

Answers to TPPT Additional Questions on Submitted Proposal to IPPC titled "Irradiation Treatment for *S. frigidus*" (2017-36)

Question No. 1: Sex determination

- Was the research based on the sexing of all adults involved (as described in De Jesus et al. (2002)?

Answer to Comment No. 1:

- Yes, the sexing of all adults was based on DeJesus L.R.A. et al 2002 (now Lorenzana L.R.J) who is also my co-author in the papers/ articles cited in the submission to the IPPC.

Question No. 2: Sex Ratio

- In Table 1 of Obra et al. 2014, figures are given for the control egg production and the eggs per female. Based on these figures, the number of females in each control can be calculated as 64 (30877/483) and 171 (87431/510), giving a sex ratio of approximately 60:40::male: female.
- In the response to the questions in the letter of 31 July 2018, the number of males and females in each of the treatment groups was given as 2275 and 2274 for the 150 Gy treatment and 740 and 740 for the 100 Gy treatment. This gives a sex ratio of almost exactly 50:50.
- Why was the sex ratio in the control so different?
- Detailed data: The submitter is requested to provide the raw data used to generate Table 1 in Obra et al 2014 which will be used to calculate the efficacy, in particular the counts of the control and the treatment group for each replicate.

Answer to Comment No. 2:

In this study, we paired males and females emerged from irradiated mangoes in equal-numbered groups and also in the control (10 males:10 females per container), and that is why the sex ratio is 50:50. There were very few excess males and females for each batch/replicate i.e without any pairs so we did not include them anymore.

February 2014

OBRA ET AL.: IRRADIATION OF *Sternonchetus frigidus*

163

Table 1. Large-scale confirmatory tests irradiating adult *S. frigidus* in mangoes at target doses of 100 and 150 Gy

Target dose (Gy)	Measured dose (Gy)				No. reps	No. tested	No. eggs laid	No. eggs hatching	Mean no. eggs laid/female	Percentage hatchability
	Avg. min.	Avg. max.	Overall min.	Overall max.						
0 (control)	—	—	—	—	1	160	30,877	29,087	483	94.2
100 Gy	91.9	105.6	89.5	106.3	1	1,450	95*	0	—	—
0 (control)	—	—	—	—	3	430	87,431	84,451	510	95.9
150 Gy	114.4	137.7	96.7	164.1	3	4,549	0	—	—	—

* All collected from one adult female.

In Table 1 of Obra et al. 2014, figures are given for the control egg production and the eggs per female. Based on these figures, the number of females in each control can be calculated as 64 (30877/483) and 171 (87431/510), giving a sex ratio of approximately 60:40 (male: female). The figures of 483 and 510 eggs/female were obtained from our spreadsheet where we computed for cumulative mean eggs laid per female based on live females not on initial total females that we used.

If we will base it on the number of initial females used in the experiment (not on live females) the figures would be 386 and 397 eggs per female and that would give a 50:50 sex ratio that we did for pairing the adults (Table A). Hence, $30,877/385.73 = 80$ females ; $87,431/ 397.00 = 220$ females.

Table A. Raw data

Target Dose (Gy)	Batch/Rep	No. of Females	No. of Males	Total No. of Eggs Laid	No. of Eggs Laid/Female*
Control	1	80	80	30,877	385.73
100 Gy	1	740	740	95	Only 1 female laid eggs
Control	1	70	70	29,304	418.62
	2	70	70	25,747	367.81
	3	80	80	32,380	404.75
	Total	220	220	87,431	Ave. = 397.06
150 Gy	1	654	655	0	-
	2	740	740	0	-
	3	880	880	0	-
	Total	2,274	2,275	0	

*For the control for 150 Gy, mean number of eggs laid per female based on the initial number of females used in the pairing/mating.

I think we should have indicated the figures of 386 and 397 (Table A) in Table 1 of Obra et al (2014) instead of 483 and 510 mean no. of eggs per female.

Prepared by:


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