

**BEHAVIOUR OF GRAINS PEA AND FIELD PEA LINES  
AND VARIETIES TO THE ATTACK CAUSED BY  
*BRUCHUS PISORUM* L., AT THE AGRICULTURAL  
RESEARCH STATION OF PODU-ILOAIEI, IASI COUNTY**

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**ABSTRACT** – Investigations conducted at the Agricultural Research Station of Podu-Iloaiei (1993-1999) have studied the behaviour of grains pea lines and varieties to the attack of pea beetle (*Bruchus pisorum* L.), which varied between 15.8% and 27.7%. The attack was weak (15.8%-19.6%) in eight lines and varieties. In field pea lines and varieties, the attack has registered values between 12.5% and 29%, weak attacks being signaled in five lines and varieties (12.5%-17.5%). Climatic factors (temperature and rainfall) and soil management works (sowing period, early harvesting in pea crops and gas treatments with Ultraphos, sulphur, carbon disulphide, etc., before or immediately after storing), diminished the hibernating adult populations during the growth season, under the limit of damaging limit. Pea lines and varieties with weak attacks in grains, produced by *Bruchus pisorum* L. were recommended for homologation and extension into production.

**Key words:** pea beetle, pea lines and varieties

**REZUMAT** – Comportarea unor soiuri și linii de mazăre cultivate pentru boabe și a unor soiuri și linii de mazăre furajeră de toamnă la atacul produs de *Bruchus pisorum* L. la S.C.D.A. Podu-Iloaiei. Cercetările efectuate la S.C.D.A. Podu-Iloaiei (1993-1999) arată comportarea soiurilor și liniilor de mazăre cultivate pentru boabe, la atacul gărgăriței *Bruchus pisorum* L., care a variat între 15.8 și 27.7%, la opt soiuri și linii fiind slab (15.8-19.6%). La soiurile și liniile de mazăre furajeră de toamnă, atacul a înregistrat valori cuprinse între 12.5 și 29%, atacuri slabe semnalându-se la cinci soiuri și linii (12.5-17.5%). Factorii climatici (temperatura, precipitațiile) și unele lucrări agrotehnologice (epoca de semănat, recoltarea timpurie a culturilor de mazăre și

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*tratamentele gazoase cu Ultraphos, sulf, sulfură de carbon ș.a, înainte sau imediat după depozitare) au redus populațiile de adulți hibernanți în perioada de vegetație sub limita potențialului de dăunare. Soiurile și liniile de mazăre cu atacuri slabe la boabe, produse de *Bruchus pisorum* L., au fost recomandate pentru omologare și extindere în producție.*

**Cuvinte cheie:** gărgărița mazării, soiuri și linii de mazăre, factori climatici, lucrări agro-tehnologice

## INTRODUCTION

In Romania, the only studies on the behaviour of grains pea and field pea lines and varieties to the attack of *Bruchus pisorum* L. (Coleoptera – Bruchidae) were carried out by Boguleanu et al. (1969). They investigated these aspects according to sowing period.

The paper presents data on the behaviour of grains pea and field pea lines and varieties to the attack of *Bruchus pisorum* L. at the Agricultural Research Station of Podu-Iloaiei, Iași County, during 1993-1999 (Boguleanu et al, 1969; Săpunaru et al, 1994; Săpunaru et al, 1990-2003)\*\*.

## MATERIALS AND METHODS

Investigations were conducted at the Agricultural Research Station of Podu-Iloaiei, studying the behaviour of grains pea varieties and lines to the attack of *Bruchus pisorum* L. We have also investigated the behaviour of field varieties and lines to the attack of this pest.

We have established the attack percentage, which is influenced both by grown variety or line and by climatic factors (temperature and rainfall), as well as by soil management works (sowing period, early crop harvesting, etc.).

Among the grains pea varieties and lines studied for 7 years (1993-1999), the attack was weak (15.8%-19.6%) in eight varieties and lines, and stronger (20.2%-21.6%) in eight varieties and lines. The strongest attack (22%-27.7%) was found in eight varieties.

In field pea varieties and lines, investigations have shown that the attack was weak (12.5%-17.5%) in five varieties and lines and stronger (21%-29%) in 10 varieties and lines.

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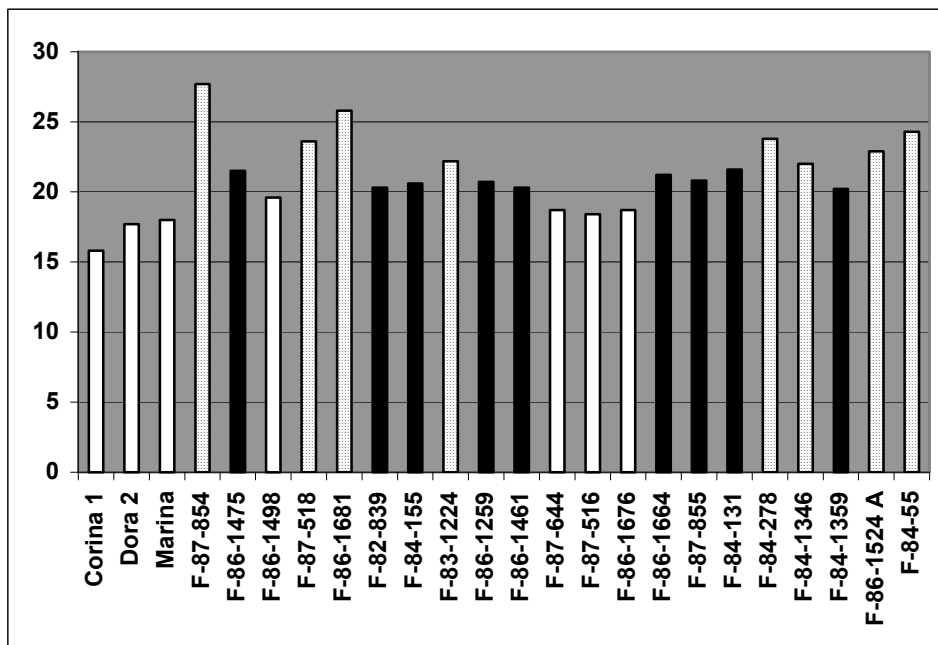
\*\*Bild Yvonne-Cecilie, 2003 – Contribution on the systematic, morphological and biological study on main pests in pea and bean crops from Moldavia and their control. PhD Thesis, University of Agricultural Sciences and Veterinary Medicine of Iași

## RESULTS

**1. Investigations conducted for 7 years (1993-1999) on grains pea varieties and lines to the attack of species *Bruchus pisorum* L**

24 grains pea varieties and lines were studied in that period: CORINA – control 1; DORA – control 2; MARIANA; F-87-854; F-86-1473; F-86-1498; F-87-518; F-86-1681; F-82-839; F-84-155; F-83-1224; F-86-1664; F-87-855; F-84-131; F-84-278; F-84-1346; F-84-1359; F-86-1524A and F-84-55. We have registered the date of sowing, emergence, flowering and the average of attacked grains by adults, and the parasitizing degree of *Bruchus pisorum* L larvae by species *Triaspis thoracicus* Curt. (Hymenoptera – Braconidae) (1993 – 1999).

The analysis of obtained data on the behaviour of these grains pea varieties and lines has shown that eight varieties and lines (Corina-control 1, F-87-516, Dora-control 2, Marina, F-87-641, F-87-1676 and F-876-1496) presented the weakest attacks (15.8%-19.6%) (*Table 1, Figure 1*). The highest attacks (22%-27.7%) were registered in eight varieties and lines (F-84-1346, F-83-1224, F-86-1524A, F-87-518, F-84-278, F-84-55, F-86-1681 and F-87-854) (*Table 1, Figure 1*).



**Figure 1 - Parasitizing degree of *Bruchus pisorum* L. larvae by *Triaspis thoracicus* Curt., in grains pea**

**Table 1**  
**Synthesis of data (%) on the behaviour of grains pea varieties and lines to the attack caused by**  
***Bruchus pisorum* L., at the Agricultural Research Station of Podu-Iloaiei, Iași County, 1993 – 1999**

Year	Variety / line																							
	Corina, ctrl 1	Dora, ctrl 2	Marina	F 87-854	F 86-1475	F 86-1498	F 87-518	F 86-1681	F 82-839	F 84-155	F 83-1224	F 86-1259	F 86-1461	F 87-644	F 87-516	F 86-1676	F 86-1664	F 87-855	F 84-131	F 87-278	F 84-1346	F 84-1359	F 86-1524 A	F 84-55
1993	32	45	32	62	59	49	59	70	49	64	45	50	65	42	52	42	66	60	65	49	52	50	49	54
1994	6	9	28	28	12	10	10	9	17	10	11	13	13	15	12	14	14	20	17	13	27	13	50	39
1995	11	11.5	8.5	21	8.5	13	12.5	11	7	12.5	10.5	6.5	11	5.5	7	7.5	12.5	11	8.5	20	8.5	2.5	6	9.5
1996	13	12	8	20	9	15	11	14	8	11	13	7	12	8	9	9	13	12	9	22	14	6	6	9
1997	26	28	24	40	40	30	54	48	40	20	50	40	18	38	22	32	20	22	27	40	20	30	26	30
1998	10	8.5	9	7.5	6	11.5	8	10.5	8.5	12	11	11.5	12	10.5	8.5	11	8	5	12.5	11	12	25	5	9.5
1999	13	10.5	17.5	16	16.5	9	11	18.5	13	15	15	17	11.5	12.5	16.5	16	15.5	16	12.5	12	20.5	15.5	18.5	19.5
Total	111	124.5	126	194.5	151	137.5	165.5	181	162.5	144.5	155.5	145	142.5	131.5	127	131.5	149	146	151.5	167	154	142	160.5	170.5
Mean	15.8	17.7	18	27.7	21.5	19.6	23.6	25.8	20.3	20.6	22.2	20.7	20.3	18.7	18.4	18.7	21.2	20.8	21.6	23.8	22	20.2	22.9	24.3

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**2. Results of the investigations conducted during 2 years on field pea varieties and lines to the attack of species *Bruchus pisorum* L.**

In order to establish the behaviour of field pea varieties and lines to the attack of *Bruchus pisorum* L., we carried out investigations during 2 years (1993-1994) in 15 varieties and lines: Artona, Caracal 39; C-88-76; C-019-86, C-028-86, C-116-86, C-118-86, C-089-87, C-135-87, C-023-88, C-0193-88, C-0224-88, C-168-88, C-196-88 and C-2007-88 (Table 2, Figure 2).

Table 2

**Synthesis of data (%) on the behaviour of field pea varieties and lines to the attack caused by *Bruchus pisorum* L., at the Agricultural Research Station of Podu-Iloaiei, Iași County, 1993 – 1994**

Year	Variety/line														
	Artona	Caracal 39	C-88-76	C-019-86	C-028-86	C-116-86	C-118-86	C-089-87	C-135-87	C-023-88	C-0193-88	C-0224-88	C-168-88	C-198-88	C-2007-88
1993	9	8	11	10	7	15	17	9	17	12	14	14	18	20	19
1994	21	27	36	35	21	43	37	15	25	13	12	27	21	21	37
Total	30	35	47	45	28	58	54	24	42	25	26	41	39	41	56
Mean	15	17.5	23.5	22.5	14	29	27	12	21	12.5	13	20.5	19.5	20.5	28

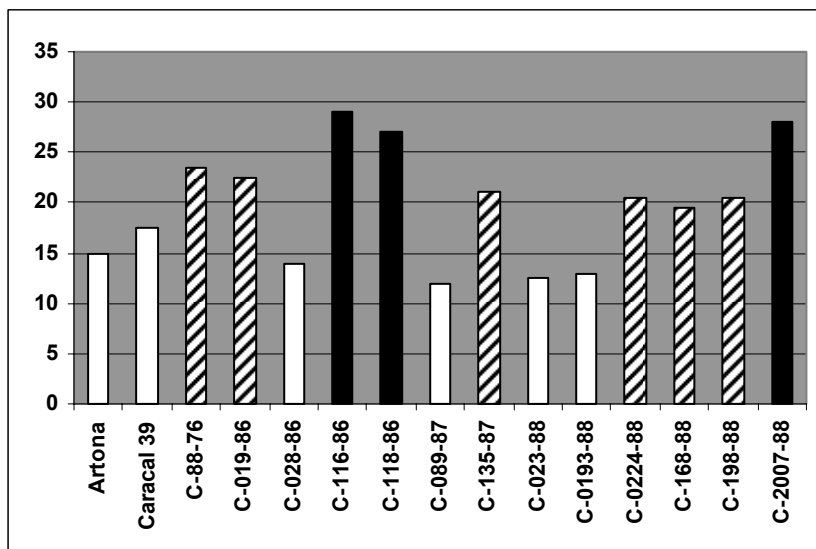
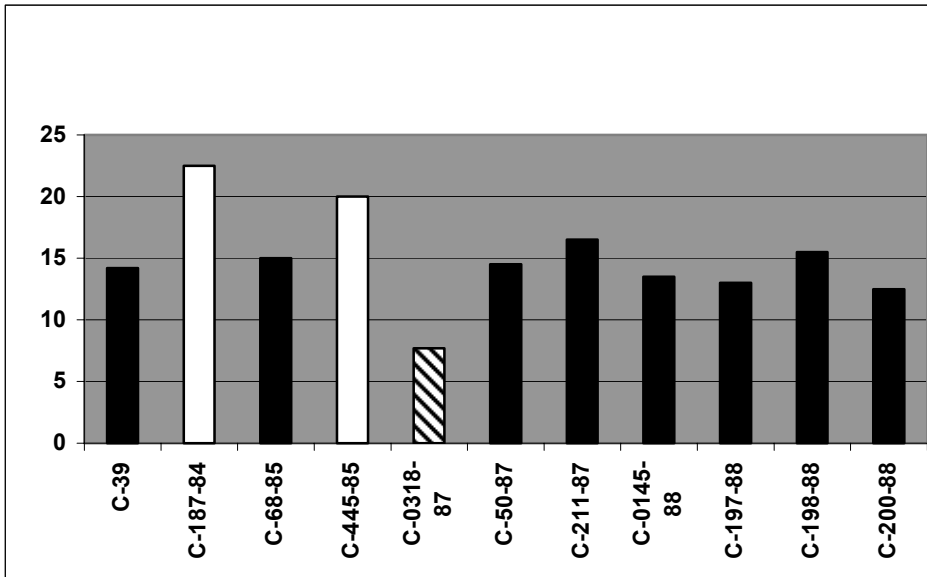


Figure 2 - Parasitizing degree of *Bruchus pisorum* L. larvae by *Triaspis thoracicus* Curt., in field pea

We have studied 11 varieties and lines during 2 years (1995-1996): C-39 , C-107/84, C-68/85, C-445/85, C-0318/87, C-50/87, C-211/87, C-0145/88, C-197/88, C-198/88 and C-200/88 (Table 3, Figure 3).

**Table 3**  
**Synthesis of data (%) on the behaviour of field pea varieties and lines to the attack caused by *Bruchus pisorum* L., at the Agricultural Research Station of Podu-Iloaiei, Iași County, 1995 – 1996**

Year	Variety/line										
	C-39	C-107-84	C-68-85	C-445-85	C-0318-87	C-50-87	C-211-87	C-0145-88	C-197-88	C-198-88	C-200-88
1995	13.5	22	14	19	7.5	15	16	13.5	12.5	15	13
1996	15	23	16	21	8	14	17	14.5	13.5	16	12
Total	28.5	45	30	40	15.5	29	33	27	26	31	25
Mean	14.2	22.5	15	20	7.7	14.5	16.5	13.5	13	15.5	12.5



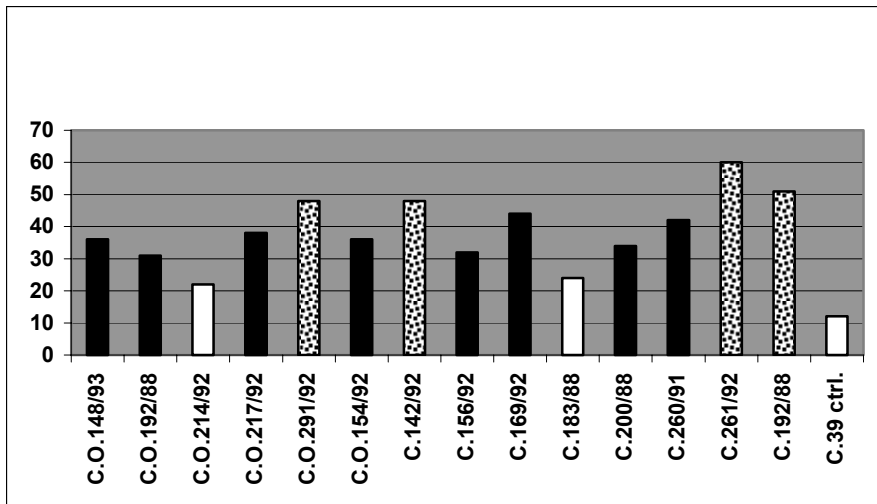
**Figure 3 - Behaviour of field pea varieties to the attack of *Bruchus pisorum* L., at the Agricultural Research Station of Podu Iloaiei, Iași County, 1995-1996**

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The investigations were conducted in 1997 on 15 varieties and lines: C.O.217/92, C.O.291/92, C.O.154/92, C.O.142/92, C.O.156/92, C.O.169/92, C.183/88, C.200/88, C.260/91, C.261/92, C.192/88 and C.39-control (Table 4, Figure 4). In 1999, the investigations were carried out in 15 varieties and lines: C.39-control, C.192/88, C.0154/92, C.183/88, C.0192/88, C.200/88, C.260/91, C.140/92, C.156/92, C.169/92, C.214/92, C.021/92, C.216/92, C.0148/93 and C.0291/92 (Table 5, Figure 5).

**Table 4**  
**Synthesis of data (%) on the behaviour of field pea varieties and lines to the attack caused by *Bruchus pisorum* L., at the Agricultural Research Station of Podu-Iloaiei, Iași County, in 1997**

Year	Variety/line														
	C.O.148/93	C.O.192/88	C.O.214/92	C.O.217/92	C.O.291/92	C.O.154/92	C.142/92	C.156/92	C.169/92	C.183/88	C.200/88	C.2670/91	C.261/92	C.192/88	C.39 ctrl.
1997	36	31	22	38	48	36	48	32	44	24	34	42	60	51	12



**Figure 4 - Behaviour of field pea varieties to the attack caused by *Bruchus pisorum* L., at the Agricultural Research Station of Podu-Iloaiei, Iași County, in 1997**

Table 5

Synthesis of data (%) on the behaviour of field pea varieties and lines to the attack caused by *Bruchus pisorum* L., at the Agricultural Research Station of Podu-Iloaiei, Iași County, in 1999

Year	Variety/line														
	C.39 ctrl.	C.192/88	C.0154/92	C.183/88	C.0192/88	C.200/88	C.260/91	C.142/92	C.156/92	C.169/92	C.214/92	C.0217/92	C.216/92	C.0148/93	C.0291/92
1999	23	31	25.5	21	23.5	32	31.5	37	34	28	39	33	28	25	21

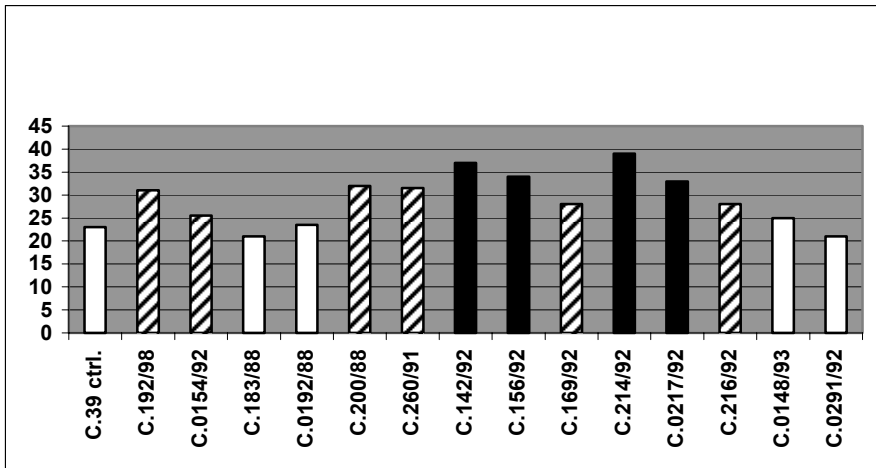


Figure 5 - Behaviour of field pea varieties to the attack caused by *Bruchus pisorum* L., at the Agricultural Research Station of Podu-Iloaiei, Iași County, in 1999

In all the studied varieties and lines we have registered flowering date, mean of grains attacked by *Bruchus pisorum* and parasitizing degree caused by species *Triaspis Thoracicus* Curt. (Hymenoptera – Braconidae).

The analysis of experimental results and observations on the behaviour of the 15 field pea varieties and lines, during 1993-1994, pointed out that the weakest attack was found in lines Artona (15%), Caracal (17.5%), C-028-86 (14%), C-023-88 (12.5%) and C-0193-88 (13%) (Table 2, Figure 2).

The attack was greater in the other varieties and lines: C.188-76 (23.5%), C-019-86 (22.5%), C-135-07 (21%), C-0224-88, C-168-88 (20.5%), C-116-86 (29%), C-118-86 (27%) and C-2007-88 (28%) (Table 2, Figure 2).



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The varieties and lines studied during 1995-1996 (*Table 3, Figure 3*), in 1997 (*Table 4, Figure 4*) and in 1999 (*Table 5, Figure 5*) have registered values of grains attacks close to the ones signaled during 1993-1994.

## CONCLUSIONS

The attack on grains and field pea varieties and lines was found at a percentage of 15.8% - 27.7% and 12.5% - 29.0%, at a higher or lower rate according to variety or line, but especially to soil management factors (best sowing time, distances between the new crops to the old ones, harvesting in time), thus, avoiding shivering of attacked pea grains, which remain in the field. The rate also depends on climatic factors (temperature, moisture and rainfall), and on the parasitizing degree caused by *Triaspis Thoracicus* Curt.

The observation of phytosanitary measures (fumigation in storehouses and field treatments with very efficient products) has greatly contributed to the diminution of the attack.

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