

---

## A SURVEY ON ONION PRODUCTION IN THE BAWKU EAST DISTRICT OF GHANA.

M. Yeboah<sup>1</sup>, G. Nyarko<sup>2</sup>, H. Bayor<sup>2</sup>, A. Bonaventure B<sup>3</sup>, and R. Kanton<sup>4</sup>

<sup>1</sup>Savannah Agriculture Research Institute, Tamale

<sup>2</sup>University for Development Studies, Tamale

<sup>3</sup>Soil Research Institute, Manga

<sup>4</sup>Savannah Research Institute, Manga

### ABSTRACT

*Dry season vegetable cultivation in the northern part of Ghana is important in various respects. It provides employment and income during a period, which would otherwise be spent in idleness among most rural farmers. Dry season vegetable production therefore has the potential of checking the north-south migration as well as contributing to improved nutrition. Dry season vegetable production has to be improved by solving some of the most important problems that hinder productivity to make it more attractive for farmers to engage in it. It is in this respect that a baseline survey was carried out in seven onion-producing communities in the Upper East Region to identify some of the major problems hindering productivity. From the survey, it became apparent that sufficient quality onion seed was a problem. Farmers produce their own seed and even supplement this by buying seed from the market. There are no certified seed growers. It was also evident that there was no standard method of bulb pre-treatment before planting and farmers were uncertain of the optimal "seed-bulb" size. However, the Bawku red cultivars were the most preferred but thrips were a major pest problem. It appears that marketing and storage of bulbs were less problematic. Seed storage, on the other hand, was a problem with about 39% of farmers able to store for only up to six months. It is recommended that the major problems identified should be scientifically studied and solutions worked out and recommendations given to the farmers to boost onion production.*

### INTRODUCTION

Onion is cultivated mostly in the dry season and mainly in the Upper East Region of Ghana. Onion production has markedly enhanced farmers living conditions in Ghana due to high market value and good yield returns (Abukyi, 1984; Nkansa 1989). In some other parts of the world, onion seed production increased income generation and reduced poverty by 20 to 23% (Ikran *et al.*, 2001).

However, many constraints limiting production have been reported, for instance farmers become unfamiliar or have not

adopted the suitable production techniques (Mousah *et al.* 1998). In Ghana, primitive farm implements, poor cultural methods and lack of seeds and disease have been reported. (Sinnadurai and Abu, 1977).

In the Upper East Region of Ghana where most of the production takes place, one disturbing aspect of production has been lack of good quality seeds.

It is in attempt to address these serious problems that a survey was conducted to critically examine constraints to onion production in seven production communities

in Bawku East District.

## METHODOLOGY

The survey was carried out in seven onion-producing communities in the Bawku East District of the Upper East Region of Ghana. The communities were Bugri, Zamballa, Sarabogo, Binduri, Zuuri, Bankango and Zomanbigo.

A total of 50 respondents (all of whom were onion farmers) were interviewed using a semi-structured questionnaire. Farmers were selected on random basis with the exception that they grow onions. Interviews were focussed on the entire production system of onion seed. This included varieties, bulb preparation, plant spacing, disease and pest control etc. The responses were collated and the responses analysed for each statement.

## RESULTS AND DISCUSSIONS

### Background of Onion Producers

Seventy-six (76%) of all respondents were males while 24% were females. Age of respondents varied from 20 – 71 years with a mean of 43.6. Only three religious groups were encountered. They are Moslems (81.6%), Christians (10.2%) and Traditionalists (8.2%).

Total family size (including all adults and children) ranged from one (1) to 26 per household with a mean of 3.9 members per household. Men in the households varied from one (1) to seven (7) with a mean of 1.5 members. Women ranged from one (1) to eight (8) members in a household with a mean of 1.9 while children varied from one (1) to 20 with a mean of 7.25 per household. As expected, children formed the majority of occupants of each household. These indicated that there was not much difference in gender but a lot of dependences on the

farmer to feed. The number of years farmers had been producing onion seed varied from three (3) to 40 with a mean of 12.3 years. In spite of the great variability in time of production among farmers, there was not much difference in their production techniques in the study area.

### Reasons for Seed Production:

Majority of respondents interviewed (63.3%) produced onion seed in addition to producing bulbs. Only 36.7% produced bulbs without producing seed. Since the sample was selected on random basis, it is possible that these figures were good reflection of the proportion of onion farmers in the communities in general who also produced onion seed.

The main reasons provided for seed production by farmers are shown below (Table 1).

**Table 1. Reasons given by farmers for producing seeds**

REASON	Percent (%) Respondents
1. For planting (own use)	21.2
2. Sale	3.0
3. Planting and sale Planting and Hobby	72.7
	3.0

It is evident from the table that planting is the main reason (97%) for producing seed at the same time sale is also very important constituting more than 75% of farmers.

### Varieties Cultivated

Seed was produced for only two varieties, Bawku red and Latteh. Majority of farmers (50%) produce seed of both Bawku Red and Latteh, with 47.2% producing seed for Bawku red alone, while only 2.8% produced seed for Latteh alone. It can

therefore be deduced from this that Bawku red is the more popular among onion seed producers in the study area with 97.2% of all seed producers producing seed for it. More than half (52.8%) of all onion seed producers also produce seed of Latteh. However choice of variety depends largely on yield, quality and earliness. This correspond well with with other survey findings (Vibeke.1995)

### Bulb Preparation

Three methods were used for preparing bulbs for planting. Majority of farmers (86.1%) prepare bulbs by cutting in half and planting immediately, others (11.1%) cut in half and leave for a day before planting while small percentage (2.8%) plant whole bulbs. As a rule therefore, cutting of bulb before planting is far more important than planting whole bulbs at Bawku East District.

The reasons assigned to the above pre-treatments before planting are shown below (Table 2).

**Table 2: Response to bulb pre-treatment before planting.**

Reasons For Pre-treatment	Percent (%) of Farmers
1. Good sprouting	
2. Fast sprouting	11.8
3. Delay after cutting causes rotting	55.9
4. Keeping one day after cutting gives better sprouting	23.5
	8.8

It appears that farmers are not certain of the right method of bulb pre-treatment before planting. For example while 23.5% of farmers insist that delay in planting after cutting causes rotting and therefore poor sprouting, 8.8% say a day's delay in planting

gives better sprouting which is supported by work done by Yoo and Pike (1995) which states that cutting of bulbs before planting promotes sprouting and shoot growth. It is, therefore, important for a detailed study to identify the best method of pre-treatment for farmers' use in the study area.

### Bulb Sizes Used for Planting

Majority (80.6%) of farmers favour medium size (50-69g) bulbs while 16.7% of farmers favour large size (>70g) with only a few (2.8%) favouring the small (30 – 49g) size. None of the farmers preferred very small (<30g) size bulbs.

The reasons they assigned for the choice of bulb sizes are shown below (Table 3).

**Table 3. Responses for the use of different bulb sizes for planting.**

REASON	PERCENT (%) OF FARMERS
1. Large bulbs produce many bulbils	34.3
2. Medium size bulbs producing the right number of bulbils (4 – 6) for good growth	34.3
3. Healthy vigorous bulbils obtained (all sizes)	17.1
4. Large bulbs do not produce many bulbils.	8.6
5. Large bulbs produce weak bulbils	2.9
6. Reasons 1 and 2 combined	2.9

It seems obvious therefore, that although the majority tends to use medium to large size bulbs, about 12% of farmers think that large size bulbs are not the best to use. However a similar study on onion seed size showed that the best size of bulb for seed yield was 4.0 cm diameter (Prat-Perez *et al.* 1996). This problem may need an objective scientific investigation to determine the optimal size of bulb to use as "seed bulb" in

the Bawku East District.

### Plant Spacing

Most farmers (61.1%) use a spacing of about 20cm x 20cm with the rest 38.9% using a spacing of about 15cm x 15cm.

Two main reasons emerged for the use of these spacings. Most farmers (50%) think that the spacing they use results in larger bulbs. This is followed by 32.4% of respondents who used the spacing for easy management. Other reasons assigned by farmers were to produce healthy plants (5.9%), better yield (2.9%) and the rest (7.7%) giving a combination of the above reasons. Contrary to this Norman (1992) indicated 30-40 cm x 7.5 –12.5 cm as the recommended spacing and further stated that wider spacing favours the production of split bulbs.

### Sources of Planting Material

About 75.8% of all farmers used seed from their own farms for next planting. The rest were split between those who bought solely from the market (6.1%) and those who used their own seed supplemented by purchases from the market (18.2%). The large percentage of farmers growing their own seed means that there is the need to teach them about how to produce high quality seeds.

### Quantities of Onion Seed Produced

The quantity produced varies from one to 30 bottles (625 cm<sup>3</sup>) of seed with a mean of 9.74 bottles (This fetches an amount of money which varies from ₵500,000.00 to ₵1,500,000.00 with a mean of about ₵1,000,000). It is important to recognize that most farmers used part of their seed and sold part implying income from sale of seeds could even be higher if all seed was sold. This

supports work by Abukyi (1984) and Nkansah (1989) that onion production has markedly enhanced farmers living conditions in Ghana due to high market value and good yield returns

### Problems of Seed Production

#### Pests and Diseases

The pests mentioned as hampering the production of onion seed were thrips (76%), grasshoppers (3.3%) and bigger animals (3.3%). About 16.7% indicated they had no problem with pests. The only method onion seed producers use to solve their pest and disease problems was to spray with agro-chemicals which is always not affordable due to high cost.

The diseases mentioned as hampering onion seed production is shown below (Table 4).

**Table 4: Major diseases/symptoms of disease reported to hamper onion seed production in study area**

*Disease	Percent (%) of Farmers
Downy Mildew	31.1
Top Leaves Dry	25.0
Bulb Rot	12.5
Dieback	12.5

\*Names of diseases deduced from farmers descriptions.

### Storage and marketing of seeds and bulbs

All farmers indicated they had no problem with bulb storage at least for the short term. Majority (70.6%) of farmers indicated they had no marketing problems of seed and bulbs. The rest (29.4%) indicated there was low price for their produce at the time of harvesting. However they also showed this was not a serious problem since they solved it by storing their produce for a few months before selling it.

### Time of Nursing

Eighty-six (86.1%) percent of all seed producers nurse bulbs meant for seed production in October, 8.3% in early November and the rest 5.6% in late November. This might be due to the favourable weather conditions in the study area between October to December, which favours flowering and seed production of most vegetable crops.

### Storage of Onion Seeds

A vast majority (86.1%) of respondents store onion seeds in bottles. Other methods of storage are in calabash (2.8%), in fertilizer bags (5.6%) and in polythene bags (5.6%).

Seeds stored by these methods maintain their viability for up to two years (11.1%). About forty seven percent (47.2%) of farmers indicated that viability last for one year, while 38.9% said viability lasted for six months and finally 2.8% indicated that seed viability lasts for eight months.

Storage of onion seed therefore seems to be a problem since only 39% of farmers can maintain the viability of their seeds for just six months.

### Preferred Varieties

Almost all farmers (98.0%) preferred Bawku red variety with the remaining 2% preferring Latteh. No other variety was mentioned apart from these two.

Again almost all farmers (93.8%) assigned the reason of high market demand for their preference. Other reasons assigned were high price (2.1%), easy to cultivate (2.1%) and long shelf life (2.1%). Surprisingly, no farmer gave problems with pests and diseases or low yield as the reasons for not growing a particular variety although the

former has already been mentioned as problem of onion seed production in the study area.

### Watering Regime

Most farmers (62.2%) water their onions twice a day and all of them do this morning and evening. This is mainly due to the high soil temperature in the afternoon and its resultant high evaporation rate, which rapidly dry up onion fields in the late evenings. However 37.8% water once a day, of these, 29.7% water in the morning while 8.1% water in the evening.

### CONCLUSION

The following conclusions could be drawn from the evidence obtained from the data:

- Majority (63.3%) of farmers produce onion seeds in addition to bulb production.
- Bawku Red is more popular among (97.2 %) seed producers.
- Some (11.8%) claimed cutting bulbs give good germination while some 8.8% claim one day after cutting gives better germination.
- Farmers are uncertain about the bulb size to be used. Some (34.3%) claimed large bulbs produce many bulbils, 34.3% favoured medium size while 8.6% think big size does not necessarily produce many bulbils but rather produce weak plants.
- Twenty-four percent (24.3%) either produce their own seed supplemented by purchases from the market or bought wholly from the market implying many seed producers cannot even meet their seed requirement. Hence, the annual onion seed shortage is understood.
- Onion seeds are stored in bottles (86.1%), calabash (2.8%), polythene bags (5.6%), fertilizer bags (5.6%) and with viability ranging from 6 months to

two years. This needs to be investigated.

- Onion seed production has the potential of reducing poverty in the area since farmers obtain about one million cedis from sale of 10 bottles (625cm<sup>3</sup>) of seeds

## REFERENCES

- Abukyi, E.A(1984). The impact of existing agricultural credit system on cash crop production in the Bawku District. BSc. Dissertation, Faculty of Agriculture, University of Science and Technology, Kumasi.
- Ikram, S., Anwar, M.Z. and Kollar K.M. (2001). Contribution of onion seed production to poverty reduction: a case study of Malakand Division, Pakistan, 17<sup>th</sup> Annual General Meetins, Paskistan Development Review, 40: 787-810.
- Mousah, S., Alber, R., Herve, N. and Blaidy C. (1998). Socio economic importance of onion production in West Africa: Constraints and prospect. Cahiers Secheresse 9(3): 233-238.
- Nkansa, A. (1989). Review of Research on Onion and shallot conducted in the University of Ghana. BSc. Dissertation, Crop Science Department, University of Ghana, Legon.
- Norman J.C. (1992). *Tropical Vegetable Crops*. Arthur stockwell Ltd. Devon
- Prat-Perez, A., Munoz-de-con L, Findora, M.Z. (1996). Influence of onion bulb size and its locality of origin on seed yield. Onion Wesh. For the Tropics. 2: 25-32.
- Sinnadurai, S. and Abu J.F. (1977). Onion farming in Ghana. Economic Botany 31: 312-314.
- Vibeke, L. (1995). Pest and Diseases in organically grown vegetables in Beenmark .A survey of problems and use of control methods. Biological Agriculture and Horticulture. 12(2): 151-171.
- Yoo K.S., P, Ke L.M. (1995). The effect of grass cutting and temperature on shoot and root growth of onion bulbs. Horticulture Science Vol. 30. 1-44.