EFFECTS OF REFLECTIVE MULCH ON APHID AND THRIPS INFESTATION ON FRENCH BEANS

(*Phaseolus vulgaris l)*

A22/0063/2007

MWANGI. Z. NDUATI.

4TH YEAR BSC. AGRIC (CROP PROTECTION MAJOR)

SUPERVISOR: DORA KILALO

INTRODUCTION.

- Originated from S. America.
- Its the leading legume produced for export in Kenya.
- Grown for their immature pods consumed fresh or processed and canned.
- **Economic importance;**

1. Employment as its labour intensive.
2. Target foreign market thus foreign exchange earner.
3. Rich in vital nutrients essential for proper growth and metabolism.
4. Rural development.

LIMITATIONS IN PRODUCTION.

- Poor and deficient soils
- Water stress
- High incidences of disease pest and insect pests
- High cost of fertilizers
- Severe competition from weeds
- High post harvest losses
- Fluctuating producer prices due to undefined markets.

PROBLEM STATEMENT

- Despite the increasing demand for French beans, production is very low due to insect pest damage especially bean aphid and thrips which transmit viruses and affect pod quality.

PROBLEM JUSTIFICATION;

- As farmers try to overcome the problem of pests, they have adopted calendar use of pesticides leading to high cost of production and is of environmental and human health concern due to high residual levels in products. There's need to look for alternative ways of managing pests to reduce insecticide use.

OBJECTIVES

- Overall objective;

Improving production and quality of French beans in Kenya.

Specific objectives.

1.To determine the effects of reflective mulch on aphid infestation on French beans.

2.To determine loss of yield caused by bean aphid on French bean.

Hypothesis;

Reflective mulch do not affect aphid infestation on French bean.

- MATERIALS;

  -French bean seeds variety Venda

  -D.A.P and C.AN fertilizer

  -Planting line (spacing 30 x 20)

  Watering can/ pipe

  -Magnifying lens

  Pesticide chemical (Dimethoate)

- METHODOLOGY
- The project was set at Upper Kabete Campus field station

  A randomised complete block design was used with the following treatments;

Methodology cont.

- Treatment 1.Reflective mulch (t1)
- Treatment 2.Chemical control (t2)
- Treatment 3.Control (t3)
- Each treatment was replicated three times and randomised as below

PARAMETERS COLLECTED

1.Aphid population-collected on the upper leaves, mid leaves, and lower leaves on 5 plants per plot randomly picked. Data collected after every 4 days.

2,Thrips on flowers-5 flowers per plant, 5 plants per plot

3,Yield of 5 plants per plot divided on different qualities (Good, malformed and weight with thrip marks)

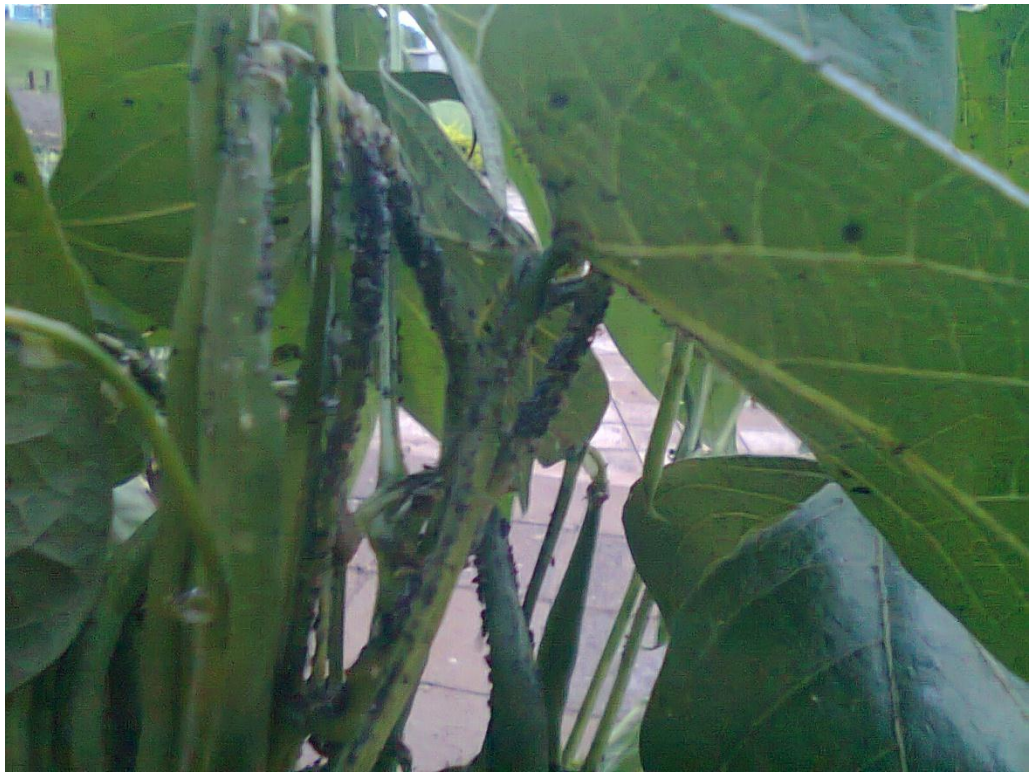
DATA ANALYSIS;

Analysis of variance was done using gen start software and the means were compared using least significant difference.

SAMPLES CLASSIFIED AS MALFORMED

Sample classified as good

APHIDS ON THE FRENCH BEANS

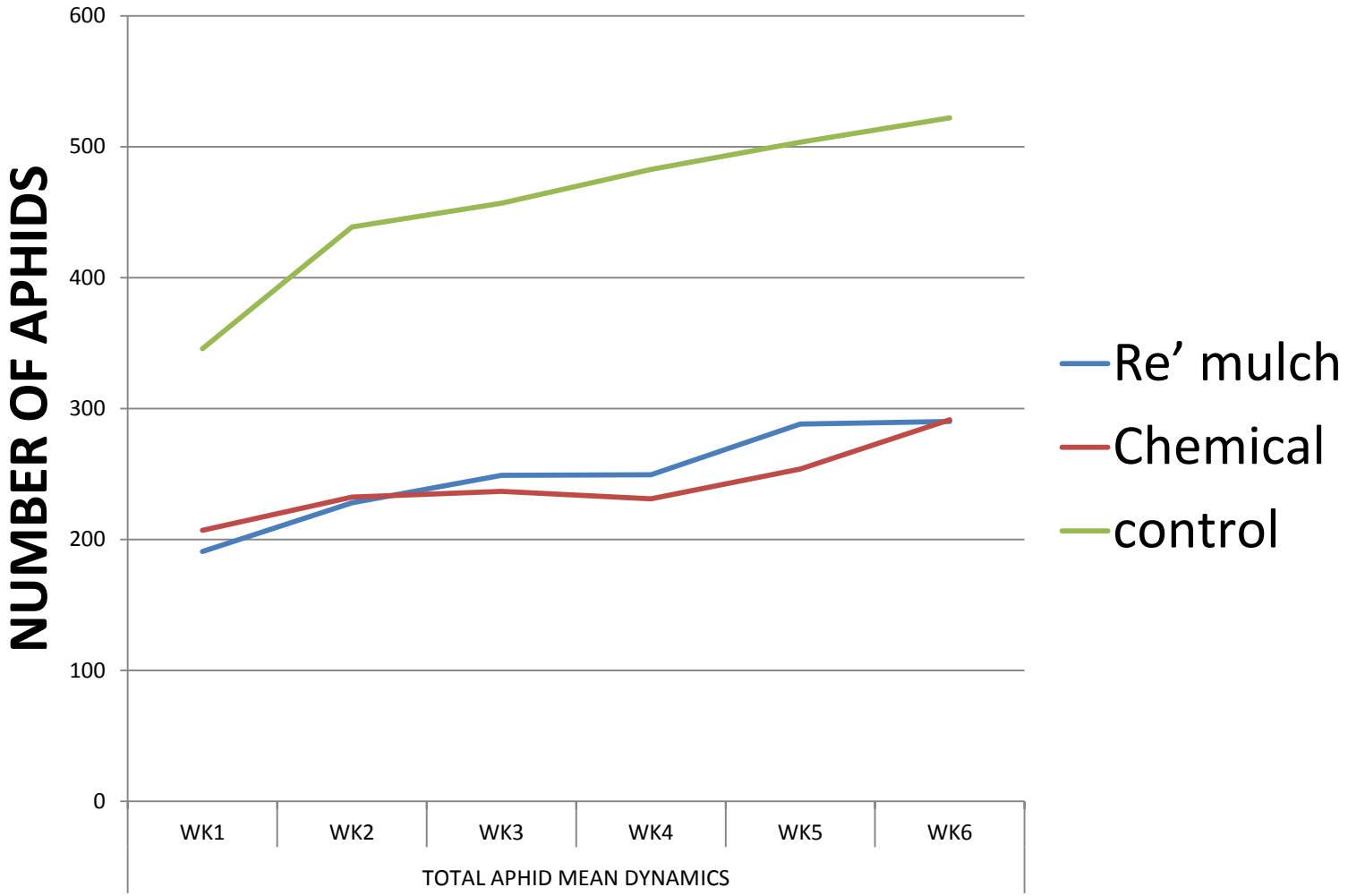


RESULTS

- AVERAGE MEANS OF APHIDS AND THRIPS.

TREATMENT	APHID LOWER LEAF	APHID MIDDLE LEAF	APHID UPPER LEAF	APHID TOTAL	THRIPS TOTAL
REFLECTIVE MULCH	64.3b	86.3b	98.5b	249.2b	52.2b
CHEMICAL	75.8b	84.6b	82.2b	242.0b	49.9b
CONTROL	151.1b	178.0a	153.7a	458.2a	88.3a
L.s.d	35.12	41.31	42.22	77.39	34.08
Cv%	21.8	23.0	22.8	14.7	32.4

TOTAL APHID DYNAMICS OVER TIME



EFFECTS OF RELECTIVE MULCH ON QUALITY

TREATMENT	GOOD QUALITY	MALFORMED	THRIP MARKS
REFLECTIVE MULCH	88.3a	23.6b	27.2b
CHEMICAL	92.3a	20.9b	23.5b
CONTROL	23.4b	85.5a	65.3a
LSD	20.96	19.9	19.26
C.V%	18.6	26.7	30

Weights sampled in grams.

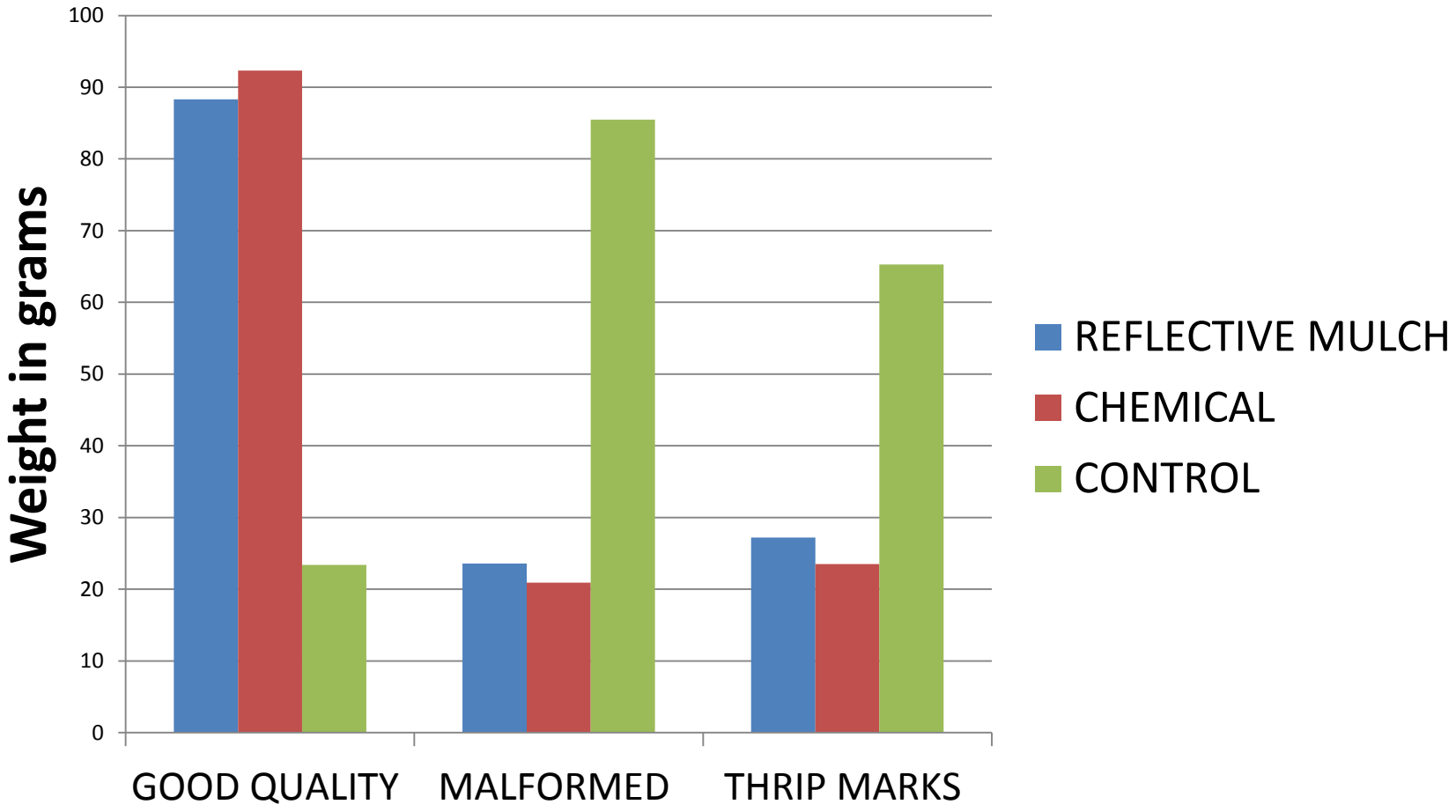
Qualities divided as ;

Good-straight, length>4 inches and no pest marks

Malformed –Curved, twisted and small length when mature

Thrip marks- weight with all pests' marks

EFFECTS OF REFLECTIVE MULCH ON QUALITY



DISCUSSION.

- Reflective mulch was found to control aphids on lower leaves better than chemical
- This indicates that chemical sprayed did not penetrate well to the lower leaves.
- Yield quality was highly affected by reflective mulch and by chemical, the control had highest % of poor quality

CONCLUSION

- Reflective mulch was found to control aphids and thrips in a comparable way to chemicals.
- Small scale farmers can adopt use of reflective mulch as they are cheaper than chemicals and can be re-used and leave no harmful residues on French bean produce.

- Thanks for listening
  - I invite questions.
- And God bless you!