

GENERAL DISCUSSION AND CONCLUSIONS

An experiment was conducted to determine whether mulching and spacing were important in the production of wild ginger in an open field. Wild ginger was planted in the field using rhizomes. The planted rhizomes were those that passed through 3cm or 4cm diameter holes to maximize uniformity of planting material. Each rhizome was given a code in order to be able to monitor its growth and development from emergence until harvest. A questionnaire survey was also conducted in search of indigenous knowledge about the plant.

To determine the importance of mulching and spacing in wild ginger growth, wheat straw mulch with a thickness of about 6cm was used in combination with 15, 30, and 45cm spacings. Unfortunately, there was general poor emergence of plants.

There was no response of wild ginger to both the main effects of spacing and mulching. However, there was interaction between spacing and mulching which resulted in an increase in fresh rhizome mass. There was no interaction between spacing and mulching in rhizome circumference, fresh enlarged root mass and enlarged root length. Mulching was also effective in reducing the soil temperature as compared to non-mulching. From mid-May to mid-June, mulching reduced the soil temperature by 8⁰C, which was the highest temperature difference between mulching and non-mulching. This indicates that mulching had played an important role in reducing soil temperatures. During May to June months, the average soil temperature difference between mulching and non-mulching was 4⁰C and the lowest was 2⁰C.

Mulching also affected the moisture content in the soil but this was dependent on the depth of the soil. With 10cm depth, both mulching and non-mulching did not affect the moisture content of the soil. However, with 15cm depth, mulching kept the moisture content for longer period as compared to non-mulching.

Mulching was also effective in suppressing the weed growth as compared to non-mulching. Therefore wheat straw applied to a thickness of about 6cm was effective in

controlling weed growth. However, as the growth season progressed, the mulch became thinner, resulting in poor suppression of weed growth.

The questionnaire survey was conducted on three groups of respondents: traditional healers, sellers and indigenous knowledge bearers. Of the total respondents interviewed, 30% were traditional healers, 29% were sellers and 41% were IK bearers. The majority of respondents interviewed were elderly people and also female (59%). The majority of respondents (53%) were able to read and write. The village which had many respondents was Vuwani area with 36% respondents.

All the respondents knew the plant and they knew it as *tshirungulu*. The most important uses of wild ginger was for stomach pains, coughs and flu. Most respondents indicated that children were always given this medicine to prevent a number of diseases. The plant is grown by most people interviewed. Those who were not growing it, were willing to learn how to grow wild ginger and to eventually cultivate it in their lands.

It was encouraging to learn that people who use this plant feel that even home-grown wild ginger is as effective as the wild one for medicine. It is therefore important to educate traditional healers, sellers and IK bearers on how best to grow wild ginger. Innovative ways of harvesting, such as leaving the mother tuber in the ground, should be encouraged for sustainable usage of wild ginger.

GENERAL SUMMARY

An experiment was conducted to determine whether mulching and spacing were important in the production of wild ginger. The experiment was done at Hatfield Experimental Farm, University of Pretoria. The survey was conducted to find out indigenous knowledge about wild ginger. A survey was done in nine different villages around Venda in Limpopo Province. The villages were Vuwani, Tshitomboni, Khubvi, Lufule 1 and 2, Thohoyandou complex, Sibasa, Maniini and Mulenzhe.

Treatments used in this experiment were mulching or non-mulching in combination with three levels of spacing. The experiment conducted was a randomised complete block design (RCBD). Wheat straw mulch was applied at a thickness of about 6cm and rhizomes were spaced at either 15, 30 or 45cm.

Mulching was effective in reducing the soil temperature, keeping the soil moisture content for a longer period and suppressing weed growth. The main effects of mulching and spacing did not affect fresh rhizome mass, but interactions between mulching and spacing were significant. Plant spacing of 30cm with non-mulching was better than both 15 and 45cm spacings. On the other hand, 15cm spacing with mulching was better than both 30cm and 45cm for fresh rhizome mass. There were no interaction between spacing and mulching for rhizome circumference, fresh enlarged root mass and enlarged root length.

In the survey, there were 76 respondents that were interviewed. People interviewed were traditional healers (30%), sellers (29%) and indigenous knowledge bearers (41%). Most of the respondents were female (59%). Also, most of the respondents indicated that they had gone through formal education, so they were able to read and write. All of the respondents knew wild ginger as *tshirungulu*.

Results from the survey indicated that wild ginger is used mainly for stomach pains. It was encouraging to learn that people who use this plant feel that even home-grown wild ginger is as effective as the wild one for medicine. The plant is currently so scarce that some of the respondents were travelling as far as Zimbabwe to get it.

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Source of Variance	DF	Mean Squares ²	
		Wet weight (g)	Fresh weight (cm)
Spacing (S)	2	167.2 ^{**}	0.347 ^{**}
Mulching (M)	1	62.0 ^{**}	0.049 ^{**}
S X M	2	396.2*	7.342 ^{**}
Replication	3	18.3 ^{**}	0.283 ^{**}
Error	15	3.9	0.229

* P - value significant (*) or highly significant (**), p < 0.05

APPENDIX TABLES

ANOVA TABLE

Table A1 Analysis of variance for fresh rhizome mass, rhizome circumference, fresh enlarged root mass and enlarged root length as affected by mulching and spacing

Sources of variation	DF	Mean Squares ^Z			
		Fresh rhizome mass (g)	Rhizome circumference (cm)	Fresh enlarged root mass (g)	Enlarged root length (cm)
Spacing (S)	2	167.2 ^{NS}	0.347 ^{NS}	90.0 ^{NS}	0.409 ^{NS}
Mulching (M)	1	62.0 ^{NS}	0.049 ^{NS}	21.0 ^{NS}	2.942 ^{NS}
S X M	2	390.2*	1.342 ^{NS}	25.0 ^{NS}	0.681 ^{NS}
Replication	3	18.3 ^{NS}	0.283 ^{NS}	48.0*	0.212 ^{NS}
Error	15	8.9	0.229	8.3	0.157

^ZF – value significant (*) or highly significant (**) at 5% level of probability

QUESTIONNAIRE – SURVEY ON WILD GINGER

A Respondent

V1 1-3

Answer each question by circling the appropriate number in a shaded box, or write your answer in the shaded space provided.

A. Respondent's profile

1. What is the title of your job position?

Traditional healer	1
Seller	2
IKS	3

V2 4

2. What age category do you fall into?

Less or equal to 20 years	1
21 years to 30 years	2
31 years to 40 years	3
41 years to 50 years	4
51 years to 60 years	5
61 years to 70 years	6
71 years and older	7

V3 5

3. What is your gender?

Male	1
Female	2

V4 6

4. What is your educational background?

V5 7-8

5. In which village do you live?

V6 9-10

B. Concerning the plant

1. What is the traditional name for wild ginger (*Siphonochilus aethiopicus*)?

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V7 11

2. Where do you get the plant materials from?

Wild/bush	1
Cultivate	2
Sangoma/traditional healer	3
Street	4
Other (specify):	

V8 12
 V9 13
 V10 14
 V11 15
 V12 16

3. What are the uses of wild ginger?

V13 17-18
 V14 19-20
 V15 21-22
 V16 23-24
 V17 25-26

4. "Plants that grow naturally are regarded to have more medicinal value compared with those that are cultivated". Do you agree with this statement?

Yes	1
No	2
Unsure	3

V18 27

5. Where do you obtain wild ginger from during the out of season period?

V19 28-29
 V20 30-31
 V21 32-33

C. Domestication and propagation

1. Do you know how to grow wild ginger?

Yes	1
No	2

V22 34

2. If "No" to Q C.1, would you be interested in learning how to cultivate wild ginger?

Yes	1
No	2

V23 35

3. Do you have land available to grow the plant?

Yes	1
No	2

V24 36

4. Would you like to see traditional medicines replacing European medicines in clinics and hospitals?

Yes	1
No	2

V25 37

5. Would you like to see traditional medicines also in clinics and hospitals?

Yes	1
No	2

V26 38

D. Harvesting and post-harvest handling

1. Do you have any difficulties in obtaining wild ginger for harvesting purposes?

Yes	1
No	2

V27 39

2. How do you harvest wild ginger?

V28 40-41

V29 42-43

V30 44-45

V31 46-47

V32 48-49

3. Do you encounter any problems when harvesting wild ginger?

Yes	1
No	2

V33 50

4. If "Yes" to Q D.3, what main problem do you encounter when harvesting wild ginger?

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V34 51-52

5. From which area do you harvest wild ginger?

--

V35 53-54

6. Which plant part do you mostly harvest?

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V36 55-56

7. For how long do you store the plant materials for medicinal purposes? (Answer in days)

--

V37 57-58

8. Do you prepare your plant materials before selling them?

Yes	1
No	2

V38 59

9. If "Yes" to Q D.8, how do you prepare them?

V39 60-61

V40 62-63

V41 64-65

V42 66-67

V43 68-69

10. When preparing the medicine, do you add anything else?

Yes	1
No	2

V44 70

11. If "Yes" to Q D.10, what main ingredient do you add?

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V45 71-72

12. Do you think that local wild ginger can become extinct in the wild?

Yes	1
No	2

V46 73

E. Marketing

1. What is the distance from where you get the wild ginger? (Answer in km)

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V47 74-76

2. What are your traveling costs to where you get the materials? (Answer in Rand)

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V48 77-79