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To: Cynthia Giles-Parker
Product Manager 22
Registration Division (H7505C)

From: Anthony F. Maciorowski, Chief *A. Maciorowski*
Ecological Effects Branch/EFED (H7507C)

Attached, please find the EEB review of...

Reg./File # : 000707-EGR
Chemical Name : Fenbuconazole
Type Product : Fungicide
Product Name : Fenethanil, Indar 2F
Company Name : Rohm and Haas Company
Purpose : Review proposed registration for use on
bananas.

Action Code : 100 Date Due : 01/26/93
Reviewer : H. Mansfield Date In : 09/29/92

EEB Guideline/MRID Summary Table: The review in this package contains an evaluation of the following:

GDLN NO	MRID NO	CAT	GDLN NO	MRID NO	CAT	GDLN NO	MRID NO	CAT
71-1(A)			72-2(A)			72-7(A)		
71-1(B)			72-2(B)			72-7(B)		
71-2(A)			72-3(A)			122-1(A)		
71-2(B)			72-3(B)			122-1(B)		
71-3			72-3(C)			122-2		
71-4(A)			72-3(D)			123-1(A)		
71-4(B)			72-3(E)			123-1(B)		
71-5(A)			72-3(F)			123-2		
71-5(B)			72-4(A)			124-1		
72-1(A)			72-4(B)			124-2		
72-1(B)			72-5			141-1		
72-1(C)			72-6			141-2		
72-1(D)						141-5		

Y=Acceptable (Study satisfied Guideline)/Concur
P=Partial (Study partially fulfilled Guideline but additional information is needed
S=Supplemental (Study provided useful information but Guideline was not satisfied)
N=Unacceptable (Study was rejected)/Nonconcur

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EEB REVIEW
RH-7592 (Fenbuconazole)

100.0 Submission Purpose and Label Information

100.1 Submission Purpose and Pesticide Use

Section 3 registration for the use of fenbuconazole on bananas.

100.2 Formulation Information

Active ingredient

α -[2-(4-chlorophenyl)ethyl]- α -phenyl-1H-
1,2,4-triazole-1-
propanitrile.....22.8*

Inert ingredients.....77.2%

*Equivalent to 2 lbs active ingredient per gallon.

100.3 Application Methods, Directions, Rates

Ground or aerial applications may be made at a rate of 6.0 fld. oz. (0.9 lb ai) per acre as required or every 14 to 21 days. A maximum of 8 applications (0.72 lb ai) are allowed per acre per season.

100.4 Target Organisms

Mycosphaerella spp.

100.5 Precautionary Labeling

Environmental Hazards

This pesticide is toxic to fish and aquatic invertebrates. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent aquatic sites. Do not contaminate water when disposing of equipment washwaters and rinsates.

101.0 Hazard Assessment

101.1 Discussion

Fenbuconazole is very persistent in the environment and the possibility of chronic or reproductive hazard exists. The following chronic studies have been received, but have not yet been evaluated: avian reproduction studies with the mallard and bobwhite, fish early life stage, and aquatic invertebrate life-cycle.

101.2 Likelihood of Adverse Effects to Nontarget Organisms

Environmental Fate Data

. Fenbuconazole 2F is stable to hydrolysis at pH levels found in the environment.

. RH-7592 2F degrades in soil under aerobic conditions with a half-life of 285 and 367 days in Lawrenceville silty clay loam and Pasquotank sandy loam soils, respectively.

. RH-7592 2F degrades in soil under anaerobic conditions with a half-life of 451 and 655 days in the Lawrenceville silty clay loam and the Pasquotank sandy loam soils, respectively.

. Fenbuconazole is slightly mobile to immobile in soils. Adsorption appears to be associated with percent organic matter present. The chemical is slightly mobile in soils containing a low percent organic material ($\leq 1\%$) and relatively immobile in soils with higher levels of organic material.

. RH-7592 2F residues have a slight potential to leach in the soil environment.

. RH-7592 2F will not bioaccumulate in fish and any residues that are taken up will be depurated.

Terrestrial Hazard

Fenbuconazole may be characterized as practically non-toxic on an acute basis to avian species (Bobwhite quail, *Colinus virginianus*, $LD_{50} > 2150$ mg a.i./kg).

RH-7592 2F may be characterized as slightly toxic on a subacute basis to avian species (Mallard duck, *Anas platyrhynchos*, LC_{50} of 2013 ppm, and Bobwhite quail, *Colinus virginianus*, LC_{50} of 4050 ppm).

RH-7592 2F may be characterized as relatively non-toxic to nontarget insects (Honey bee, *Apis mellifera*, $LD_{50} > 292.18$ ug a.i./bee).

An acute oral LD_{50} performed with rats indicated that fenbuconazole is practically nontoxic to mammals ($LD_{50} > 2000$ mg/kg). A three month rat feeding study produced a NOEL of 20 ppm and a LEL of 80 ppm.

A single application of 0.09 lbs a.i. per acre is expected to produce the following residues on terrestrial food items:

TABLE ONE

<u>Short Range Grass</u>	<u>Long Range Grass</u>	<u>Leaves/ Leafy Crops</u>	<u>Forage</u>	<u>Pods/ Insects</u>	<u>Fruit</u>
21.6 ppm	9.9 ppm	11.3 ppm	5.2 ppm	1.1 ppm	0.6 ppm

These levels are significantly below the restricted use trigger (1/5 of the LC₅₀ values) for bobwhite quail, mallard ducks, and rats. On the basis of this data, a single application of fenbuconazole on bananas will not pose a hazard to avian, mammalian, or insect life.

Although EEB has little concern that there is an acute hazard to terrestrial life from this use, the extremely persistent nature of fenbuconazole does raise the concern of a chronic risk.

With the exception of mammals, the hazard to nontarget organisms from chronic exposure can not be examined at this time because of a lack of data. Hazard to mammals is not indicated by residues expected on the banana fruit from 8 applications. However, foliage, as well as range grass surrounding banana trees on plantations, is likely to be contaminated by fenbuconazole. Residues of 158, 83, and 72 ppm may be expected on short grass, long grass, and leaves, respectively (see attachment). As the chemical produced an LEL of 80 ppm in a 3 month feeding study, grazing rodents might be adversely affected by this use of fenbuconazole. When the submitted avian reproduction studies have been evaluated, chronic hazard to birds may also be evaluated.

Aquatic Hazard

RH-7592 2F, with a 96-hour LC₅₀ of 1.5 mg a.i./L for Rainbow trout, *Salmo gairdneri*, is considered moderately toxic to coldwater fish. Data for the Bluegill sunfish, *Lepomis macrochirus*, 96-hour LC₅₀ of 0.68 mg a.i./L, indicate that fenbuconazole is highly toxic to warmwater fish.

The 48-hour EC₅₀ for *Daphnia magna* of 2.3 mg a.i./L indicates that fenbuconazole is moderately toxic to freshwater invertebrates.

Based on the EEB scenario of a 10-acre drainage basin draining into a one acre farm pond, the maximum estimated environmental concentration (EEC) for the maximum ground application rate of 0.09 lbs a.i./A would be approximately 1.1 ppb or 13.3 ppb for a 6 foot or 6 inch deep pond, respectively. This value is less

than 1/10 the LC₅₀ values for coldwater fish, warmwater fish, and freshwater invertebrates (see table 2 below). Accordingly, no acute hazard to non-endangered aquatic species is expected.

TABLE 2 HAZARD TRIGGERS

SPECIES	HIGH RISK TRIGGER (PPM)	RESTRICTED USE, NON-ENDANGERED SPECIES HAZARD TRIGGER (PPM)	RESTRICTED USE, ENDANGERED SPECIES HAZARD TRIGGER (PPM)
rainbow trout	.75	0.15	0.075
bluegill sunfish	.34	0.068	0.034
<i>Daphnia magna</i>	1.2	0.23	0.115

The chronic hazard to aquatic organisms will be evaluated upon completion of the *Daphnia magna* life cycle and fish early life stage study.

Plant Hazard

Due to the low water solubility of fenbuconazole (3.8 ppm) the hazard to aquatic plants should be minimal and aquatic plant growth testing on the freshwater green alga, *Selenastrum capricornutum*, is not required. The registrant has, however, submitted this study and it is currently in review.

101.1 Endangered Species Consideration

No acute hazard to avian, mammalian, aquatic, or insect species is expected from the use of fenbuconazole on bananas. Endangered grazing mammals might be affected by chronic exposure. Chronic or reproductive hazards to other endangered organisms can not be evaluated at this time. Formal consultation with the U.S. Fish and Wildlife Service (USFWS) regarding the use of this pesticide and possible detrimental effects to federally listed mammals should be initiated pending evaluation of other in house chronic studies and subsequent risk assessment.

101.4 Adequacy of Toxicity Data

Four chronic studies currently in review must be evaluated for this use (avian reproduction with mallard and bobwhite, fish early life stage with fathead minnow, and invertebrate life cycle with *Daphnia magna*). A fish life cycle test is being held in reserve pending the results of the in house toxicity testing.

101.5 Adequacy of Labeling

No change to the current environmental hazards labeling is necessary.

102.0 Classification

Not classified.

103.0 Conclusions

Based on the available data the proposed registration will not pose an acute risk to avian, aquatic, mammalian, or insect species. EEB is concerned about the hazard from long term exposure as environmental fate data indicates that fenbuconazole is persistent in both aquatic and terrestrial environments. Two avian reproduction, a fish early life stage, and an aquatic invertebrate life cycle study are in house and must be reviewed and the chronic hazard to these organisms must also be assessed prior to registration.

Endangered and non-endangered grazing mammals might be affected by chronic exposure to fenbuconazole. Reproductive hazards to other endangered organisms can not be evaluated at this time. Formal consultation with the USFWS regarding the use of this pesticide and possible detrimental effects to federally listed mammals should be initiated pending evaluation of other in house chronic studies and subsequent risk assessment.

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EEC CALCULATION SHEETI. For un-incorporated ground application

A. Runoff

$$0.09 \text{ lb(s)} \times \frac{0.02}{(\% \text{ runoff})} \times \frac{10 \text{ (A)}}{\text{(from 10 A. drainage basin)}} = \frac{0.018 \text{ lb(s)}}{\text{(tot. runoff)}}$$

EEC of 1 lb a.i. direct application to 1 A. pond 6-foot deep = 61 ppb

$$\text{Therefore, EEC} = \frac{61 \text{ ppb}}{734} \times \frac{0.018 \text{ (lb)}}{13.2 \text{ ppb}} = \frac{1.098 \text{ ppb}}{6'}$$

II. For incorporated ground application

A. Runoff

$$\text{--- lb(s)} \div \frac{\text{--- (cm)}}{\text{(depth of incorporation)}} \times \frac{0.0 \text{---}}{(\% \text{ runoff})} \times \frac{10 \text{ (A)}}{\text{(10 A d. basin)}} = \text{--- lb(s)} \text{ (tot. runoff)}$$

$$\text{Therefore, EEC} = 61 \text{ ppb} \times \text{--- (lbs)} = \text{--- ppb}$$

III. For aerial application (or mist blower)

A. Runoff

$$0.09 \text{ lb(s)} \times \frac{0.6}{\text{(appl. efficiency)}} \times \frac{0.02}{(\% \text{ runoff})} \times \frac{10 \text{ (A)}}{\text{(10 A. d. basin)}} = \frac{0.008 \text{ lb(s)}}{\text{(tot. runoff)}}$$

B. Drift

$$0.09 \text{ lb(s)} \times \frac{0.05}{(5 \% \text{ drift})} = \frac{0.0045 \text{ lb(s)}}{\text{(tot. drift)}}$$

$$\text{Tot. loading} = \frac{0.008 \text{ lb(s)}}{\text{(tot. runoff)}} + \frac{0.0045 \text{ lb(s)}}{\text{(tot. drift)}} = \frac{0.0125 \text{ lb(s)}}{\text{(tot. runoff)}}$$

$$\text{Therefore, EEC} = 61 \text{ ppb} \times \frac{0.0125 \text{ (lbs)}}{11.23 \text{ ppb}} = \frac{0.933 \text{ ppb}}{6'}$$

DAILY ACCUMULATED PESTICIDE RESIDUES—MULTP. APPL.

Chemical name ————— fenbuconazole —leaves
 Initial concentration (ppm) — 11.3
 Half-life ————— 367
 A number of application — 8
 Application interval — 14
 Length of simulation (day) — 365

DAY RESIDUE (PPM)

0	11.3	51	42.72882	104	81.63036	157	73.8548	210	66.81988
1	11.27868	52	42.64819	105	81.47633	158	73.71544	211	66.6938
2	11.2574	53	42.56772	106	81.3226	159	73.57635	212	66.56795
3	11.23616	54	42.4874	107	81.16915	160	73.43751	213	66.44235
4	11.21495	55	42.40723	108	81.016	161	73.29895	214	66.31698
5	11.19379	56	53.62721	109	80.86311	162	73.16064	215	66.19185
6	11.17267	57	53.52602	110	80.71055	163	73.0226	216	66.06695
7	11.15159	58	53.42502	111	80.55825	164	72.88481	217	65.94228
8	11.13055	59	53.32421	112	80.40625	165	72.74728	218	65.81786
9	11.10954	60	53.2236	113	80.25451	166	72.61001	219	65.69368
10	11.08858	61	53.12317	114	80.10309	167	72.473	220	65.56971
11	11.06766	62	53.02293	115	79.95194	168	72.33626	221	65.44598
12	11.04678	63	52.92288	116	79.80107	169	72.19976	222	65.3225
13	11.02593	64	52.82302	117	79.6505	170	72.06353	223	65.19923
14	22.30513	65	52.72335	118	79.50021	171	71.92755	224	65.07621
15	22.26304	66	52.62387	119	79.3502	172	71.79183	225	64.95343
16	22.22103	67	52.52457	120	79.20048	173	71.65638	226	64.83086
17	22.1791	68	52.42546	121	79.05103	174	71.52116	227	64.70853
18	22.13725	69	52.32654	122	78.90187	175	71.3862	228	64.58643
19	22.09548	70	63.5278	123	78.75298	176	71.2515	229	64.46456
20	22.05379	71	63.40793	124	78.6044	177	71.11706	230	64.34292
21	22.01218	72	63.28829	125	78.45607	178	70.98286	231	64.22151
22	21.97064	73	63.16887	126	78.30803	179	70.84893	232	64.10033
23	21.92919	74	63.04968	127	78.16027	180	70.71525	233	63.97939
24	21.88781	75	62.93071	128	78.01279	181	70.58181	234	63.85866
25	21.84651	76	62.81196	129	77.86559	182	70.44863	235	63.73817
26	21.80528	77	62.69345	130	77.71867	183	70.31571	236	63.61791
27	21.76414	78	62.57514	131	77.57202	184	70.18301	237	63.49786
28	33.02307	79	62.45708	132	77.42565	185	70.05059	238	63.37804
29	32.96076	80	62.33922	133	77.27955	186	69.91841	239	63.25846
30	32.89857	81	62.22159	134	77.13373	187	69.7865	240	63.13909
31	32.8365	82	62.10419	135	76.98819	188	69.65481	241	63.01996
32	32.77453	83	61.98701	136	76.84292	189	69.52338	242	62.90105
33	32.71269	84	73.17004	137	76.69792	190	69.39219	243	62.78236
34	32.65096	85	73.03198	138	76.55321	191	69.26126	244	62.66389
35	32.58936	86	72.89418	139	76.40875	192	69.13057	245	62.54565
36	32.52786	87	72.75663	140	76.26458	193	69.00013	246	62.42763
37	32.46649	88	72.61934	141	76.12068	194	68.86993	247	62.30984
38	32.40523	89	72.48231	142	75.97704	195	68.73998	248	62.19227
39	32.34408	90	72.34555	143	75.83368	196	68.61028	249	62.07492
40	32.28305	91	72.20904	144	75.69059	197	68.48081	250	61.9578
41	32.22213	92	72.0728	145	75.54777	198	68.3516	251	61.84088
42	43.46134	93	71.9368	146	75.40522	199	68.22261	252	61.72419
43	43.37933	94	71.80106	147	75.26294	200	68.0939	253	61.60772
44	43.29748	95	71.66558	148	75.12092	201	67.96541	254	61.49148
45	43.21578	96	71.53035	149	74.97917	202	67.83716	255	61.37545
46	43.13423	97	71.39538	150	74.8377	203	67.70916	256	61.25964
47	43.05284	98	82.56066	151	74.69649	204	67.5814	257	61.14405
48	42.97161	99	82.40488	152	74.55555	205	67.45388	258	61.02867
49	42.89052	100	82.24939	153	74.41486	206	67.3266	259	60.91352
50	42.8096	101	82.0942	154	74.27445	207	67.19956	260	60.79858
		102	81.93929	155	74.1343	208	67.07276	261	60.68386
		103	81.78468	156	73.99441	209	66.9462	262	60.56935

263	60.45507	328	53.47081
264	60.341	329	53.36992
265	60.22714	330	53.26922
266	60.11349	331	53.1687
267	60.00006	332	53.06838
268	59.88685	333	52.96824
269	59.77385	334	52.8683
270	59.66106	335	52.76854
271	59.54849	336	52.66897
272	59.43613	337	52.56959
273	59.32398	338	52.47039
274	59.21204	339	52.37139
275	59.10031	340	52.27257
276	58.98879	341	52.17394
277	58.87749	342	52.07548
278	58.7664	343	51.97723
279	58.6555	344	51.87915
280	58.54483	345	51.78126
281	58.43436	346	51.68355
282	58.32411	347	51.58603
283	58.21405	348	51.4887
284	58.1042	349	51.39154
285	57.99457	350	51.29457
286	57.88514	351	51.19778
287	57.77592	352	51.10118
288	57.6669	353	51.00476
289	57.55809	354	50.90851
290	57.44948	355	50.81245
291	57.34107	356	50.71657
292	57.23288	357	50.62088
293	57.12489	358	50.52537
294	57.0171	359	50.43003
295	56.90951	360	50.33487
296	56.80213	361	50.23989
297	56.69495	362	50.14509
298	56.58797	363	50.05047
299	56.4812	364	49.95603
300	56.37462	365	49.86177
301	56.26825		Maximum residue
302	56.16207		----- 82.56066
303	56.0561		Average residue
304	55.95034		-----
305	55.84476		58.83574
306	55.73939		
307	55.63421		
308	55.52923		
309	55.42446		
310	55.31988		
311	55.21549		
312	55.11131		
313	55.00732		
314	54.90352		
315	54.79993		
316	54.69652		
317	54.59332		
318	54.4903		
319	54.38748		
320	54.28487		
321	54.18243		
322	54.0802		
323	53.97816		
324	53.8763		
325	53.77464		
326	53.67317		
327	53.57189		

DAILY ACCUMULATED PESTICIDE RESIDUES—MULTP. APPL.

Chemical name ————— fenbuconazole-long grass
 Initial concentration (ppm) — 9.899999
 Half-life ————— 367
 A number of application — 8
 Application interval ————— 14
 Length of simulation (day) — 365

DAY RESIDUE (PPM)

0	9.899999	51	37.43498	104	71.51686	157	64.70464	210	58.54131
1	9.881319	52	37.36434	105	71.38191	158	64.58255	211	58.43085
2	9.862675	53	37.29384	106	71.24723	159	64.46607	212	58.3206
3	9.844064	54	37.22347	107	71.11228	160	64.33906	213	58.21055
4	9.825489	55	37.15323	108	70.97861	161	64.21765	214	58.10071
5	9.806949	56	46.98313	109	70.84468	162	64.09649	215	57.99108
6	9.788444	57	46.89447	110	70.711	163	63.97554	216	57.88166
7	9.769976	58	46.80599	111	70.57758	164	63.85483	217	57.77244
8	9.75154	59	46.71767	112	70.4444	165	63.73434	218	57.66343
9	9.73314	60	46.62952	113	70.31148	166	63.61408	219	57.55463
10	9.714774	61	46.54153	114	70.17881	167	63.49404	220	57.44603
11	9.696444	62	46.45371	115	70.04639	168	63.37424	221	57.33763
12	9.678148	63	46.36606	116	69.91421	169	63.25465	222	57.22944
13	9.659886	64	46.27857	117	69.78229	170	63.1353	223	57.12145
14	19.54166	65	46.19125	118	69.65062	171	63.01617	224	57.01367
15	19.50478	66	46.10409	119	69.5192	172	62.89726	225	56.90609
16	19.46798	67	46.0171	120	69.38803	173	62.77859	226	56.79872
17	19.43125	68	45.93027	121	69.2571	174	62.66013	227	56.69155
18	19.39458	69	45.8436	122	69.12641	175	62.5419	228	56.58457
19	19.35799	70	55.6571	123	68.99598	176	62.42388	229	56.4778
20	19.32146	71	55.55208	124	68.8658	177	62.3061	230	56.37123
21	19.285	72	55.44726	125	68.73584	178	62.18853	231	56.26486
22	19.24861	73	55.34263	126	68.60615	179	62.07118	232	56.15869
23	19.21229	74	55.23821	127	68.4767	180	61.95406	233	56.05274
24	19.17604	75	55.13398	128	68.34749	181	61.83716	234	55.94697
25	19.13986	76	55.02995	129	68.21851	182	61.72048	235	55.84141
26	19.10374	77	54.92611	130	68.0898	183	61.60402	236	55.73604
27	19.0677	78	54.82247	131	67.96132	184	61.48778	237	55.63087
28	28.93172	79	54.71902	132	67.83308	185	61.37176	238	55.5259
29	28.87713	80	54.61578	133	67.70509	186	61.25596	239	55.42113
30	28.82264	81	54.51272	134	67.57734	187	61.14037	240	55.31655
31	28.76825	82	54.40986	135	67.44983	188	61.02501	241	55.21217
32	28.71397	83	54.3072	136	67.32256	189	60.90986	242	55.108
33	28.65979	84	64.10472	137	67.19553	190	60.79492	243	55.00401
34	28.60571	85	63.98377	138	67.06873	191	60.68022	244	54.90022
35	28.55174	86	63.86304	139	66.94218	192	60.56571	245	54.79663
36	28.49786	87	63.74253	140	66.81586	193	60.45143	246	54.69323
37	28.44409	88	63.62225	141	66.68979	194	60.33737	247	54.59004
38	28.39042	89	63.50221	142	66.56395	195	60.22352	248	54.48703
39	28.33685	90	63.38238	143	66.43836	196	60.10988	249	54.38422
40	28.28338	91	63.26279	144	66.31299	197	59.99646	250	54.2816
41	28.23001	92	63.14342	145	66.18787	198	59.88325	251	54.17918
42	38.07675	93	63.02427	146	66.06298	199	59.77026	252	54.07694
43	38.00489	94	62.90535	147	65.93832	200	59.65748	253	53.97491
44	37.93318	95	62.78665	148	65.81391	201	59.54491	254	53.87306
45	37.86161	96	62.66818	149	65.68972	202	59.43256	255	53.77141
46	37.79017	97	62.54993	150	65.56576	203	59.32041	256	53.66995
47	37.71886	98	72.3319	151	65.44205	204	59.20848	257	53.56868
48	37.64769	99	72.19542	152	65.31858	205	59.09676	258	53.4676
49	37.57665	100	72.05921	153	65.19531	206	58.98525	259	53.36671
50	37.50575	101	71.92323	154	65.07231	207	58.87395	260	53.26602
		102	71.78751	155	64.94952	208	58.76286	261	53.16551
		103	71.65206	156	64.82696	209	58.65198	262	53.06518

263 52.96506
264 52.86512
265 52.76537
266 52.6658
267 52.56643
268 52.46724
269 52.36824
270 52.26943
271 52.1708
272 52.07236
273 51.9741
274 51.87603
275 51.77815
276 51.68045
277 51.58293
278 51.4856
279 51.38845
280 51.29149
281 51.1947
282 51.09811
283 51.00169
284 50.90546
285 50.8094
286 50.71353
287 50.61783
288 50.52232
289 50.42699
290 50.33184
291 50.23687
292 50.14208
293 50.04746
294 49.95303
295 49.85877
296 49.7647
297 49.67079
298 49.57707
299 49.48352
300 49.39015
301 49.29696
302 49.20394
303 49.1111
304 49.01843
305 48.92593
306 48.83362
307 48.74148
308 48.6495
309 48.55771
310 48.46608
311 48.37463
312 48.28335
313 48.19225
314 48.10131
315 48.01055
316 47.91996
317 47.82954
318 47.73929
319 47.64921
320 47.5593
321 47.46956
322 47.37999
323 47.29059
324 47.20136
325 47.1123
326 47.02339
327 46.93467

328 46.84611
329 46.75772
330 46.66949
331 46.58142
332 46.49353
333 46.4058
334 46.31824
335 46.23084
336 46.14361
337 46.05654
338 45.96964
339 45.8829
340 45.79631
341 45.70991
342 45.62365
343 45.53757
344 45.45165
345 45.36588
346 45.28028
347 45.19484
348 45.10956
349 45.02445
350 44.93949
351 44.85469
352 44.77006
353 44.68558
354 44.60126
355 44.5171
356 44.4331
357 44.34926
358 44.26558
359 44.18206
360 44.09869
361 44.01547
362 43.93242
363 43.84953
364 43.76679
365 43.68421

Maximum residue
----- 72.3319
Average residue

51.54635

DAILY ACCUMULATED PESTICIDE RESIDUES—MULTP. APPL.

Chemical name ————— fenbuconazole-short grass
 Initial concentration (ppm) — 21.6
 Half-life ————— 367
 A number of application — 8
 Application interval — 14
 Length of simulation (day) — 365

DAY RESIDUE (PPM)

0	21.6	51	81.67631	104	156.0368	157	141.1738	210	127.7265
1	21.55924	52	81.5222	105	155.7424	158	140.9074	211	127.4855
2	21.51856	53	81.36838	106	155.4485	159	140.6415	212	127.2449
3	21.47796	54	81.21485	107	155.1552	160	140.3761	213	127.0049
4	21.43743	55	81.0616	108	154.8624	161	140.1113	214	126.7652
5	21.39699	56	102.5086	109	154.5702	162	139.8469	215	126.526
6	21.35661	57	102.3152	110	154.2786	163	139.583	216	126.2873
7	21.31631	58	102.1222	111	153.9874	164	139.3196	217	126.049
8	21.27609	59	101.9295	112	153.6969	165	139.0568	218	125.8111
9	21.23594	60	101.7371	113	153.4069	166	138.7944	219	125.5737
10	21.19587	61	101.5452	114	153.1174	167	138.5325	220	125.3368
11	21.15588	62	101.3536	115	152.8285	168	138.2711	221	125.1003
12	21.11596	63	101.1623	116	152.5401	169	138.0102	222	124.8642
13	21.07612	64	100.9714	117	152.2523	170	137.7498	223	124.6286
14	42.63635	65	100.7809	118	151.965	171	137.4898	224	124.3935
15	42.5559	66	100.5907	119	151.6783	172	137.2304	225	124.1588
16	42.4756	67	100.4009	120	151.3921	173	136.9715	226	123.9245
17	42.39545	68	100.2115	121	151.1064	174	136.713	227	123.6906
18	42.31546	69	100.0224	122	150.8213	175	136.455	228	123.4573
19	42.23561	70	121.4337	123	150.5367	176	136.1976	229	123.2243
20	42.15592	71	121.2045	124	150.2526	177	135.9406	230	122.9918
21	42.07637	72	120.9758	125	149.9691	178	135.6841	231	122.7597
22	41.99698	73	120.7476	126	149.6862	179	135.428	232	122.5281
23	41.91773	74	120.5197	127	149.4037	180	135.1725	233	122.2969
24	41.83864	75	120.2923	128	149.1218	181	134.9175	234	122.0661
25	41.75969	76	120.0654	129	148.8404	182	134.6629	235	121.8358
26	41.68089	77	119.8388	130	148.5596	183	134.4088	236	121.6059
27	41.60225	78	119.6127	131	148.2793	184	134.1552	237	121.3764
28	63.12375	79	119.387	132	147.9995	185	133.902	238	121.1474
29	63.00464	80	119.1617	133	147.7202	186	133.6494	239	120.9188
30	62.88576	81	118.9369	134	147.4415	187	133.3972	240	120.6907
31	62.7671	82	118.7124	135	147.1633	188	133.1455	241	120.4629
32	62.64866	83	118.4884	136	146.8856	189	132.8942	242	120.2356
33	62.53046	84	139.8649	137	146.6084	190	132.6435	243	120.0088
34	62.41247	85	139.6009	138	146.3318	191	132.3932	244	119.7823
35	62.2947	86	139.3375	139	146.0557	192	132.1434	245	119.5563
36	62.17715	87	139.0746	140	145.7801	193	131.894	246	119.3307
37	62.05983	88	138.8122	141	145.505	194	131.6452	247	119.1055
38	61.94273	89	138.5503	142	145.2305	195	131.3968	248	118.8808
39	61.82585	90	138.2888	143	144.9564	196	131.1488	249	118.6565
40	61.70919	91	138.0279	144	144.6829	197	130.9014	250	118.4326
41	61.59275	92	137.7675	145	144.4099	198	130.6544	251	118.2091
42	83.07653	93	137.5075	146	144.1374	199	130.4078	252	117.9861
43	82.91977	94	137.2481	147	143.8654	200	130.1618	253	117.7634
44	82.76331	95	136.9891	148	143.594	201	129.9162	254	117.5412
45	82.60715	96	136.7306	149	143.323	202	129.671	255	117.3194
46	82.45127	97	136.4726	150	143.0526	203	129.4264	256	117.0981
47	82.2957	98	157.8151	151	142.7827	204	129.1821	257	116.8771
48	82.14041	99	157.5173	152	142.5133	205	128.9384	258	116.6566
49	81.98543	100	157.2201	153	142.2443	206	128.6951	259	116.4365
50	81.83072	101	156.9234	154	141.976	207	128.4523	260	116.2168
		102	156.6273	155	141.708	208	128.2099	261	115.9975
		103	156.3318	156	141.4407	209	127.968	262	115.7786

263	115.5601	328	102.2097
264	115.3421	329	102.0168
265	115.1244	330	101.8243
266	114.9072	331	101.6322
267	114.6904	332	101.4404
268	114.474	333	101.249
269	114.258	334	101.058
270	114.0424	335	100.8673
271	113.8272	336	100.677
272	113.6124	337	100.487
273	113.398	338	100.2974
274	113.1841	339	100.1081
275	112.9705	340	99.91924
276	112.7574	341	99.7307
277	112.5446	342	99.54252
278	112.3322	343	99.35469
279	112.1203	344	99.16722
280	111.9087	345	98.9801
281	111.6975	346	98.79334
282	111.4868	347	98.60692
283	111.2764	348	98.42086
284	111.0664	349	98.23516
285	110.8569	350	98.04979
286	110.6477	351	97.86478
287	110.4389	352	97.68011
288	110.2305	353	97.49581
289	110.0225	354	97.31184
290	109.8149	355	97.12822
291	109.6077	356	96.94494
292	109.4009	357	96.76202
293	109.1945	358	96.57944
294	108.9884	359	96.39721
295	108.7828	360	96.21532
296	108.5775	361	96.03377
297	108.3726	362	95.85256
298	108.1682	363	95.6717
299	107.9641	364	95.49118
300	107.7603	365	95.311
301	107.557		Maximum residue
302	107.3541		----- 157.8151
303	107.1515		Average residue
304	106.9493		-----
305	106.7475		112.4648
306	106.5461		
307	106.345		
308	106.1444		
309	105.9441		
310	105.7442		
311	105.5447		
312	105.3455		
313	105.1467		
314	104.9483		
315	104.7503		
316	104.5526		
317	104.3554		
318	104.1585		
319	103.9619		
320	103.7658		
321	103.57		
322	103.3745		
323	103.1795		
324	102.9848		
325	102.7905		
326	102.5965		
327	102.4029		