(Stapf) (Fonio) in Riyom, Plateau State, Nigeria.

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INTRODUCTION

1. Fonio or Acha (*Digitaria exilis and Digitaria iburua*) originated in West Africa[1,12]
2. Grows fast and thrives in marginal sandy, rocky soils of the Sahel both in drought and flood[8]
3. It grows in some center and northern Nigerian states as such Bauch Kaduna, Kebbi, Nassarawa, Niger, Plateau and F.C.T[2]
4. The grain contains 7% crude protein, 9.8% leucine, 5.6% methionine and5.8% valine compared to other cereals (sorghum, rice, wheat or barley)[9,15,16]
5. Almost 450 000 ha of Fonio are grown annually in West Africa with production of about 360 000 t and average yield of 800 kg/ha.
6. The world three largest producers are Guinea, Nigeria and Mali with production of 222 000, 80 000 and 26 000 t from 200 000, 162 000 and 45 000 Ha respectively [5]
7. Production of Fonio is hampered by the inherent low yielding potentials of existing unimproved landraces and lack of tolerance to available herbicides [3]
8. Fonio is consumed as stiff or thin porridge, couscous, or mixed with other flours to make breads.
9. Fonio is a useful diet for diabetic people and in delivering women [1,8]
10. The fungi *Phyllachora sphearosperma, Puccinia cahuensis* and *Helminthosporium spp.* have been reported on the crop [11,16,7]
11. The study was carried out to determine the incidence and severity of leaf spot and identify its causal agent on *D.iburua*.

MATERIALS AND METHODS:

1. A field trial was established in 2011 and 2012 copping season at National Cereals Research Institute, Riyom, Nigeria.
2. Sixteen accessions of D.iburuawere sown using the broadcast method on a plot size 3 x 4 m^2 each and laid out in (RCBD) with three replicates at a seed rate of 15 kg/ha.
3. Hand pulling of weeds was done at 4, 8 and 12 WAS.
4. At 10 WAS a 30 x 30 cm quadrant was thrown five times diagonally as sample plots.
5. Disease incidence was determined by counting diseased plants and expressing it as a percentage of total plants in each sample plot.
6. Disease severity index was assessed by scoring individual plants in sample plots using a 1-5 scale where: 1= no symptoms on leaves; 2= 1-25 % leaves infected; 3 = 26-50 % leaves infected; 4=51-75 % leaves infected and 5= 76 % or more leaves infected.
7. Grain yields of each accession from each plot was weighed.
8. Data was analysed using and means compared using the Student Newman Keuls test at 5% level of significance[13]
9. Diseased samples were taken to the laboratory grown on PDAs for isolation and identification.
10. At 14 days Mycelia growth was observed under an electric microscope and pathogen identified with the help of a manual [4]

MAJOR FINDINGS:

- The fungus isolated from diseased leaves was Curvularia sp. Leaves showed symptoms of Brown irregular spot (Plates 1 a and b).
- In 2011, there were no significant (P=0.05) differences in disease incidence and severity. Guzuk 3 had the highest disease incidence followed by Munsung, with Dinat and Gwabi record the least. However, Munsung and shalak recorded the highest disease severity while Gwabi and Napiya had least.
- There were significant differences (P=0.05) in yield with highest grain yield obtained from shalak while Napiya and Dinat gave the least (Table 1).
- In 2012, there were significant differences(P=0.05) in disease incidence Gwabi gave highest incidence but not statistically different to others
- Munsung, Dinat, Ja'alak and Guzuk which recorded low incidence and were at par with each other.
- All the accessions did not differ significantly from each other in respect to disease severity with Gwabi having the highest.
- There were significant differences in the yield with Nashleng having the highest yield followed by Gotip and Gwabi having the least (Table 2).
- Gwabi having the highest disease severity could have led to the low yield

CONCLUSION:

1. The present result confirm reports by other authors', that Fonio is infected by pathogens which include *Curvularia* sp. it also shows that the disease can be contributes to low yield. Further research on the control measures for this disease is in envisaged.

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Table 1: Disease incidence and severity on *D.iburua* in 2011

Accession Names	Disease incidence (%)	Disease severity index (%)	Grain yield Kg/Ha
Jakah	24.8	3.5	305.4
Gwabi	20.4	3.0	532.4^{ab}
Napiya	21.2	3.0	265.2^{b}
Jipel	23.5	3.2	331.7^{ab}
Abutt	27.9	2.9	452.8^{ab}
Nashleng	23.7	3.9	463.9^{ab}
Guzuk 3	30.7	3.6	383.9^{ab}
Ma'an	26.1	3.4	282.2^{b}
Dampep	25.1	3.5	318.5^{ab}
Gotip	21.2	3.4	440.2^{ab}
Sha'alak	24.2	4.0	666.7^{a}
Suhn	22.5	3.8	414.5^{ab}
Munsung	29.6	4.0	447.3^{ab}
Gopantor	22.4	3.4	429.3^{ab}
Ja'alak	26.2	3.5	463.2^{ab}
Dinat	20.4	3.5	617.6^{ab}
SNK	Ns	Ns	*
SE	3.12	0.31	91.4
CV%	22.0	15.4	36.0

Table 2: Disease Incidence and severity on *D. iburua* in 2012

Accession Names	Disease incidence (%)	Disease severity index (%)	Grain yield Kg/Ha
Jakah	25.76^{ab}	2.20	318.5^{ab}
Gwabi	27.13^{a}	2.8	91.4^{c}
Napiya	25.5^{ab}	2.43	429.3^{ab}
Jipel	26.86^{ab}	2.43	440.2^{ab}
Abutt	24.96^{ab}	2.7	532.4^{ab}
Nashleng	26.03^{ab}	2.33	671.6^{a}
Guzuk 3	24.93^{b}	2.43	282.2^{b}
Ma'an	25.75^{ab}	2.57	447.3^{ab}
Dampep	25.90^{ab}	2.46	412.6^{ab}
Gotip	25.26^{ab}	2.33	601.7^{a}
Sha'alak	25.70^{ab}	2.43	383.9^{ab}
Suhn	24.43^{b}	2.43	305.4^{ab}
Munsung	24.00^{b}	2.33	452.8^{ab}
Gopantor	25.76^{ab}	2.23	331.7^{ab}
Ja'alak	24.86^{b}	2.56	463.9^{ab}
Dinat	24.60^{b}	2.33	483.2^{ab}
SNK	*	ns	*
SE	3.15	0.28	81.4
CV %	20.6	17.5	26.4

Values in each column with same superscript(s) are statistically the same using students-Newmans Keuls (SNK) test at 5% level of significance

a. Plate 1: (a) Brown spots on leaves **(b) at vegetative and reproductive stage**

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Fully exerted Acha Panicle