A NEW SPECIES OF THE GENUS *CRAMBUS* F.(LEPIDOPTER PYRALIDAE) FROM PAKISTAN WITH ITS RELATIONSHIP.

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خلاصہ

پاکستان سے جنس کریمبنس ایف کی ایک نئی نوع بحوالہ اسکے راسی جوار حوں، دونوں پروں کی اِگیت اور نر اور مادہ تناسلوں کے حوالے میں بیان کی گئی ہے اور سی پرلیلا (اسکوپولائی) کے تعلقات پر بحث بھی کی گئی ہے۔

Abstract

A new species of the genus *Crambus* F. is described with reference to its Components of head, venations of both elytron and male and female genitalia from Pakistan and also discussed its relationships with *C. Parlella* (Scopoli).

Introduction

Hampson (1896) described the genus *Crambus* Fabricius with twenty three species from India, Ceylon, Burma and Australia, in fauna of British India with their head components colour patterns of elytron and body and also venations of both elytron. Mc Daniel *et al* (1984) studied sod webworm moths from south Dakota. Goater (1986) in his British pyralid moths , a guide to their identification briefly described and illustrated nine species of the genus *Crambus.* Hashmi and Tashfeen (1992) listed nine species including one unidentified in their "Lepidoptera of Pakistan". Kamaluddin *et al*. (2007) gave a check list of moth of Pakistan but unfortunately they did not mention any species of the genus *Crambus (F.)* Sterling and Parson (2012) illustrated eight species of the genus *Crambus* with little description and distributional range in their field guide to the micro moths of great Britain and Irela

They formulated a key of south Dakota crambine moths including 9-species of the genus *Crambus* with reference to their flight period and remarks on distribution ranges.

Materials and Methods

The specimens were collected from Thatta and Sujawal of Sindh province with the help of light trap and identified by literature at hand and internet source. For the study of morphological characters specially wing venations the slides were prepared. For the study of male and female genital complex the abdomen were detached at base and boiled in 5% KOH solution for few minutes , then inflate in saline water . After study the diagrams were made under binocular using graticule. For finalizing the routine procedure adopted using by Kamaluddin and Ahmad (1980, 1995 , Kamaluddin *et al* (2017)

Genus: *Crambus* Fabricius

Crambus, Fabricius, 1798, *Ent. Syst. Suppl*: 464; Hampson, 1896, *Faun. Brit. Ind . 4*: 12.
Palparia, Haworth, 1811, *Lepid. Britannica* (3): 481.
Chilus, Billberg, 1820, *Enum. Ins. Mus. Billo.*: 93.
Tetrachila, Hubner, 1822, *Syst. alph. Verz.*: 52.
Argyroteuchia, Hubner, 1825, *Verz. Bek. Schmett.* (23-27): 363.
Arequipa, Walker, 1863, *List. Spec. Lepid. Insects Colln. Br. Mus. 27*: 195; Hampson, 1896, *Proc. Zool .Soc. Lond.*: 926.
Calamotropha, Zell., 1863, *Mon. Chil. & Cramb.*:8
Myeza, Walker, 1863, *Cat. 27*: 190
Epichilo, Rag., 1888, *Ann. Soc. Ent. fr.*: 278.

Diagnostic characters: Body generally brown with longitudinal dark streaks on elytron, frons sub-rounded not produced maxillary palpi porrect, very large, thickly clothed with scales, about 3X the length of head, proboscis short, mesonotal elytron long and narrow with apices produced, Radius Three and Radius four veins arise from

Proximal Angle of cell, metanotal elylron triangular shaped with median two and mediam Three veins arise from lower Potion of cell, tibiae with moderate spurs.

Genital components: In male tegumen moderate with thickly scaled at apex, uncus large, simple, gnathos reduced, herpagon moderate, theca stout, thick, membranous conjunctiva large with cornuti. In female papillae anales semi-lunar shaped, both apophysesses large with pointed apices, ductus bursae large, corpus bursae balloon-shaped.

Comments: This genus have very near is most closely resemble with the genus *Pediasia* Hubner, in nearly palpi usually porrect, maxillary palpi well developed and dilated, but it idtnlified quickhy isolated from the same in nearly palpi obliquely turned, second segment of maxillary palpi more than 3X the length of third segment and by the other characterers as listed in the main explanation.

Type species: *Phalaena pascuella* Linnaeus.
Distribution: World wide

***Crambus pakistanica* (Sp.n.)**
(Figs. 1-8)

Colour pattern: Body brown except three dark longitudinal streaks on mesonotal elytron and two longitudinal streaks on metanotal elytron.

Head (Fig. 2): Frons broadly rounded, slightly produced, palpi well developed thickly scaled, obliquely porrected, 2nd segment of maxillary palpi very large less than 4X the length of 3rd segment, proboscis moderate.

Mesonotal elytron (Fig. 3): Mesonotal elytron with frontal margin wavey, caudal margin convex, apical margin wevay, apical angle subacute, veins subcostal vein and R1 alonge with side by side to each other, Radius two and Radius three largely stemed and unite with R4 and arise from upper angle of cell, R5 stalked with medianone and arise from lower angle of cell, two anal veins are found.

Metanotal elytron (Fig. 4): Metanotal elytron with frostal and caudal margins wavey, apical margin wevy, veins Sc+R1 largely stalked with Rs and unite with M1 and arise from upper angle of cell , M2 and M3 unite and arise from lower angle of cell, three anal veins (1A, 2A and 3A) are found.

Elytron expansion: Size of body-25mm. with elytron expansion.

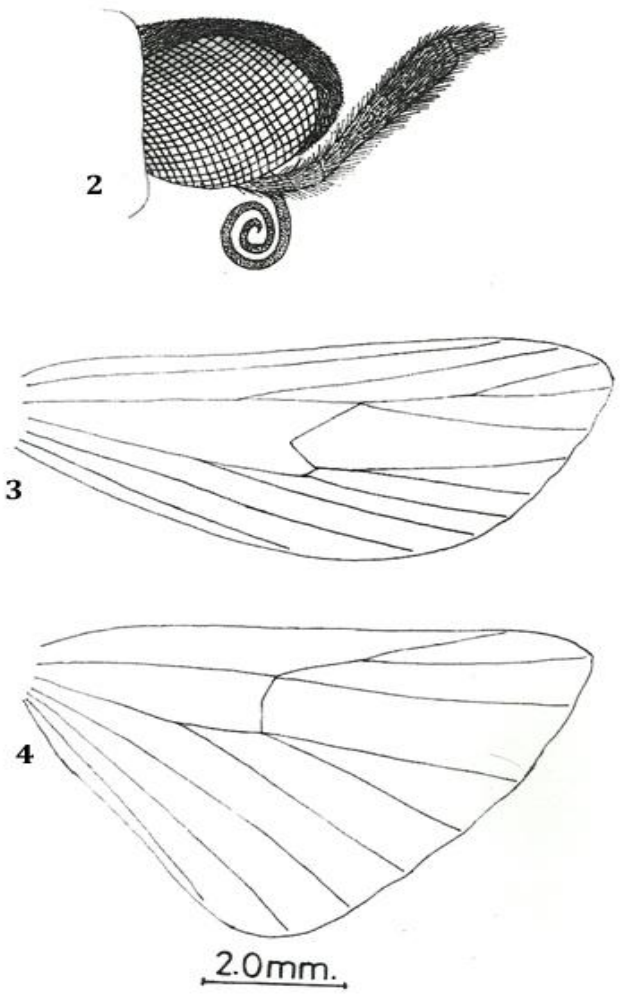
Male genital components (Figs. 5-7): Tegumen (Figs. 5-7) broad, rectangular-shaped, saccusV-shaped, uncus large, sickle-shaped, gnathos reduced, herpagon broad, a truncated-shape, tubercle found below apex, apex of herpagon beset with a bunch of thick scales, aedeagus (Fig. 7) tubular, stout, membranous conjunctiva very large, a series of small spine-like cornuti present at middle.

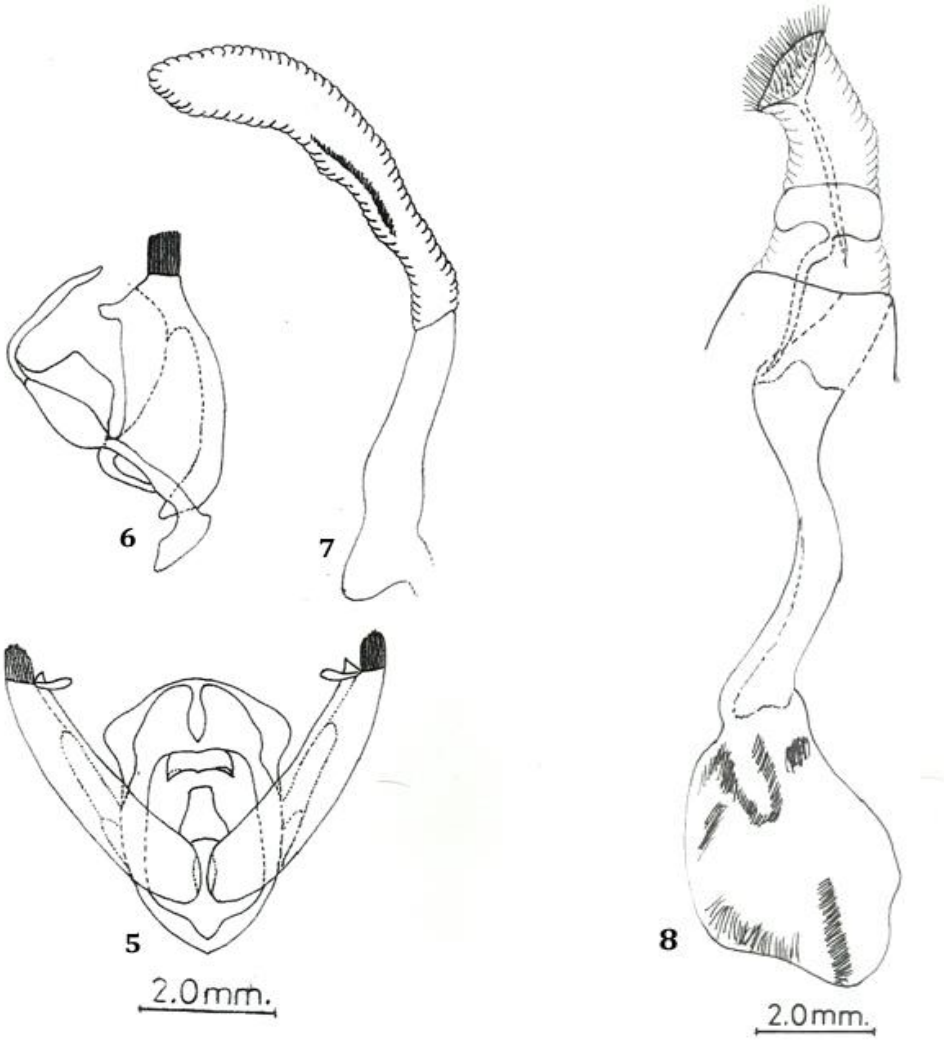
Female genital components (Fig. 8): Papillae anales lunar-shaped beset with large scales, apophyses posterior straight longer than apophyses anterior, later comma-shaped, ductus bursae broad, tubular and long, corpus bursae, bag-like with six irregular comb-like cornuti.

Material studied: Holotype, male, Pakistan, Sujawal, Thatta, on light, 25.7.2009, leg. Zubair Ahmad, lodged at Supervisor record.
Paratypes, two males, four females, same data as Holotype, lodged at supervisor record.

Comments: This species is most closely resemble with *Crambus parlella* (Scopoli) in nearly general characters of colour pattern, palpi obliquely upturned but it quickly be identfied from the same in nearly mesonotal elytron with veins radius Two and Radius three largely stemed, metanotal elytron with veins Sc+R1 stalked with Rs, membranous conjunctiva with a series of minute cornuti and by the other features.as listed in the main explanation explanation.

Fig. 1. *Crambus pakistanica* (Sp.n.)





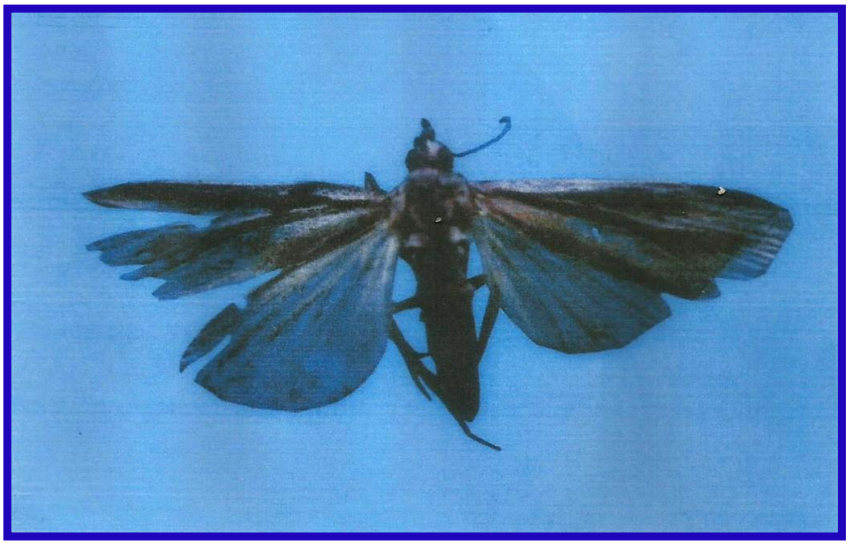


Fig. 9. ***Crambus perlella*** **(Scopoli)**

***Crambus perlella* (Scopoli)**

(Figs. 9-16)

Crambus perlellus, Scopoli, 1763, *Ent. Cram*: 243; Hampson, 1896, *Fun. Brit. Ind. 4*: 16.
Crambus warringtonellus, Stainton, 1849, *Man. 2*: 184.
Crambus perlella, Goater, 1985, *Brit. Pyralid Moths*: 29.

Colour pattern: Body brown except dark brown longitudinal stripes at costal, median and anal margin of mesonotal elytron, dusky white metanotal elytron.

Head (Fig. 10): Frons sub-rounded, slightly produced, palpi well developed, thickly scaled, obliquely porrectd, 2nd segment of maxillary palpi very large, more than 4X the length of 3rd segment, proboscis moderate.

Mesonotal elytron (Fig. 11): Mesonotal elytron with fronal and caudal side and posterior margin convex apical margin wevy, apical angle sub-rouded, sub costal vein and Radius one each other, Radius three and Radius four unite and arise from Lower upper angle of cell, Radius fine arises from upper angle of cell, M2 from lower angle of cell, only one anal vein (1A) is found.

Metanotal Elytron (Fig. 12): Metanotal elytron with front aland caudal margins some what straight, apical margin distinctly weavy, subcoastal and Radius one veins areporallel o Radio-Buetorial parallel to Rs, Rs and M1 stalked and arise from upper angle of cell, M2 arise from lower angle of cellThree anal veins are found.

Elytron enlargement: Size of body 25-30 mm. with elytron Cnlargement.

Male genital components (Figs. 13-15): Tegumen (Figs. 13 and 14) long, some what oblongate saccus U-shaped, uncus narrowed, hook-shaped, gnathos reduced, herpagon large narrow, a sharply pointed tubercle found below apex, apex of herpagon beset with thickly scales, aedeagus (Fig. 15) tubular, stout, membranous conjunctiva large, a plate of small spinules like cornuti at base and two thorn-like process found at middle and at apex.

Female genital components (Fig. 16): Papillae anales lunar-shaped beset with large scales, apophyses posterior straight slightly longer than apophyses anterior, later comma-shaped, lobus vaginalis broad, rectangular-shaped, ductus bursae balloon-shaped with four comb-like cornuti.

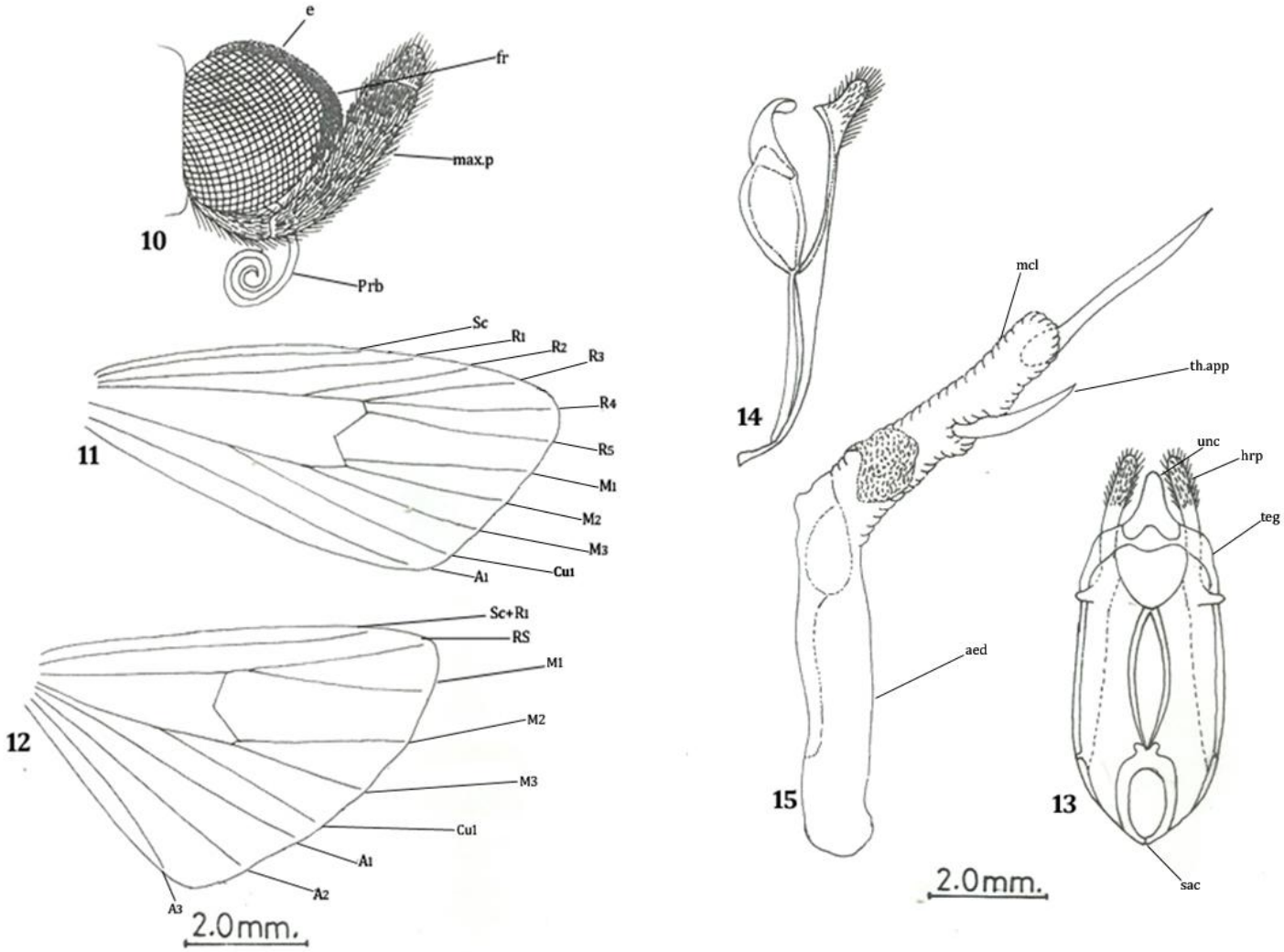
Material studied: Two males, five females, Pakistan, Thatta, Sujawal, on light 20.6.2010, leg. Zubair Ahmad, lodged at supervisor record.

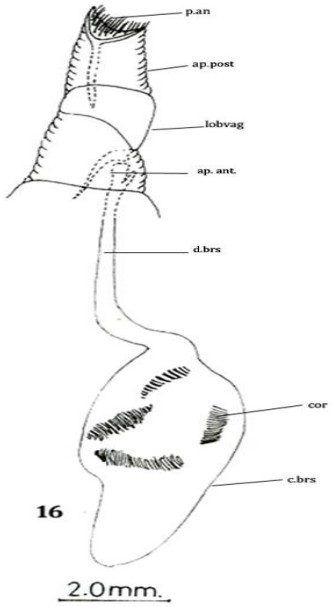
Comments: This species is most closely resemble with new species *C. pakistanica* in nearly general characters, metanotal elytron triangular shaped, and in female corpus brusae with comb-like cornuti but it identified quickly from the same in nearly mesonotal elytron Radius three and Radius four. unite and arise from just below upper angle of cell, metanotal elytron with veins Rs and M1 stalked, herpagon narrowed and by the other characters as listed in the key and explanation.

Discussion

The representatives of the genes Crambus F. is widely distributed throughout the world especially in tropical areas. This genus play Sister group relationship with *Psdiasia* Hubner by its syntapomorphis like both palpi remakably porrect and the maxillory palpi well developed and dilated (Kamaluddin *et al*., 2017).

Presently the new species is described in detail and also related and compound with closest alies C. *Perlefa* by its scopoli synapomorphic characters like papli obliquely formed and second segment of maxillary palpi more than three times the length of third segment and by its autapomorphies like metanotal elytron with veins SC+R stalked with Rs unite with M and arise from upper angle of cell, paramere broad and apex narrowed with tubereles at inner margin and membranous conjunctiva with a series of minute corawti.





1. Illustration of Figures

Figs. 1-8; Crambus pakistanica (sp.n):
1. Entire, dorsal side, 2. head, lateral side, 3. mesonotal elytron, dorsal side,
4. meteanotal elytron dorsal side, 5. tegumenl, ventral side, 6. Same, lateral side, 7. aedeagus, lateral side, 8. Female genital components, lateral side

Figs. 9-16; C. perllela (Scopli): 9. Entire, dorsal side, 10. head, lateral side, 11. mesonotal wing, dorsal side, 12. metanotal wing, dorsal side, 13. tegumenl, ventral side, 14. same lateral side, 15. aedeagus, lateral side, 16. Female genital, components, lateral side

2. Key to the laterling

aed. (aedeagus), ap.ant. (apophyses anteriors), ap.post. (apophyses posteriors), c.brs. (corpus bursae), cor. (cornuti), d.brs. (ductus busae), fr. (frons), lob.vag. (lobus veginalis), max.p. (maxillary palpi), mcl. (membranous conjuctival lobe), p.an. (papillae anales), prb. (proboseis), hrp. (herpagon), teg. (tegument), unc. (uncus), A1-A3. (anal veins 1 to 3), Cu1-Cu3. (cutibus veins 1 to 3), M1-M3. (median veins 1 to 3), R1-R5. (radius veins 1 to 5), Rs-(radio suctorial vein), Sc.(subcostal vein), Sc+R1. (subcostal and radius veins)

References

Goater , B. (1986) . British Pyralid moths . A guide their indentification : 1-175 .

Hampon, G.F. (1896) . The fauna of British India including Ceylon and Burma . *Faun . Brit . Ind . 4* : 12-17

Hashmi , A. A., and Tashfeen , A. (1992) . Lepidoptera of Pakistan . *Proc . Pakistan Congr . Zool . 12 :* 171-206.

Kamaluddin , S. and Ahmad , I . (1980). Redescription of small white stemborer *Patissa erythrozonalis* (Hampson) (Pyralidae : Schoenobinae) with special reference to its genitalia and their bearing on classification . *Proc . Ent .Soc . Kar* . 9-10:59-66.

Kamaluddin , S. and Ahmad , I .(1995) . Redescription of pulchella Hubner (Lepidoptera; Arctidae) from Pakistan with a note on its systematic postion , distribution range and life history . *Proc. Pakistan Congr . Zool . 15* : 35-39

Kamaluddin , S., Yasir, I, Shakira and Baig, N. (2017). A cladistic analysis of pyralid species (Lapidorptera: Pyralidae) from Pakistan. FUUAST J. Biol 7 (1): 61-73.

Kamaluddin , S., Viqar , S . N., Saeed, K.A.B.S. and Ali , A. (2007) Check list of moths (Lepidoptera : Heterocera) of Pakistan *Int . J . Biol . Biotech. 4* (2-3) : 113-119 .

Mc Daniel , B., Fauske , G . and Gustin , D . (1984). Sod webworm moths (Pyralidae : Crambinae) in South Dakota . *Journal of the Lepidopterus Society 38* (3) : 149-164.

Starling , P. and Parsons , M . (2012). Field guide to the Micro-moths of great Britain and Ireland. *British wildlife publishing* : 1-416.