



International Conference on Advanced Research in Agriculture and Food (ICARAF-24)
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Morphological Identification of *Impatiens balsamina* L. Seeds from Different Sources

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INTRODUCTION

Impatiens balsamina L., widely used in traditional ceremonies in Bali.

The huge demand for balsam as a ceremonial material means that flowers must always be available.

The high demand for balsam flowers necessitates increased production, making the quality of seeds the primary input in cultivation an essential factor to enhance.

Seeds produced by different farmers are presumed to vary in quality due to differences in production and storage methods. The use of quality seeds can minimize losses for farmers by ensuring the availability of superior planting materials.

This study aims to identify the seed morphology of balsam from both commercial and locally produced seeds





METHODOLOGY



lamps, a camera, petri dishes, tweezers, a stereo microscope, the Munsell Plant Tissue Colour Book, a scalpel, labels, and writing instruments.



balsam seed samples from local farmers, uncertified commercial seeds, and certified commercial seeds



Seed Technology and Plant Breeding Laboratory UPN Veteran Yogyakarta.



- Qualitative: seed coat colour, seed shape, seed spot
- Quantitative: length, width

The experiment was designed as a single-factor study using a Completely Randomized Design (CRD). Quantitative data were analysed using Analysis of Variance (ANOVA). If significant differences were observed between treatments, the analysis was followed by Duncan's Multiple Range Test (DMRT) at a 5% significance level.

RESULT & DISCUSSION

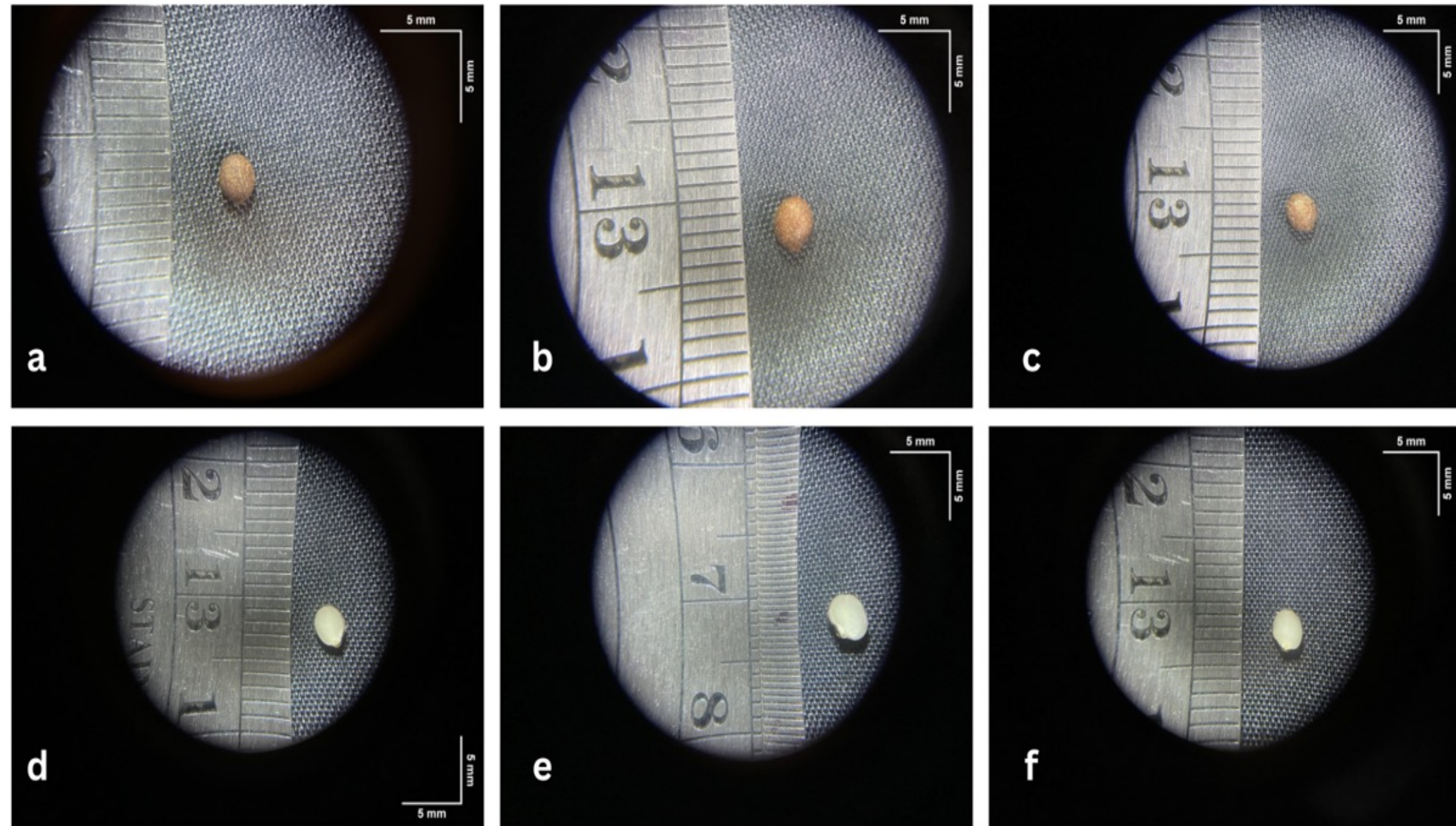


Figure 1. a) Whole seed from a local farmer, b) Whole seed from uncertified commercial source, c) Whole seed from certified commercial source, d) Cross-section of seed from a local farmer, e) Cross-section of seed from uncertified commercial source, f) Cross-section of seed from certified commercial source.



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Table 1. Identification of characteristics and morphology of *Impatiens balsamina* seeds

Seed source	Replicated	Quantitative		Qualitative		Seed spot
		Length (mm)	Width (mm)	Colour	Shape	
Farmer-produced seeds	1	3,78	2,86	2.5YR 3/4	Elliptic	v
	2	3,60	2,99	5R 3/4	Elliptic	v
	3	3,03	1,57	5R 3/2	Irregular	v
	4	3,05	2,18	10 R 3/4	Irregular	v
	5	2,41	2,31	2.5YR 3/4	Irregular	v
	6	3,24	2,43	5R 3/2	Elliptic	v
	7	3,02	2,35	10R 3/4	Elliptic	v
	8	3,19	2,53	2.5YR 3/4	Irregular	v
	9	2,78	2,79	10R 3/2	Irregular	v
	10	2,97	1,81	2.5YR 3/4	Elliptic	v
Uncertified commercial seeds	1	2,81	2,80	2.5YR 3/4	Circular	v
	2	3,15	2,00	2.5YR 3/4	Irregular	v
	3	3,30	2,88	10R 3/4	Circular	v
	4	2,98	2,22	2.5YR 3/4	Irregular	v
	5	3,40	2,78	2.5YR 3/4	Elliptic	v
	6	3,41	3,12	2.5YR 3/4	Elliptic	v
	7	3,23	3,41	2.5YR 3/4	Circular	v
	8	2,96	3,63	2.5YR 3/4	Elliptic	v
	9	3,45	2,90	2.5YR 3/4	Circular	v
	10	3,10	2,38	2.5YR 3/4	Circular	v
Certified commercial seeds	1	2,81	1,69	2.5YR 3/4	Circular	v
	2	3,05	2,65	5R 3/2	Elliptic	v
	3	2,53	2,39	2.5YR 3/4	Irregular	v
	4	2,43	1,92	5R 3/2	Irregular	v
	5	3,18	2,55	5R 3/2	Elliptic	v
	6	3,13	2,64	5R 3/2	Elliptic	v
	7	3,07	2,45	5R 3/2	Elliptic	v
	8	3,04	2,31	5R 3/2	Elliptic	v
	9	2,90	2,18	5R 3/2	Elliptic	v
	10	2,92	2,19	5R 3/2	Elliptic	v

The table shows differences in seed colour based on their source. Seeds from local farmers exhibited a variety of colours, with the most dominant being 2.5 YR 3/4, described as a medium dark shade of red orange. The colour of uncertified commercial balsam seeds was also 2.5 YR 3/4, a medium dark shade of red orange, while the certified commercial balsam seeds had a colour code of 5R 3/2, described as a medium dark shade of red.

Certified commercial balsam seeds exhibited a more uniform elliptic shape compared to seeds from local farmers and uncertified commercial sources.



Table 2. Results of DMRT analysis on the morphology of *Impatiens balsamina* seeds

Seed source	Length (mm)	Width (mm)
Farmer-produced seeds	3,11a	2,38a
Uncertified commercial seeds	3,06 a	2,81b
Certified commercial seeds	2,91a	2,30a

The quantitative characteristics of balsam seeds from various sources indicate that the longest seed length was found in seeds from local farmers, measuring 3.11 mm, while the shortest was 2.91 mm. However, the differences among the seed sources were not statistically significant



CONCLUSION

Identification of seed characteristics and morphology, such as shape, size, and colour, is essential for supporting seed quality analysis. Certified commercial balsam seeds exhibit the most uniform colour, uncertified commercial seeds have the widest size, and seeds from local farmers have the longest length.

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Thank You