWARMS					
7-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
7-2	swarm density (/m2 or Low Medium High)						
7-3	swarm size (km2 or ha)						
7-4	number of swarms						
7-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7-6	flying (direction, time passing)						
7-7	flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
8		CONTROL					
8-1	pesticide name & formulation						
8-2	application rate (l/ha or kg/ha)						
8-3	quantity (l)						
8-4	area treated (ha)						
8-5	ground or air	G A	G A	G A	G A	G A	G A
8-6	estimated % kill						
9		COMMENTS					
		RH:24% (crop near Dunes) Sorghum Gua Gua Acacia	RH:25% Date palm Alfalfa	RH:21% Sorghum Acacia	RH:35% Tamarix	RH:55% Barley Alfalfa Date palm Mango Ziziphus	

Was a GPS used to determine locations? **Yes**

Locust Officer : Desert Locust joint survey 2002
cleared by : _____

country : **Pakistan-Pasni**

date : Apr-02
date : _____

FAO DESERT LOCUST AND CONTROL FORM

1	SURVEY STOP	1	2	3	4	5	6
1-1	date	25/04/02	25/04/02	25/04/02	25/04/02	25/04/02	
1-2	name	Douri	Nagor	Rek	Shabi	Pishokan	
1-3	latitude (N)	25 13 42	25 16 70	25 15 27	25 13 39	25 09 21	
1-4	longitude (E or W)	62 18 56	62 15 96	62 11 91	62 08 66	62 02 46	
2		ECOLOGY					
2-1	area (ha) of survey	200	300	100	100	60	
2-2	habitat (wadi, plains, dunes, crops)	Dunes	Dunes	Dunes	Dunes	Wadi	
2-3	date of last rain	21/02/02	21/02/02	21/02/02	21/02/02	21/02/02	
2-4	rain amount (mm or Low Moderate High)	L	L	L	L	L	
2-5	vegetation (dry, greening, green, drying)	Drying	Green	Dry	Dry	Dry	
2-6	vegetation density (Low Medium Dense)	M	M	L	L	L	
2-7	soil moisture (wet/dry)	D	D	D	D	D	
3		LOCUSTS					
3-1	present or absent	A	A	A	A	A	
3-2	area infested (ha)						
4		HOPPERS					
4-1	hopper stages (H123456F)	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
4-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
4-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
4-4	hopper density (/site or /m2)						
5		BANDS					
5-1	band stage (H12345F)	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
5-2	band density (/m2 or Low Medium High)						
5-3	band sizes (m2 or ha)						
5-4	number of bands						
6		ADULTS					
6-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
6-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
6-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
6-4	adult density (/transect or /ha)						
6-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7		SWARMS					
7-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
7-2	swarm density (/m2 or Low Medium High)						
7-3	swarm size (km2 or ha)						
7-4	number of swarms						
7-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7-6	flying (direction, time passing)						
7-7	flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
8		CONTROL					
8-1	pesticide name & formulation						
8-2	application rate (l/ha or kg/ha)						
8-3	quantity (l)						
8-4	area treated (ha)						
8-5	ground or air	G A	G A	G A	G A	G A	G A
8-6	estimated % kill						
9		COMMENTS					
		RH:53%	RH:45% (Crop near dunes) Date palm Acacia	RH:44% Tamarix Acacia	RH:30% (Dunes beside sea)	RH:23%	

Was a GPS used to determine locations? **Yes**

Locust Officer : Desert Locust joint survey 2002
cleared by : _____

country : **Pakistan-Gwadar**

date : Apr-02
date : _____

FAO DESERT LOCUST AND CONTROL FORM

1	SURVEY STOP	1	2	3	4	5	6
1-1	date	26/04/02	26/04/02	26/04/02	26/04/02	26/04/02	
1-2	name	Garuk	Megshut	Sontsar	Meating	Shooli	
1-3	latitude (N)	25 19 06	25 25 21	25 30 53	25 32 27	25 35 53	
1-4	longitude (E or W)	62 11 23	62 02 74	61 59 52	62 04 60	62 07 43	
2		ECOLOGY					
2-1	area (ha) of survey	50	100	60	30	10	
2-2	habitat (wadi, plains, dunes, crops)	Plain	Plain	Wadi	crops	crops	
2-3	date of last rain	21/03/02	21/03/02	21/03/02	21/03/02	21/03/02	
2-4	rain amount (mm or Low Moderate High)	L	L	L	L	L	
2-5	vegetation (dry, greening, green, drying)	Dry	Dry	Green	Green	Green	
2-6	vegetation density (Low Medium Dense)	L	L	M	L	M	
2-7	soil moisture (wet/dry)	D	D	D	D	D	
3		LOCUSTS					
3-1	present or absent	A	A	A	A	A	
3-2	area infested (ha)						
4		HOPPERS					
4-1	hopper stages (H123456F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
4-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
4-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
4-4	hopper density (/site or /m2)						
5		BANDS					
5-1	band stage (H12345F)	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F	H 1 2 3 4 5 6 F
5-2	band density (/m2 or Low Medium High)						
5-3	band sizes (m2 or ha)						
5-4	number of bands						
6		ADULTS					
6-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
6-2	appearance (solitary, transiens, gregarious)	S T G	S T G	S T G	S T G	S T G	S T G
6-3	behaviour (isolated, scattered, groups)	I S G	I S G	I S G	I S G	I S G	I S G
6-4	adult density (/transect or /ha)						
6-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7		SWARMS					
7-1	maturity (immature, mature)	I M	I M	I M	I M	I M	I M
7-2	swarm density (/m2 or Low Medium High)						
7-3	swarm size (km2 or ha)						
7-4	number of swarms						
7-5	breeding (copulating, laying)	C L	C L	C L	C L	C L	C L
7-6	flying (direction, time passing)						
7-7	flying height (Low Medium High)	L M H	L M H	L M H	L M H	L M H	L M H
8		CONTROL					
8-1	pesticide name & formulation						
8-2	application rate (l/ha or kg/ha)						
8-3	quantity (l)						
8-4	area treated (ha)						
8-5	ground or air	G A	G A	G A	G A	G A	G A
8-6	estimated % kill						
9		COMMENTS					
		RH:24%	RH:33%	RH:27% Sorghum Acacia	RH:28% Acacia	RH:26% Sorghum	

Was a GPS used to determine locations?

Yes

country : **Pakistan-Gwadar**

Locust Officer : Desert Locust joint survey 2002

date : Apr-02

cleared by : _____

date : _____

APPENDIX 4. RAINFALL DATA, I.R. IRAN

Rainfall in the major basins of Sistan & Baluchistan Province, 1964-94

Basin area	30-year average	No. highly wet years	No. wet years	No. dry years	No. highly dry years	No. normal years	The driest years	The wettest years
Hirmand	62	2	6	3	2	17	1970-71	1974-75
Mashkil	125	2	4	6	-	18	1983-84	1981-82
Karir loot	92	2	4	5	-	19	1965-66	1975-76
Hamoun Jazmourian	117	3	3	6	1	17	1965-66	1975-76
Oman sea	170	2	4	6	-	18	1983-84	1981-82

Rainfall in Sistan & Baluchistan, 1996-97 and 2001-02 growing seasons

	1996-97 rainfall (mm)	2001-02 rainfall (mm)	Variation (%)
Zahedan	105.7	14.9	-86
Zabol	84.9	25	-70.6
Khash	267.9	28.7	-89.3
Saravan	196.9	14	-92
Iranshahr	207.2	19.5	-90.6
Chabahar	467.7	12.9	-97.2

Rainfall in Desert Locust areas, 2001-02

(rainfall in mm / number of days)

Month	July 2001				Aug 2001				Sep 2001				Oct 2001				Nov 2001			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Zahedan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saravan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Iransharh	0	0	0	0/1	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0
Chabahar ¹	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				19/2
Jask	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minab ¹	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				1

Month	Dec 2001				Jan 2002				Feb 2002				Mar 2002				Apr 2002			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Zahedan	0	0	0/1	5/7	0	0	0/6	0	0	0	0	5/6	0	0	0	0	0	0	0	0
Saravan	0	0	0	0	0	0	0	0/1	0	0	1/5	0	0/3	0	0	3/6	0	0	0	0
Iransharh	0	0	0	0/1	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
Chabahar	0	0	0	0	0	0	0	0/8	0	0/3	0	0	0	0	5/7	5/5	0	0	0	0
Jask ¹	0	0	0	0				8/4				0/1				8/3	0	0	0	0
Minab ¹				2				65/3	0	0	0	0	0	0	0	0	0	0	0	0

¹ Monthly total; specific week that the rain fell was not reported.

APPENDIX 5. RAINFALL DATA, PAKISTAN

Monthly rainfall (mm) in Desert Locust breeding areas in Baluchistan, 2001-02

	Jul 2001	Aug 2001	Sep 2001	Oct 2001	Nov 2001	Dec 2001	Jan 2002	Feb 2002	Mar 2002	Apr 2002
Quetta	6	36	0	0	0	17.1	13	33	40	39
Noshki	0	0	0	0	0	8	7	6	6	9
Khuzdar	81	75.7	2.5	0	0	0	0	0	7	1.5
Kharan	0	0	0	0	0	0	0	0	0	0
Panjgur	39.5	0	0	0	0	0	0	2	4	0
Turbat	21	0	0	0	0	0	0	12	0	0
Pasni	60	0	0	0	0	0	0	3.5	0	0
Gwadar	0	0	0	0	0	0	0	0	0	0

APPENDIX 6. PRIMARY AREA DESCRIPTIONS

I.R. Iran

On the basis of the experiences of the past twenty years, the main part of Desert Locust activity occurs in the winter-spring breeding areas between 2503N-3128N and 5447E-6319E in Sistan Baluchistan and parts of Hormozgan (Jask) and Kerman (Kahnoj) provinces. The highest place in the region is Mount Taftan with an altitude of 4042 m above sea level and the lowest place with an altitude of 5 m lies along the Oman Sea. The region has an average rainfall of 80-120 mm per year. The average yearly temperature is 21.5°C. About 61 percent of the total area (118,000 km²) is rangeland, 30 percent is desert, seven percent (13,870 km²) is forest, and one percent is under farm and orchard crops.

Kavir Loot Basin

With an area of 210,000 km² this area represents the largest portion of the central plateau. An area of 35,000 km² of the Kavir Loot is in the Iranian Baluchistan. No significant Desert Locust activities have been observed in the basin area during the past twenty years except for a number of small areas on the Abkhan Plains, Goharkuh area, the Khash and Kurin plains, and Hesarouieh near Zahedan.

Hamoun-Jazmorian Basin

One of the most important areas of Desert Locust activities in I.R. Iran is the 70,427 km² Hamoun-Jazmorian basin. This area consists of Irandegan in northern Khash, Dasht-e-Bampour, Bazman, Iranshahr, Dalgan, Espakeh, Maskutan, and Lashar area as districts of Nikshahr. Approximately 34,500 km² of the basin, from Zehkaloot and Jiroft to the Kahnaj plains, is in Kerman province. The average annual rainfall of the basin area is about 117 mm with an average yearly evaporation of 1,800 mm, an average annual temperature of 24.1°C, and a temperate dry to temperate warm highly dry climate. Major crops are wheat, alfalfa, maize, greenhouse and under plastic fruits and vegetables, citrus and dates. Natural vegetation is generally dry except for the area around the Hamoun-Jazmorian.

Hirmand Basin

This basin has an area of 34,273 km² and is located along the middle portion of the eastern borders with neighbouring Afghanistan and Pakistan. It comprises of Sistan, Hormak and Dasht-e-Zahedan. Desert Locust outbreaks have rarely been observed in this area with only one control operation carried out against dense groups of adults in places near Zabol.

Mashkil Basin

With an area of 37,008 km², this basin area lies in the eastern part of the country and comprises Mirjavah, Ladez and Tahlab plains as districts of Zahedan, Abkhan plains and Poshtkoh belonging to Khash and Zaboli, and Suran and Galegh as districts of Saravan. It extends into the northern Baluchistan, Pakistan areas of Nushki, Mashkil and Kharan plains. Rainfall in these plains increases the potential for Desert Locust populations and outbreaks. At least five Desert Locust control operations have been carried out in the area during the past twenty years. At present, fully dry conditions prevail in rangelands and along seasonal rivers. Irrigated farming in the area includes wheat, alfalfa, cumin and maize. The average rainfall of the basin is 125 mm per year with the average annual temperature of 27°C. About 22,000 km² of the total area is mountainous and 15,000 km² is lower altitude plains and

mountains, ranging from 500-3000 m above sea level. Mount Taftan (4,042 m ASL) is the highest point in the basin.

Oman Sea Basin

The Oman Sea Basin lies in southern Baluchistan province with an area of 48,906 km². The area consists mainly of plains: Pishin, Qaser Qand, Dashtaiyari, Chabahar, Nikshahr Kahir, Fanooj, Zarabad, and Jask. The average annual rainfall is 170 mm with a temperature dry climate. Sarbaz River originates in the Makran Range and empties into the Pishin Dam reservoir. Most of the vegetation of the area consists of annual grass and rangeland that remains dry in the absence of rainfall. Greener vegetation is present in parts of the rangeland and forests closer to Jaz. Major crops are banana, citrus, alfalfa, onion and tomato. Given adequate rainfall, this has been an important Desert Locust breeding area in the past where control operations have been required.

Primary areas

Primary survey areas in 2002 were identified with the help of SPOT-VGT imagery for second dekad of March 2002 and supplemented by an analysis provided by DLIS. These will differ from year to year according to rainfall and the locust situation.

I.R. Iran coast – 6 primary areas

	Location	Coordinates	Area (km ²)	Comments
1.	southwest of Pishin in the Dashtiari River valley	2540/6122 2540/6123	5	palm plantations along the valley edge?
2.	Vashnum plains	2544/6055 2542/6055 2544/6057 2541/6057	28	likely to contain some good DL habitats mixed with crops and trees
3.	N. Chababahr	2517/6037 2522/6036	6	trees along the cliffs near the town?
4.	Zarabad area	2539/5919 2539/5923 2537/5921	10	
5.	E. Jask along coast	2538/5801 2536/5803 2536/5801	5	Mangroves?
6.	Southwest of Minab	2819/5706 2821/5704	8	On the coast

I.R. Iran interior – 7 primary areas

	Location	Coordinates	Area (km ²)	Comments
1.	Iranshahr - Bampur	2713/6042 2707/6045 2707/6039 27106023	300	Mainly crops?
2.	Bampur area 1	2709/6015 2712/5959	1-10	5 small patches of varying areas
	Bampur area 2	2723/5954 2718/5959	55	Crops mixed with trees & natural veg?
3.	Saravan	2722/6218 2719/6223	20	Palm oasis
4.	Kushkuk	2737/6221	5	Oasis with crops?
5.	Zaboli area 1	2726/6148 2715/6201 2722/6157 2722/6150	varying	Crops?
	Zaboli area 2	2733/6138	9	Crops?
	Zaboli area 3	2736/6134	3	Crops?
	Zaboli area 4	2707/6140	7	Crops?
	Zaboli area 5	2711/6145	2	Crops?
6.	Jaz Murian basin: (a) southeast side	2705/5900 2707/5906 2704/5907 2704/5904	42	Crops and palms?
	(b) southern side 1	2711/5833	3	Crops and palms?
	southern side 2	2721/5803 2711/5825	35	Scattered crops and palms?
	(c) northern side 1	2742/5851 2741/5853	11	Crops and palms?
	northern side 2	2740/5858	6	Crops and palms?
7.	Dalgan area	2734/5914 2724/5942	85	Crops and palms?

Pakistan interior – 9 primary areas

	Location	Coordinates	Area (km ²)	Comments
1.	IRN/Pak border – south of Mirjavah/Taftan	2853/6134 2843/6140 2844/6143 2837/6149	26+2	Crops on the border along the Tahlab river?
2.	Chagai Hills	2921/6443 2907/6440 2907/6443	75	
3.	Nushki	2935/6558 2931/6559 2934/6558 2934/6600	11	Crops and trees associated with the town?
4.	Dalbandin – Nushki road	2922/6553 2904/6530	1-16	6 separate areas of crops (?) along the road
5.	Kharan area: west	2831/6511 2836/6515 2836/6518 2833/6517	42	
	Kharan area: east & southeast	2834/6526 2834/6534 2823/6530 2823/6528	115	
	Kharan area: Washuk	2743/6448	2	
6.	Panjgur	2656/6402 2700/6411	54	Palms along the valley
7.	Gar area	2637/6320	5	
8.	N. Turbat: Gish valley	2616/6301 2818/6310	45	Oasis?
9.	Turbat valley	2607/6216 2600/6307	200	Long stretch of palms and oases

APPENDIX 7. SPOT-VGT ANALYSIS

The following information was received from FAO DLIS at the Plant Protection Organization (Tehran) and the Department of Plant Protection (Karachi) on 26 March 2002.

SPOT-VEG satellite imagery for use during the 2002 Joint Survey

It has been suggested that SPOT-VEG satellite imagery indicating the location of green vegetation could be useful in helping to determine where to look for locusts during the 2002 Joint Iran/Pakistan Survey. Consequently, DLIS at FAO HQ has analyzed the latest SPOT vegetation image and identified the primary areas that were green during the period 11-20 March 2002.

Whenever possible, latitude and longitude coordinates of the corner points are given to indicate the perimeter of the area that is green. An estimate of the total number of sq. km of green vegetation is also provided. In cases of small areas, a single point is given. During the survey, these coordinates can be entered into the GPS and the GOTO function can be used to guide the teams to the locations. These images are not meant to be maps themselves as they have no coordinates. Rather, they should be used in conjunction with the 1:500,000 TPC maps.

It is important to realize that this product is not perfect. The areas that are indicated as green (yellow and greenish colours pixels) are likely to be green vegetation; however, they may consist of perennial plant species or trees that are not suitable for Desert Locust, for example, palm plantations or Acacia trees. Those areas that are indicated as dry without vegetation may indeed have enough vegetation for Desert Locust but not enough to be detected by the satellite. A good example is the Shooli area south of Turbat, Pakistan that is indicated as dry but it is likely that there is sparse vegetation allowing Desert Locust to survive and perhaps breed. This may also be true for the Kulanch valley west of Pasni, Pakistan. Therefore, do NOT limit surveys to only those areas that are showing green on the satellite. Other traditional areas known to contain Desert Locust should also be checked even if the satellite image suggests that they are dry.

The areas that are green according to the latest SPOT image are listed in the following tables, each with a number that appears on the various images that have been supplied to you. Save these images to your computer's hard disk, open them using Adobe Reader programme (because they are PDF files that can only be opened using Reader), and print them on a colour printer.

We would be grateful if you could take a photo at the areas indicated in the table that are visited during the survey, and complete the FAO DL Survey Form with your observations. This information should be sent to DLIS after the survey to allow further verification and improvements to SPOT-VEG imagery. The results of this exercise will be reported at the next SW Asia Commission meeting.

Thank you,

Keith Cressman
Pietro Ceccato

Seven images supplied as well as tables of primary areas (see Appendix 6)
Overview (Baluchistan), Pakistan (coast, central and northern Baluchistan), I.R. Iran (coast, eastern interior, western interior).