

SHORT COMMUNICATION

STUDY ON THE DORMANCY CHARACTERISTIC OF FIVE POPULAR WEEDY RICE VARIETIES IN THE MEKONG RIVER DELTA

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INTRODUCTION

Red rice is undesirable to rice farmers, to the milling industry, and to the consumers. For the rice farmers, it affects the yield. (Fisher and Ramirer 1993) ; to the milling industry, it reduces the total and head rice yield and increased, the processing cost by removing red rice from milled rice (Dunand 1988; Menezes et al, 1997). Most red rice grains remain with some traces of the red color after polishing, which is undersirable to consumers.

Therefore, understanding deeply about physiological characteristics of weedy rice seed is very essential to eliminate it. Among that, the dormancy characteristics which is one of the important factor should be considered. In the above content, the “study on the dormancy characteristics of five popular weedy rice varieties in the Mekong River Delta” was conducted.

MATERIALS AND METHODS

Materials

- Consist of five popular weedy rice varieties in the Mekong River Delta viz., LATA 10, LATT 11, LATA 20, LATA 18, LATA 23.
- One cultivated rice variety as check (IR 64).

- Distilled water, petri disk, filter paper.
- Location: The experiment was carried out at the green house belonging to Farming System Division of the Cuu Long Delta Rice Research Institute from February to May, 1999.

Methods

The seeds of 6 weedy rice and cultivated rice varieties were dried at 14 % of moisture. Every variety was tested 8 times, at 15 days interval. In the first time germination percentage (GP) of these seed was tested after 5 days of harvesting (DAH). Hundred seeds of each variety was tested for each time. Weedy rice seeds and cultivated rice were soaked in the water for 24 hours, then they were covered for 24 hours by cloth bag (standard germination percentage testing method). After that, they were put on the humid filter paper in the petri disk with sufficient light (used the distilled water for testing). The number of germinated seeds were counted (as seeds had radical appearing).

Result analysis: GP of each variety depends on the time and the dormancy trait of the seeds.

RESULTS AND DISCUSSION

The result in table 1 is detailed as follows:

Phase 1- GP at 5 days after harvest (DAH)

All 5 weedy rice varieties and 1 cultivated variety were germinated. GP of seeds ranging from 0.66 % (LATT 11) to 23.33 % (LATA 18). While GP of cultivated rice (IR 64) was 5.33 %.

The weedy rice varieties the similar dormancy pattern with IR 64 included LATA 20 and LATA 23. The rest ones had higher GP ranging from 8.66 % to 23.33%. of LATT 11 got lower GP at 5 DAH. This result was in line with the finding of Binh (1997) and Thiet (1998) and they inferred these varieties to have low GP belonging to the group of high shattering percentage. Wanatabe et al (1994) remarked that the degree of seed dormancy of spontaneous shattering type was higher than that of intermediate shattering type and previously Silder (1974) said that the dormancy of seeds was not due to physiological immaturity of seeds.

Phase 2 - GP at 20 DAH

At 20 DAH GP of all varieties increased ranging from 10.00 % to 73.66 %, the 3 varieties namely LATA 10, LATA 18, LATA 20 had higher GP while LATT 11 had lower GP as compared to IR 64.

Phase 3 - GP at 35 DAH

Until this phase LATT 11 still got lower GP as compared to IR 64 (58.33 % compared to 88.66 %), the reason could be attribute to its husk that was too thick.

Weedy rice showed slower emergence speed than rice (Pyon et al, 1998).

Figure 1 shows that the weedy rice varieties do not have the uniform GP of seeds compared to cultivated rice at three phases at 5, 20 and 35 DAH. This is an important trait for the survival and existence of weedy rice in rice field (Watanabe et al, 1994).

Phase 4 - GP at 50 DAH

At this stage, almost weedy rice and cultivated rice varieties had an equal germination percentage ranging from 85.66 to 91.33 %, except LATT 11 (66.00%) which lower as compared to IR 64 (89.00 %).

Phase 5 - GP at 65 DAH

All weedy rice and IR 64 had very high GP ranging from 93.66 % to 99.00 %. It could be concluded that tested weedy rice varieties had the same dormancy percentage as cultivated rice IR 64 at the duration of 65 DAH. They might be had the medium seed dormancy characteristics.

Phases of 80, 95, 110 and 125 DAH

There were differences among varieties at the stage of 80, 95 and 110 DAH. Generally, all varieties of weedy rice and cultivated rice maintained high GP of more than 90 % but at 110 DAH, the GP of all varieties of weedy rice and cultivated rice got decreased. After 3 months all varieties reduced the GP clearly (Figure 1). Among them, the weedy rice varieties showed clearly reduction in GP compare to IR 64 (Table 1 and figure 1).

Table 1. Seeds dormancy of weedy rice cultivated rice varieties at different tested stages

Varieties	Germination percentage of seeds (%)								
	5 DAH	20 DAH	35 DAH	50 DAH	65 DAH	80 DAH	95 DAH	110 DAH	125 DAH
LATA 10	8.66d	71.33d	82.00b	85.66b	93.00a	94.66a	97.66b	95.00b	65.33b
LATT 11	0.66a	10.00a	53.33a	69.00a	98.00b	98.00b	97.33b	91.00a	61.0ab
LATA 18	23.33e	73.66d	96.33d	85.66b	97.33b	99.00b	98.66b	87.00a	65.33b
LATA 20	8.00cd	44.33b	85.66c	85.00b	94.66a	99.33b	92.66a	90.66a	56.00a
LATA 23	3.66ab	57.66c	86.66c	91.33b	98.33b	93.33b	98.00b	95.00b	55.67a
IR 64	5.33bc	52.66c	88.66c	89.00b	99.00b	98.66b	97.66b	87.00a	73.00c

- DAH : Days after harvest.

- Data in a column followed by the same letter are not significant difference by DMRT.

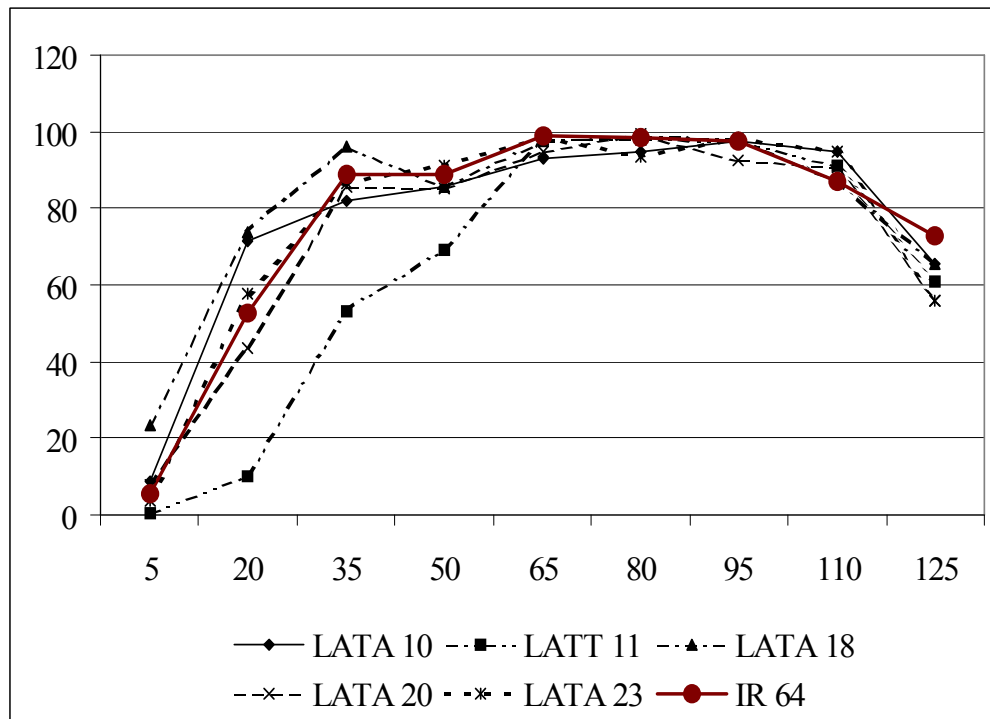


Fig. 1. Seeds dormancy of weedy rice cultivated rice varieties at different tested stages

CONCLUSION

All the tested weedy rice varieties required more than two months to break out its seed dormancy. This is harmony with the conclusion of Hiroaki Wanatabe, Azmi Man and Md. Zuki Ismail, (1994): degree of seed dormancy of weedy rice was not very high ; it required less than three month to be overcome. The five tested weedy rice varieties had the medium seed dormancy as the same with cultivated rice IR 64. However, at three phases of 5, 20 and 35 DAH the weedy rice varieties do not had GP of seeds uniformly as compared to cultivated rice. This trait may be contributed to the reason why weedy rice is present in the field for the succeeding seasons when they meet favourable conditions in the long run.

References

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TÓM TẮT

Nghiên cứu đặc tính miên trạng của 5 giống lúa cỏ phổ biến ở ĐBSCL.

Kết quả khảo sát đặc tính miên trạng của 5 giống lúa cỏ phổ biến ở ĐBSCL so sánh với một giống lúa trồng bằng cách thủ tỷ lệ hạt nảy mầm ở 9 thời điểm, mỗi thời điểm cách nhau 15 ngày. Thời điểm đầu tiên bắt đầu sau thu hoạch 5 ngày. Kết quả cho thấy 5 giống lúa cỏ đều có miên trạng trung bình giống như lúa trồng, tính miên trạng bị phá vỡ hoàn toàn sau 2 tháng. Đặc tính này có thể giải thích lý do lúa cỏ hiện diện trên đồng ruộng vào các vụ kế tiếp khi gặp điều kiện thích hợp để phát triển.