



KABARAK UNIVERSITY

6TH ANNUAL INTERNATIONAL RESEARCH CONFERENCE

EFFECT OF PLANT DENSITIES ON GROWTH AND YIELD OF THREE DRY BEAN VARIETIES IN THE HIGHLAND OF ABERDARE RANGES

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Introduction / Background

- ▶ Several studies have shown that beans are the leading source of protein and calories for many of the poorest families in Kenya
- ▶ Two dry bean cultivars (Chelelang and Ciankui) have been reported to be suitable for growing in highland of Aberdare ranges
- ▶ previous instability of potato cultivation, farmers are thus being encouraged to venture into commercial dry bean production.

Statement of the problem

- ❖ Farmers in this region lack knowledge of suitable proper plant population, variety and technology
- ❖ This has led to planting of inferior varieties that have resulted to an increase in the cost of production with low yield to the poor farmers, further lowering their income.
- ❖ It is hoped that this study will address significant contributions to the solution of these very important constraints

Study objectives

- . To compare growth, yields and seed quality of the three dry bean cultivars when grown under conditions prevalent in the area around Ndaragwa in Nyandarua county.
- . To determine the effect of different plant densities on growth, yields and seed quality of the three dry bean cultivars when grown under varying conditions

Brief literature review

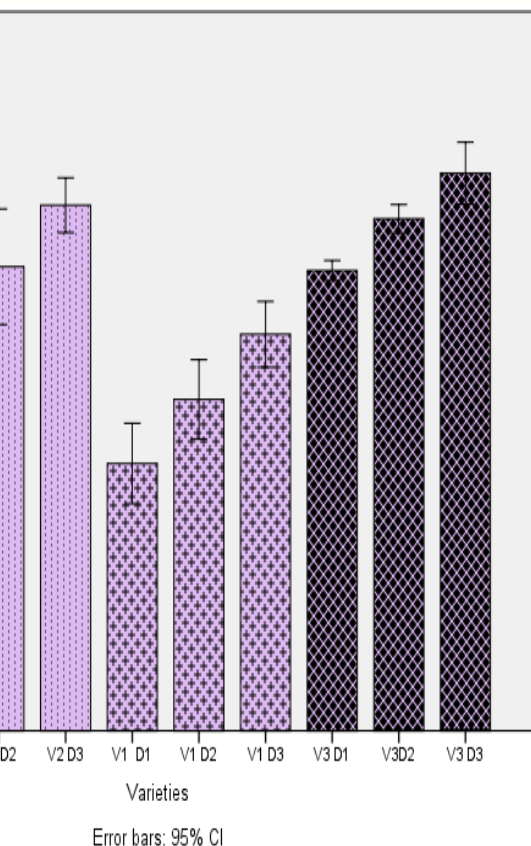
- . Dry bean varieties originated in America. Only five species; *P. acurifolius*, *P. coccineus* L, *P. Lunatus* L, *P. polyanthus* Greenman and *P vulgaris* L. were domesticated (Berrocal – Ibarra, 2010).
- . Genetic factors, plant population and its environmental interaction affect dry bean vegetative growth and development (Makbib, 2012).

Methodology

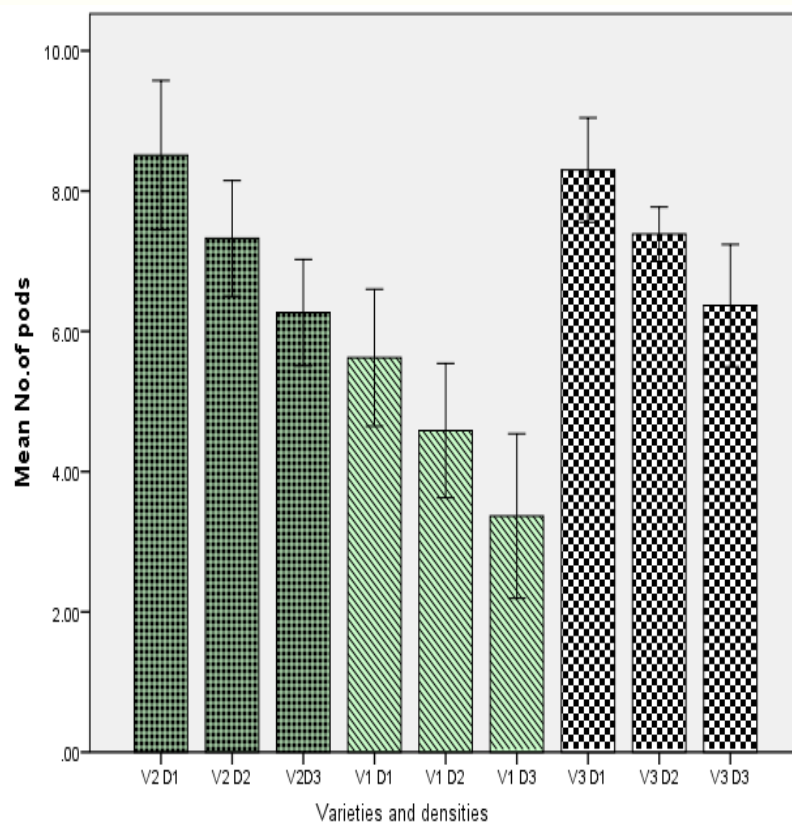
Densities	
1 seed / hill	D1
2 seeds /hill	D2
3 seeds /hill	D3
Varieties	
Mwitmania	V1
Cherelang	V2
Ciankui	V3

Varieties	D1	D 2	D3
V1	VID1	V1D2	V1D3
V2	V2D1	V2D2	V2D3
V3	V3D1	V3D2	V3D3

Findings / Results

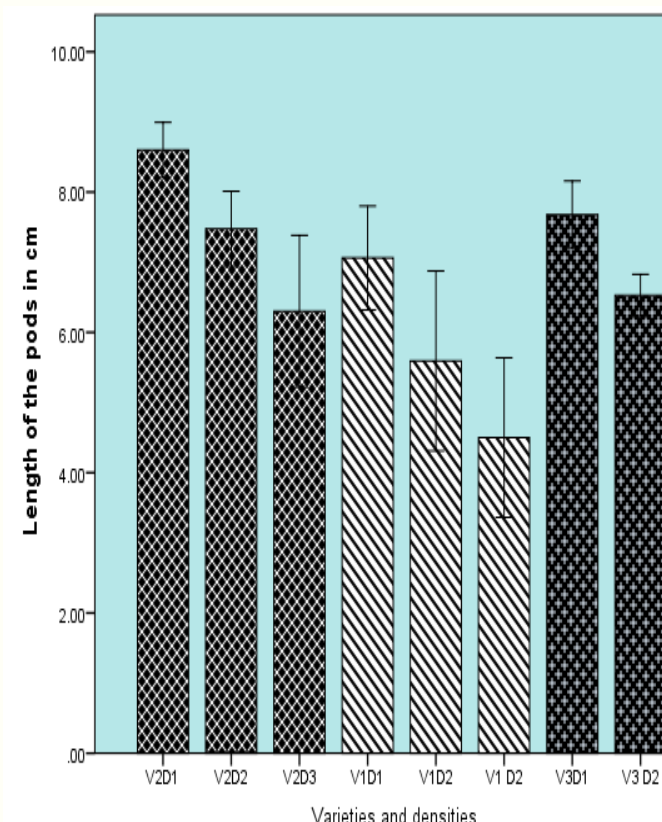


Error bars: 95% CI



Varieties and densities

Error bars: 95% CI



Varieties and densities

Error bars: 95% CI

Findings / Results

Result and Discussions

Variety/Density	Ciankui	Mwitmania	Chelelang
D1	0.487	0.421	0.498
D2	0.567	0.461	0.571
D3	0.413	0.361	0.421

Treatment combinations	Grain yield in kg
V2D1	130
V2D2	238
V2D3	285
V1D1	102
V1D2	195
V1D3	219
V3D1	135
V3D2	240
V3D3	289

Conclusions

- . Plant population and the cultivar type are significant
- . Decreasing plant population causes an increase in harvest index irrespective of the cultivar.
- . The optimum plant population for seeds production by all the varieties is approximately two seeds per hill

Recommendations

From the investigation showed, plant densities really influence production across most of the cultivars. Therefore under Nyandarua condition the optimum plant density the study would recommend is two seed per hill.

Areas for further study

- A similar study on effect of plant densities on growth and yield of three dry bean cultivars, should be carried out in other regions to enable generalisation of the results of this study

- A study of this kind should be done in other types of dry bean to establish the relationship of the findings of this study with other dry bean cultivars



Thankyou