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Abstract

Pearl millet seeds samples collected from Kordofan, Gezira ,Gedarif and Damazin States were investigated for seed-borne fungi. The methods used were: the dry inspection method, the Blotter method, the Agar Plate Method and the washing test method. The dry inspection method revealed an average of 6.10 % discolored seeds,% 6.25 malformed seeds and 3.8% damaged seeds for all samples. The samples were tested as normal and discolored seeds. Sixteen fungal species were isolated from pearl millet i.e. four *Drechslera* species: *Drechslera* sp; *D. halodes*; *D. rostarata* and *D. holmii*. Three *Aspergillus* species: *A. flavus*; *A. nidulans* and *A. niger*. Two *Fusarium* species: *F. oxysporum* and *F. moniliforme*. In addition to *Alternaria alternata*, *Auerobasidium pullular*, *Rhizopus* sp, *Curvularia lunata*, *Penicillium* sp, *Phoma* sp , *Cladosporium oxysporum* and *Macrophomina* sp.

This is the first report of the following fungi to be isolated from millet *D. halodes*, *D. holmii*, *Fusarium oxysporum*, *Aureobasidium pullulans* and *Cladosporium oxysporum*. The most important pathogens of millet were also not reported in this study *Cercospora fusimaculans*, *Pyricularia grisea*, *Tolyposporium penicillariae* *Sclerospora graminicola*, *Puccinia penneiseti*, *Tolyposporium ehrenbergii* and *Gleocercospora sorghi*.

All the sixteen fungi were reported using the Blotter method, while only nine were reported using the agar plate method. The blotter method proved better than the agar plate method for testing for seed-borne fungi in pearl millet. The incidence of pathogenic fungi increased over saprophytic fungi when chlorine was used to surface disinfect the seeds.

A pest Risk Analysis was carried out for the fungal pathogens not known to be reported in the Sudan to evaluate the risk of their introduction with seeds of pearl millet. The pathogens are *Gloeocercospora sorghi*, *Pyricularia grisea*, *Myrothecium roridum*, *Phyllachora penniseti*, *Plasmopara penniseti*, *Dactuliophora elongate* and *Sphacelia sorghi*. All of them are not known to be seed transmitted expect *Sphacelia sorghi*. There is a very low risk to be introduced with imported seeds for planting. *Sphacelia sorghi* has a medium risk to be introduced with seeds. The risk can be mitigated by importing from disease free areas or by chemical treatment.

ملخص الأطروحة

تم جمع عينات من بذور الدخن من ولايات كردفان، الجزيرة، والقضارف والدمازين لاختبار صحة البذور للتعرف على الأمراض المحمولة عليها أو داخلها.

الطرق التي استخدمت في هذا البحث هي اختبار الفحص الجاف، اختبار ورق الترشيح المبلل (طريقة بلوتر)، طريقة الأجار وطريقة غسيل البذور.

الفحص الجاف أظهر الآتي: 6.1% متوسط البذور الملونة، 6.25% البذور المكرمية و 3.8% البذور المكسورة.

العينات التي تم اختبارها كانت من البذور العادية والملونة.

تم عزل ستة عشر نوع من الفطريات وهي:

Drechslera rostrata, Drechslera holmii, D. halodes, Asperigillus niger, A. flavus, A. nidulans, Fusarium moniliforme, F: oxysporum Alteraria alternate, Aureobasidium pullulans, Rhizopus sp., Curvularia lunata, Penicillium sp, Phoma sp, Cladosporium oxysporum. and Macrophomina

كل هذه الفطريات (ستة عشر فطرا) تم عزلها بطريقة ورق الترشيح المبلل اما طريقة طبق الاجار فكانت الفطريات التي عزلت منها اقل عددا (تسع فطريات). طريقة ورق البرشيح هي الطريقة الأفضل لعزل هذه الفطريات من بذور الدخن. وقد وجد أن الفطريات الممرضة تكشفت بنسبة أكبر من الفطريات المترسبة عند استخدام الكلور لتعقيم سطح البذور المصابة.

الفطريات التي عزلت لأول مرة من بذور الدخن من السودان هي:

D. halodes, D. holmii, Fusarium oxysporum, Aureobasidium pullulans and Cladosporium oxysporum.

معظم مسببات أمراض الدخن المذكورة في المراجع لم ترصد في هذه الدراسة وهي:

Cercospora fusimaculans, Pyricularia grisea, Tolyposporium penicillariae Sclerospora graminicola, Puccinia penneiseti, Tolyposporium ehrenbergii and Gleocercospora sorghi.

اجري تحليل لمخاطر الآفات المسببة للأمراض الدخن والغير موجودة في السودان و حتى يتثنى لنا رصدها في حالة استيراد بذور الدخن الي السودان.

اجري تحليل لمخاطر الآفات للممرضات الآتية:

Gloeocercospora sorghi, pyricularia grisea, Myrothecium roridum, Phyllachora pennisete, Datuliphora elongate and, Sphacelia sorghi.

و قد وجدت كلها غير محمولة على البذور ماعدا *Sphacelia sorghi* وهو ذو خطورة قليلة في دخوله مع البذور المستوردة للزراعة والفطر أيضاً له خطر متوسط عند دخوله بالإستيراد والخطر يمكن تجنبه بإدخال حبوب من مناطق خالية من المرض أو المعاملة بالمواد الكيميائية.