ECONOMIC THRESHOLD AND ECONOMIC INJURY LEVELS FOR RICE STEM BORER, USING SIMULATED WHITE HEADS IN RICE

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Abstract

Rice (*Oryza sativa* L.) ranks second to wheat in area and production on the global level. Unfortunately, it is attacked by several insect pests. The rice stem borer, *Chilo agamemnon* Bles. is the most important in Egypt. The current investigation was carried out at the Experimental Farm of Sakha Agricultural Station, Kafr EL-Sheikh Governorate in 2013 and 2014 rice seasons using two cultivars, Giza 178 (high tillering capacity) and Egyptian Jasmine (medium tillering capacity) to establish the correlation between borer infestation as white heads and rice yield losses to determine the economic threshold and injury levels of *C.agamemnon* infestation in rice fields. Due to the great difficulty to use the technique of artificial infestation by the rice stem borer, the simulated technique (panicle removal) was applied to induce different levels of simulated white heads. The panicles were removed by hand to get gradual levels of stimulated white heads; 0, 2, 4,6, 8, 10, 12, 14 and 16%. Yield components (panicle weight, 1000-grain weight and filled grain %) increased at the higher levels of panicle removal. This could be interpreted in the light of phenomenon compensation. This phenomenon suggests that the nutrients going to removed panicles are translocated to the adjacent ones. Consequently, the panicles adjacent to the removed ones become healthier than normal, and compensate, to a certain extent, the removed ones. The final grain yield was negatively affected, in the current study, by high levels of panicle removal. In Giza 178 rice cultivar (high tillering), the grain yields were 2315, 2295 and 2311, match to 1815, 1755 & 1781 g/ 2 m^2 at 0, 2 & 4% panicle removal, respectively. However, in both cultivars, the lowest grain yields were at 12, 14 1nd 16 % simulated white head (panicle removal). Considering the cost of chemical control against the rice stem borer, and obtained grain yield at different levels of simulated white heads, economic threshold and economic injury levels were estimated. In Giza 178, the economic threshold was determined as 10 and economic injury as 12 % white heads (panicle removal), while the economic threshold level of Egyptian Jasmine cultivar was determined as 8% white heads, and economic injury as 10% white heads. These results are important to the decision makers and rice growers to avoid using insecticides before the rice stem borer infestation reaches the economic threshold. On the other hand, economic threshold level should be assessed under several circumstances, e.g. location, cultivar, cultural practices, prices of insecticides and prices of rice.

INTRODUCTION

Rice (*Oryza sativa* L.) ranks second to wheat in the area and production on the global level (Anonymous, 2000). It is the staple food for about half of the world population, and it generates employment and income for rural people (Suhail *et al.,* 2008). Because of the progressive increase of the world population, it has been necessary to increase rice production in the next decades.

Unfortunately, insect pests are among various constraints for sufficient rice production. The hot weather and high humidity are suitable circumstances for insect proliferation (Pathak *et al.*, 2002). Many insect pest species appear sporadically but do not cause economic losses, however, a few species cause a significant damage, and are extremely important (Sherif *et al.* 1999). The stem borers, belonging to order Lepidoptera, are widely distributed as economic pests of rice.

In Egypt, the stem borer, *Chilo agamemnon* Bles. is the most important insect attacking rice fields causing dead hearts in the vegetative stage and white heads in the reproductive stage. Annual rice yield losses due to this pest were estimated as 5-8 % (El-Malky *et al.,* 2013).

Most of the growers use scheduled insecticide applications to control insect pests, irrespective of insect attack, which results in many side effects including insect resistance to insecticides and environmental concerns (Suhail *et al.*, 2008).

Reports about the level of white heads that significantly reduces rice yield are conflicting. Using the computer simulations, Rubia and Vries (1991) predicted that 20 % white heads, at the grain filling stage, can cause an almost proportionate yield reduction. Litsinger (2008) indicated that the level of 7 % white head has no effect in reducing rice yield.

Due to lack of knowledge about the effect of white head symptom in reducing rice yield, the current investigation was undertaken to establish correlation between borer white head infestation and rice yield losses. This will contribute to determine the economic threshold and injury levels of *C. agamemnon* Bles infestation in rice fields.

MATERIALS AND METHODS

The current investigation was carried out at the Experimental Farm of Sakha Agricultural Research Station, Kafr EL-Sheikh Governorate during two successive seasons; 2013 and 2014. Two types of rice cultivars, Giza 178 (high tillering) and Egyptian Jasmine (medium tillering) were assigned to this study. The objective was to determine the economic threshold and economic injury levels of *C. agamemnon* Bles infestation in rice fields using simulated white head technique. In both seasons, clover was the preceding winter crop.

1. Cultural Practices

1.1. Nursery preparation

The rice nursery bed (one kerat = 175 m^2) was prepared according to cultural practices recommendation. The land was tilled thrice, and calcium superphosphate (15% P_2O_5) was incorporated into the soil before the last tillage at the rate of 150 kg/feddan. Before the dry leveling of the seed bed, nitrogenous fertilizer (Urea, 46.5% N) was incorporated into the soil at the rate of 69 kg/ feddan. Then, the nursery was flooded, and wet leveled. Zinc sulphate was broadcasted as one kilogram/ Kerat just before seed broadcasting. Pregerminated seeds of Giza 178 and Egyptian Jasmine rice cultivars were broadcasted at the rate of 40 kg/feddan (two separated nurseries). The herbicide, thiobencarb (Saturn 50) at the rate of 2 liters/ feddan), mixed with sand, was broadcasted ten days after nursery flooding.

1.2. Permanent field

The permanent field was tilled thrice, with applying calcium superphosphate as done with the nursery. Nitrogen fertilizer was incorporated into the soil after last tillage at a rate of 23 kg/feddan, then, the field was flooded and wet leveled. One month after seed broadcasting, the rice seedlings were pulled out from the nursery, and moved to the permanent field. The seedlings were distributed, and transplanted at spacing of 20x20 cm, with 3- 4 seedlings per hill. The herbicide, thiobencarb (Saturn 50) at the rate of 2 liters/ feddan), mixed with sand, was broadcasted five days after permanent field flooding. Twenty and forty days after transplanting, the second and third doses (23 kg each) of nitrogen were applied as topdressing.

2. Prevention of natural insect infestation

To avoid the natural borer infestation, the permanent field was treated with carbofuran (Furadan 10 G) at rate of 6 kg / feddan twice, 20 and 40 days after transplanting.

3. Experimental treatments

The experiment was established in the first season (2013) as a pilot for determining a scale to be adopted for panicle removal to find out the economic threshold and injury levels of *C. agmemnon* infestation in rice. Therefore, two scales were used as follows:

In 2013 season:

The first scale was applied with Giza 178 cultivar as follows: 0, 4, 8, 12 & 16%. The second scale was applied with Egyptian Jasmine cultivar as follows; 0, 2, 4, 6, 8, 10, 12, 14 & 16%. The experimental area was divided into 15 plots (5 treatments x 3 replicates) for Giza 178, and to 27 plots (9 treatments x 3 replicates) for Egyptian Jasmine.

In 2014 season:

For both cultivars the used scale for panicle removal was 0, 2, 4, 6, 8, 10, 12, 14 & 16%. The experimental area was divided into 27 plots (9 treatments x 3 replicates) for each cultivar.

Treatments of both cultivars, in both seasons, were applied in an area of $2m^2$ (50 hills) per panicle removal level. To determine the number of panicles required to be removed, the panicles in the 50 rice hills were counted, and the number of panicles needed to match the percentage of panicle removal was pulled out by hand ten days after complete heading.

4. Yield and yield components

4.1. Panicle weight (g/panicle)

Ten panicles, from each plot, were picked up and collectively weighed, and average weight of a panicle was calculated.

4.2. 1000-grain weight (g)

One thousand grains were taken from each plot, and average of 1000-grain weight was calculated

4.3. Filled grain (%)

One hundred grains were taken from each plot, and examined for filled and unfilled grains, and percentage of filled grains was calculated.

4.4. Grain yield (g/ 50 hills = 2 m^2**)**

From each plot, two square meters of guarded plants were harvested,

air-dried, threshed and winnowed. The grains were weighed to express the final yield of each plot.

5. Statistical analysis:

Data were subjected to analysis of variance, and the significantly different means were compared using Duncan's Multiple Range Test (1955).

RESULTS AND DISCUSSION

1. 2013 Season:

Data of yield components of Giza 178 and Egyptian Jasmine cultivars are presented in Tables (1 and 2).

1.1. Panicle weight (g/panicle):

Variable levels of panicle removal had no significant effects on panicle weight in both cultivars. The weights ranged from 2.56 to 3.30 g / panicle in Giza 178 and from 4.12 to 4.96 g / panicle in Egyptian Jasmine.

1.2. 1000-grain weight (g):

In Giza 178 cultivar (Table 1), the highest 1000-grain weight (20.78) was obtained from 16% panicle removal, followed by those at levels of 12 and 8 %, with values of 20.44 and 19.99 g/ 1000 grains, respectively. Similar results were obtained in Egyptian Jasmine, with 16% resulting in the heaviest panicles (28.21 g), followed by 14 and 12% with weights of 27.55 and 26.54 g / 1000 grains, respectively. However, the lightest grain weights were obtained with the low levels (0, 2 and 4 %) of panicle removal. Statistical analysis proved that variations in 1000-grain weight due to certain levels of panicle removal were significant.

Table 1. Effect of panicle removal (white head simulation) on yield components of Giza 178 rice cultivar, at the farm of Sakha Agricultural Research Station, 2013 season.

Panicle Removal (%)	Panicle weight (g)	1000-grain weight (g)	Filled grain (%)
0	3.30 a	19.39 b	88.30 a
4	2.78 a	19.28 b	89.30 a
8	2.82 a	19.99 ab	89.90 a
12	2.58 a	20.44 ab	91.30 a
16	2.56 a	20.78 a	92.60 a

In a column, means followed by the same letter are not significantly different at the 5 % level

Table 2. Effect of panicle removal (white head simulation) on yield and yield components of Egyptain Jasmine rice cultivar, at the farm of Sakha Agricultural Research Station, 2013 season.

Panicle Removal (%)	Panicle weight (g)	1000-grain weight (g)	Filled grain (%)
0	4.12 a	25.67 cd	86.87 c
2	4.13 a	25.20 d	87.40 bc
4	4.22 a	25.77 cd	87.83 bc
6	4.13 a	25.73 cd	88.09 bc
8	4.28 a	25.93 bcd	89.59 bc
10	4.22 a	26.19 bcd	89.60 bc
12	4.77 a	26.54 abc	90.35 b
14	4.93 a	27.55 a	90.84 b
16	4.96 a	28.21 ab	94.53 a

In a column, means followed by the same letter are not significantly different at the 5 % level

1.3. Filled grain (%):

Statistical analysis revealed that the averages of filled grains% were not significantly different in Giza 178 cultivar, but significantly different in Egyptian

Jasmine cultivar. In both cultivars, the highest percentage of filled grains was obtained with the highest levels of panicle removal, and vice versa.

1.4. Grain yield (g/ 2m^2):

Estimation of grain yield was not available, as some rice plots were damaged by the invasion of rats.

2. 2014 Season:

Data of yield and yield components of Giza 178 and Egyptian Jasmine cultivars are presented in Tables (3 and 4).

2.1. Panicle weight (g/panicle):

In Giza 178 cultivar, the heaviest panicle weights were recorded at 14 and 12 % removed panicles (3.86 and 3.81g/ panicle, respectively), while the lightest weights were obtained at 0, 2 and 4% removal with values of 3.05, 3.21 and 3.18 g/panicle, respectively.

The same trend was found with Egyptian Jasmine cultivar, with 0, 2 and 4% panicle removal giving the least weights; 3.15, 3.62 and 3.44 g/ panicle, respectively. On the other hand, the highest values of panicle weights were obtained at the highest levels of panicle removal; 5.66 and 5.72 g/panicle at 14 and 16% removal, respectively. The differences in both varieties were significant.

2.2.1000-grain weight (g):

In both cultivars (Tables 3 and 4), the lowest values of 1000-grain weight were detected with the lowest percentages of panicle removal, while the greatest weights of 1000-grain were detected with the highest percentages of panicle removal.

In Giza 178 cultivar, 1000-grain weights were 20.71, 20.65 and 20.86 g at 0, 2 and 4 % panicle removal, respectively. At 14 and 16 % removal, the 1000-grain weights increased to 22.81 and 22.76 g, respectively.

The same trend was found with Egyptian Jasmine. The lowest 1000-grain weights; 24.60, and 23.17g were obtained at 0 and 2% panicle removal, respectively. On the other hand, the highest 1000-grain weights; 26.90, and 26.93g were obtained at 14 and 16% panicle removal, respectively. Statistical analysis revealed that the differences in both cultivars were significant.

2.3. Filled grain (%):

In both cultivars, percentages of filled grains were higher with the higher levels of panicle removal, but lower with the lower levels. The differences in filled grains % due to different levels of panicle removal were significant.

2.4. Grain Yield (g / 2m^2)

Panicle removal significantly reduced grain yield of both cultivars.

In Giza 178, the highest grain yields were obtained at 0, 2 and 4 % panicle removal, with values of 2315, 2295 and 2311 g/2 m^2, respectively without significant differences. The least grain yields were obtained at 12% panicle removal (1951), 14% (2075) and 16% (1833 g/ 2m^2). Similar results were obtained with Egyptian Jasmine. The yields were significantly the same at 0, 2 and 4% panicle removal with values ranging between 1781 and 1815 g / 2 m^2. The least values of grain yield were obtained at 14% (1495 g/ 2 m^2) and 16% panicle removal (1265 g/ 2m^2).

Statistical analysis showed that yield differences, in both cultivars, were significant only in some treatments.

Table 3. Effect of panicle removal (white head simulation) on yield and yield components of Giza 178 rice cultivar, at the farm of Sakha Agricultural Research Station, 2014 season.

Panicle Removal (%)	Panicle weight (g)	1000-grain weight (g)	Filled grain (%)	Yield g / 2m^2 (50 hills)
0	3.05 d	20.71 c	83.17 d	2315 a
2	3.21 c	20.65 c	83.60 c	2295 ab
4	3.18 c	20.86 c	83.77 c	2311 a
6	3.45 b	21.49 c	84.51 bc	2273 b
8	3.59 ab	21.23 bc	88.12 b	2230 bc
10	3.68 a	21.88 b	92.26 a	2232 bc
12	3.81 a	22.55 a	93.11 a	1951 cd
14	3.86 a	22.81 a	92.08 a	2075 c
16	3.77 a	22.76 a	93.12 a	1833 d

In a column, means followed by the same letter are not significantly different at the 5 % level

Table 4. Effect of panicle removal (white head simulation) on yield and yield components of Egyptain Jasmine rice cultivar, at the farm of Sakha Agricultural Research Station, 2014 season.

Panicle Removal (%)	Panicle weight (g)	1000-grain weight (g)	Filled grain (%)	Yield g / 2m^2 (50 hills)
0	3.15 e	24.60 d	84.16 e	1815 a
2	3.62 d	23.17 cd	86.77 be	1755 a
4	3.44 d	24.81 d	88.91 cd	1781 a
6	4.02 cd	25.56 c	87.42 c	1750 a
8	4.00 c	25.76 c	89.65 b	1747 a
10	4.28 bc	26.14 b	89.92 b	1597 b
12	4.91 b	26.38 ab	90.17 ab	1623 b
14	5.66 a	26.90 a	92.36 a	1495 c
16	5.72 a	26.93 a	94.59 a	1265 d

In a column, means followed by the same letter are not significantly different at the 5 % level

4. Economic threshold and economic injury levels (ETL & EIL):

4.1. Giza 178

Data presented in Table (5) show the effect of panicle removal on rice yield of Giza 178 cultivar. The check (no panicle removal) yielded 4.630 Ton / fed which was reduced to 4.590 and 4.622 t /fed at 2 and 4 % panicle removal, respectively. The lowest grain yields were obtained at 12, 14 and 16 % panicle removal. In terms of yield losses, 10 % panicle removal induced 166 kg reduction/fed which is less the cost of chemical control (350 L.E/fed). The following level of panicle removal (12 %) resulted in a loss of 728 kg/fed, i.e. 1456 L. E. The latter monetary value is higher than the cost of chemical control. Accordingly, the economic threshold level could be considered as 10 % panicle removal (stimulated white head), while the economic injury level could be considered as 12 % panicle removal, as the loss in yield and monetary are higher than the cost of chemical control.

4.2. Egyptian Jasmine:

Data presented in Table (6) show the effect of different levels of panicle removal on reductions in rice yield, and monetary. The rice yields were reduced by 120, 68, 130 and 136 kg/fed at 2, 4, 6 and 8 % panicle removal. Up to 8% panicle removal, the monetary reduction was calculated as 340 L. E. per feddan, which is less than the cost of chemical control (350 L. E. /fed). Thus, this level could be considered as the economic threshold level for the infestation of rice stem borer (stimulated white head). Beyond 8 %, the yield loss accounted for 436 kg/fed, that equals 1090 L.E., which is higher than the cost of chemical control. Consequently, the level of 10 % panicle removal (stimulated white head) is considered the economic injury level.

Table 5. Economic analysis of Giza 178 rice cultivar for evaluating the economic threshold and injury level (ETL & EIL)

Panicle removal %	Yield / 2 m^2 g	Yield/ fed Ton	Yield reduction/Fed Kg	Monetary reduction/fed L.E.	Control cost L.E.
0	2315 a	4.630	-	-	350
2	2295 ab	4.590	40	80	350
4	2311 a	4.622	8	16	350
6	2273 b	4.546	84	168	350
8	2230 bc	4.460	170	340	350
10	2232 bc	4.464	166	332	350
12	1951 cd	3.902	728	1456	350
14	2075 c	4.150	480	960	350
16	1833 d	3.666	964	1938	350

- In a column, means followed by the same letter are not significantly different at the 5 % level
- Insecticide value: 8 Kg carbofuran (Furadan 10G), as two treatments, x 40 L.E. /kg = 320 L.E.
- Labor cost = 30 L. E. (one labor to broadcast Furadan)
- Total control cost = 320 + 30 = 350 L. E.
- One ton of paddy rice = 2000 L. E.

Table 6. Economic analysis of Egyptian Jasmine rice cultivar for evaluating the economic threshold and injury levels (ETL & EIL).

Panicle removal %	Yield /2 m^2 g	Yield/ fed Ton	Yield reduction/fed Kg	Monetary reduction/fed L.E.	Control cost L.E.
0	1815 a	3.630	-	-	350
2	1755 a	3.510	120	300	350
4	1781 a	3.562	68	170	350
6	1750 a	3.500	130	325	350
8	1747 a	3.494	136	340	350
10	1597 b	3.194	436	1090	350
12	1623 b	3.246	384	960	350
14	1495 c	2.990	640	1600	350
16	1265 d	2.530	1100	2750	350

- In a column, means followed by the same letter are not significantly different at the 5 % level
- Insecticide value: 8 Kg carbofuran (Furadan 10G), as two treatments, x 40 L.E. /kg = 320 L.E.
- Labor cost = 30 L. E. (one labor to broadcast Furadan)
- Total control cost = 320 + 30 = 350 L. E.
- One ton of paddy rice = 2500 L. E.

Rice stem borer, *Chilo agamemnon* Bles. infestation results in two main symptoms of damage, dead hearts during vegetative stage, and white heads during reproductive stage. In many cases, rice plants are capable of compensating for dead hearts, particularly if infestation occurs before maximum tillering stage (Sherif *et al.* 1999). The relationship between damage by stem borers and yield loss is complex because stem borer effects on rice yield vary with pest population intensity, time of damage and growing conditions (Feijen 1979). Rice plants may compensate for damage during early growth stages (Ahmed 1984). In the current study, panicle weight, 1000-grain weight and percentage of filled grains exhibited high values when more panicles were removed. This could be interpreted in the light of phenomenon of compensation (Rubia *et al*, 1996), i.e. the nutrients that should be going to removed panicles, will translocate to the remaining panicles. Thus, the latter panicles become healthier than normal. This means that the yield loss is not linearly correlated with the percentage of removed panicles. In such concern, Rubia *et al.* (1987) suggested that the extent to which rice plants are able to overcome the stem borer damage is needed to be investigated. The decision makers as well as the growers are seriously wiling to correlate insect infestation with the yield loss to adopt control measures at the appreciate time

Rubia *et al.* (1987) found a significant relationship between high density of white heads by natural stem borer infestation and rice yield, however, no significant yield losses occurred up to 10 % white heads. Way (2003) recommended development and implementation of economic threshold as a rational approach to pest control management designed to aid farmers in making pest control decisions. Sherwat *et al.* (2007) assessed the economic threshold level of rice stem borer infestation in rice as 7.5 % infestation. However, the economic threshold level was determined by Suhail *et al.* (2008) at a lower level, i.e. 5 % infestation. Reji *et al.* (2008) reported that the variations in economic threshold levels are due to locations and circumstances dominant at conducting the assessment. Researches of Litsinger (2008) indicated that stem borer economic threshold level is only 2-4 % white heads for high value rice varieties.

For Giza 178, the economic threshold was determined at 10 % panicle removal (= 10 % white head), while the economic injury level was determined at 12 % panicle removal. For Egyptian Jasmine, the economic threshold and economic injury levels were determined as 8 and 10%, panicle removal, respectively.

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الحد الحرج ، وحد الضرر الاقتصادى للإصابة بثاقبة ساق الأرز ، بمحاكاة مظهر السنابل البيضاء ، فى نباتات الأرز

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قسم بحوث آفات المحاصيل الحقلية ، معهد بحوث وقاية النباتات ، مركز الحوث الزراعية ، الدقى ، الجيزة.

يحتل الأرز المرتبة الثانية بعد القمح ، من حيث المساحة والإنتاج على مستوى العالم. ولسوء الحظ ، فإن محصول الأرز يصاب بالعديد من الآفات الحشرية ، والتى من أهمها ثاقبة ساق الأرز *Chilo agamemnon* Bles. . أجريت الدراسة الحالية بمحطة بحوث سخا محافظة كفر الشيخ خلال عامى ٢٠١٣ ، ٢١٠٤ بهدف إيجاد العلاقة بين الإصابة بالثاقبة (كمظهر سنابل بيضاء) وخسائر المحصول ، ومن ثم تقدير الحد الحرج ، وحد الضرر الاقتصادى لإصابة الأرز بالثاقبة. ونظرا للصعوبة البالغة فى استخدام طريقة العدوى الصناعية بثاقبة ساق الأرز ، تم استخدام طريقة محاكاة الإصابة ، بإزالة نسب مئوية متدرجة: صفر ، ٢ ، ٤ ، ٦ ، ٨ ، ١٠ ، ١٢ ، ١٤ ، ١٦% من السنابل باليد. أوضحت النتئج أن مكونات المحصول (وزن السنبلة ، ووزن الألف حبة ، والنسبة المئوية للحبوب الممتلئة) زادت بزيادة النسب المئوية للسنابل المزالة. ويمكن تفسير ذلك فى ضوء نظرية التعويض ، حيث ينتقل الغذاء الذى كان مخصصا للسنابل المزالة ، إلى السنابل المجاورة المتبقية ، ومن ثم تصبح أوزان السنابل المتبقية أعلى من الأوزان العادية. ولكن هذا التعويض قد لا ينعكس على المحصول النهائى ، إذا زادت النسبة المئوية للسنابل المزالة عن حد معين. ففى الصنف جيزة ١٧٨ (عالى التفريع) كانت أعلى قيم لمحصول الحبوب (٢٣١٥ ، ٢٢٩٥ ، ٢٣١١ جرام/٢ متر مربع . وفى الصنف ياسمين مصرى (متوسط التفريع) كانت أعلى القيم (١٨١٥ ، ١٧٥٥ ، ١٧٨١ جرام / ٢ متر مربع) عند نسب صفر ، ٢ ، ٤ % لإزالة سنابل على التوالى. وفى كلا الصنفين كانت أقل قيم للمحصول عند ١٢ ، ١٤ ، ١٦% إزالة سنابل (محاكاة السنابل البيضاء). وعند أخذ تكاليف المكافحة والمحصول الناتج فى الاعتبار ، أمكن تقدير الحد الحرج للإصابة فى الصنف جيزة ١٧٨ بمقدار ١٠% سنابل بيضاء ، وحد الضرر الاقتصادى بمقدار ١٢% . بينما كان الحد الحرج للإصابة فى الصنف ياسمين المصرى ٨% سنابل بيضاء ، وحد الضرر الاقتصادى١٠%. ومن الملاحظ ، فى ضوء هذه التجربة ، زيادة قيمة الحد الحرج وحد الضرر الاقتصادى للإصابة بالثاقبة بزيادة قدرة الصنف على التفريع ، حيث أنه يصبح أكثر قدرة على تعويض الإصابة. والنتائج الحالية لها أهمية كبيرة ، لدى القائمين على عملية المكافحة ، بحيث لا ينصح بمكافحة الآفة إلا عند وصول الإصابة إلى الحد الحرج ، لتقليل استخدام المبيدات. ومن الضرورى الأخذ فى الاعتبار أن الحد الحرج للإصابة بثاقبة ساق الأرز يتأثر بكل من الصنف ، والمنطقة ، والعمليات الزراعية المتبعة ، وأسعار المبيدات الحشرية ، وأسعار الأرز السائدة.