بسم الله الرحمن الرحيم

Sudan University of Science and Technology

College of Agricultural Studies

Department on Plant Protection

Host plants of Dodder (*Cuscuta* spp)in Western Darfour State (Elginana)

النباتات العائلة للحامول(*Cuscuta* spp) في ولاية غرب دارفور (الجنينة)

A Thesis submitted in partial fulfillment of the requirement for B.Sc.(Honors) in plant protection

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الآية

بسم الله الرحمن الرحيم

قال تعالي :

(هُوَ الَّذِي أَرْسَلَ رَسُولَهُ بِالْهُدَىٰ وَدِينِ الْحَقِّ لِيُظْهِرَهُ عَلَى الدِّينِ كُلِّهِ ۚ وَكَفَىٰ بِاللَّهِ شَهِيدًا)

سورة الفتح الآية 28

DEDICATION

TO My

Mather

TO My Family and Friend

TO My

Brother who I consider my Second Father Abobakar Mohammed Ebrhim

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Thanks and gratitude to Almighty Alla. I offer the highest the verses of gratitude, gratitude and love to those who carried the most sacred message in life to those who paved the way for knowledge and knowledge to our entire distinguished professor.

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Abstract

The study was carried out the field dodder *Cuscuta spp* during autumn Season (2019) in Western Darfour State (Elginana) to determine its all host distributed in State using Global positioning System (GPS) in the survey. The survey covered several areas in State. The result revealed that dodder founded parasitizing 5plants species belonging to 5 families such as (*Corchorus olitoirus, Eruca sativa, Xanthium baralcim, and Citrus arntiifolia and Amaranthus viridis*). The high percentage incidence (100%) were recorded in Rmatook (*Xanthium barasicum*).Low percentage incidence (10%) was recorded in lime(*Citrus rantiifolia)* and in *(Eruca sativa*). Results of survey in Western Darfour State (Elginana) indicated that the dodder was found on North, East, West of the State.

الخلاصة

أجريت هذه الدراسة في ولاية غرب دارفور الجنينة للتعرف علي المدى العائلي الحامول الحقل (*Cuscuta spp*) المنتشر في الولاية أثناء فصل الخريف 2019باستخدام جهاز تحديد المواقع العالمي(GPS). المسح غطي مناطق متعددة من الولاية .أظهرت النتائج أن الحامول وجد متطفلا علي خمسة نباتات تنتمي إلي خمسة عوائل نباتية من الخضر والحشاش وأشجار الحمضيات وهذه النباتات مثل الجرجير ولسان الطير والملوخية و الرامتوك و ا لليمون . تم تسجيل أعلي نسبة إصابة في الرامتوك (100%) ،أقل نسبة إصابة في الجرجير والليمون (10%).أشارت نتائج المسح إلى وجود طفيل الحامول في شرق وغرب وشمال الولاية .

CHAPTER ONE

INTRODUCTION

Dodder (*Cuscuta spp*) an annual Holophrastic plant of legume crops ,which belongs to family *Cuscutaceae* .The *Cuscuta* species are widely distributed and Colonized .Diversity of habitats throughout the temperate and tropical zone (Belize,1987).Many species of dodder have been introduced to different part of the world due to similarity of the seed to those of commercial corps ,especially legumes like alfalfa (*Medicago sativa* L.). Dodder species commonly known as dodder and it is one of most invasive weeds (Lowe et *al* .,2001).Dodder can be parasitizing dicotyledonous plant but it I snot able to infect Monocotyledons plant, probable for Anatomical reason such as the arrangement of vascular bundles or incompatibility(Dawson *et al* ,1994).

In moderate climate, filed dodder is maybe the most parasitic weeds of legumes .Genus Cuscuta belongs to family (*Cuscutaceae*) many spp that are hardly recognizable and are able to parasite numerous shrubby and woods species belong to this genus .Dodder are abundant in Europe, Africa but less in Australia it also present in Asia .Commonly in South India to Srilanka and east to China and Indonesia .It may have been introduced and become established occasionally (Holm *et al*.1956).

The distribution in country Sudan reported the occurrence of *C pedicellata* ladeb in Khartoum, Gezira and Bahr Algzal State .*C Pedniflora* in Southern State, Khartoum, Kassala, Northern Kordfan and Eastern Darfour State (Musslaman and Bebawi, 1983). Mahdi *et al.*,(2019) reported that dodder found parasitizing in the north, south and east of Khartoum and Gezira State.

Since Gunter (1950) review on Genus *Cuscuta* it is in considered as the most serious weed in alfalfa clover and other legumes .

The aim of the research is to determine the host range of *Cuscuta* spp distributed in Western Darfour State (Elginana).

CHAPTER TWO

LITERATURE REVIEW

2.1 Field Dodder

Dodder which belong to family *Cuscutaceae,* its species are widely distribution and colonized a diversity of habitats throughout the temperate and tropical zones (Belize,1987). Many species of *Cuscuta* have been introduced to different parts of the world due to similarity of their seed to those of commercial corps, especially legumes like Alfalfa (*Medicago sativa l)* . *Cuscuta* species commonly known as dodder and is one of the most invasive weeds in the world (Lowe *et al*,2001).

Filed dodder have wide spectrum of host, although they favor less monocotyledonous. Species genus *Cuscuta* contains three sub –genus. member of sub-genus destroy fruit trees, while the species in sub-genus *Cuscuta* represents problems for hosts of herbaceous plants ,as well as sub – genus grammica. Infected plants weaken, vegetative luxuriance is reduced as well as their fertility (Koslcela.*et al*, 2001,fathoulla and Duhoky ,2008).

In moderate climate ,filed dodder is maybe the most parasitic weeds of legumes *C campestis* in Alfalfa (*Mediocago sativa)* is special importing .

Alfalfa and filed dodder seed are like by size , and by alfalfa sowing the parasite with the host . many species that are hardly recognizable and are able to parasite numerous shrubby and woods species belong to this genus. Dodder are vein that usually bright colors orange ,yellow ,or red .

2.2 Dodder distribution

Dodder are abundant in Europe, Africa but less in Australia . It also present in Asia, Commonly in India south to Srilanka , china and Indonesia. It may have been introduced and become established occasionally ells where .Holm

et al.(1979) classified *Cuscuta reflexa* as serious weed in Afghanistan ,Nepal ,India and Pakistan .

In the Arab countries ,several species have been recorded in Algazira ,Egypt ,Jordan , Lebanon, Syrian ,United Arab Emirates ,Saudi Arabia and Sudan (Zerman and Saghir,1995).

In Sudan the study from Andrews (1956) recorded that about four species of *Cuscuta* :namely *C planifora* ten's C *hylaina* Roth :*C Kilimanjaro* oliv and *C cordofana*, while *Musslman* (1984),reported seven species and described their geographical distribution in Country. He reported the occurrence of *C pedicellata* ladeb ,in Khartoum ,Gazer ,and Bahr Al Gazal State ,and *C Pedniflora* Ten in South Darfur State and red Sea State He found *C hyalina* in the Northern Kordofan States ,Red Sea .Kassala and Khartoum State .Musslman and Bebawi(1983) Reported .*C Campestris* :Yunker, in Shambat and Toti Island Khartoum State Widly spread through much of Sudan as Aountamin of Lucerne seeds.

2.3 Scientific Classification

C*uscuta* can be considered an obligate holoparasitic (Mabberely 1993)the genus was assigned to the family *Convolvulaceae* , being the only genus in the family exhibiting parasitism ,later ,it was moved to a new family ,*Cuscutaceaea* . Brattling in book "Ordines Naturals Planturm" published in 1830 was the first to suggest the family *Cusctaceaea (*Kuijit 1969), but most of the subsequent workers did not share his idea (Johri and Tiagi ,1952;Govil ,1970 and Johri,1987) found a the number of embryological feature in *Cuscuta* that different from those of the numbers of family *Convolvulaceae* and hence supported the separation of genus *Cuscuta* from *Convolvulaceae* ,And set up of the family *Cuscutaecaae* . Cronquist ,(1988) Classified *Cuscuta as* follows :

Kingdom :*Plantae*

Order :*Splashes*

Family: Convolvulacea

Tribe :Cuscuta

Genus: Cuscuta

SN : Cuscuta americana

SN :Cuscuta aficana

SN :Cuscuta indina

SN: Cuscuta europea

SN: Cuscuta acuta

SN: Cuscuta abyssinica

SN: Cuscuta mexicana

SN: Cuscuta reflexa

SN: Cuscuta campestris

SN: Cuscuta Australia

The species about 170 mainly in North South America in Asia and Europe;11 species in china.

2.4 Host range of *Cuscuta* and its losses

Since (Gaunter,1950) review on the genus *Cuscuta it is* in considered as the most serious weeds in alfalfa, clover and other legumes It also attaches other plant.

Cuscuta spp is a Serious problem in forage legumes .Princially Alfalfa(*Medicago sativa*),clovers (*Trifolum* sp) and Niger (*Guizaotia abyssinia).* Other crops plagued by *Cuscuta* include linseed (*Linum*

ustiatissium) ,Chiekpea (*Cicera rietinum*), Lentil(*Lens culinaris*), pea (*Pisum sativa*),black gram (*Vigna mungo*), greenn gram(*Vagin* radiata), Prgenopea (*Cajanus cajan*), sesame (*Sesamum indicum*), soybean (*Glycine max)*, Tomato(*Lycopersicon esculentum*), Potato(*Solanum tuberosum*),citrus (*Citrus spp*), and numbers ornamental species. *Cuscuta* Also parasitizes numerous species of dicotyledonous, weeds and wild plants. *Cuscuta campestries* is the most widespread species in the world and they only parasitic weed of North America that has spreaed to the old world(Dawson *et al* 1994). However ,field dodder in Gezira ,central Sudan ,parasiting onion , some vegetable crops ,broadleaf weeds and it was found to infect lime trees; a woody species .(Jasasinghe *et al* .,2004) reported that ,field dodder parasitizes 161species of different life-forms belonging to 25 families comprising 27 crops , 22 weeds, and 60 mediciinal plant .Of the recorded hosts,24 were trees ,42 were shrubs,12 were creepers and 83 were herbs .

Cuscuta can parasitize Asparagus (*Asparagus officinalis*)and onion (*Allium capa)*which are Monocotyledons corps, but grass and grains (*poacaea*)are usually at usually not parasitized.

2.5. Host damage.

After seeds germination *Cuscuta* seedling emerged above the ground, the orange or yellow vine strands grow and entwine around the stem and the other ground parts of the host plants ,the growing tips even reach out and attack adjacent plants . After being attached to a suitable host ,*Cuscuta like* other parasitic plants produce special organs known as hasutoria, these are usually developed from protuberance limited to the contact surfaces of the hasutoria coils .They point towards the host and may elongate considerably if host organs recede (Kuijt,1969).Many times it may cause complete failure of the crops. As an absolutely parasite ,when attached to a host. The highly efficient absorption system allows the parasite to divert resources (water, amino acid and assimilates)from the host to itself (Tsivion, 1979 and Dorr ,1987).*Cuscuta*

also transmute the viral diseases in host plant (Zhang,1991 and Marcone ,*et al* .,1999).The intensity of damage caused by *Cuscuta* depends upon it is capacity to rapidly parasitize the host crop. The infestation of dodder results in heavy loss in terms of Quantity and quality of production(Mishra J *Moorthy al* 2006) .

2.6 *Cuscuta* Control

It is extremely difficult to achieve effective control of *Cuscuta* because its seeds a hard seed coat, can remain viable in soil for many years and continue to germinate and emerge throughout the year .In addition, the nature of attachment and association between host and parasite requires a highly selective herbicide to destroy the parasite without the parasite plant.(Mishra and Moorthy, 2006) of *Cuscuta*, NRC for Weed Science, Jabalpur for Weed Science, Jabalpur (M.P.). p – 41)

2.5.1 Prevention

Seed of dodder are transported as contaminant of seed crops such as alfalfa and clover .consequently most dodder problems have originated from human carelessness in transporting and planting contaminated crop seed .*Cuscuta* persisted and spreads with in infested fields through further agricultural activities by periodic onsite seed production, because the seed may remain viable for several years in the soil. As the saying goes**, "Prevention is better than cure"** the best method of controlling *Cuscuta* in corps is to prevent its introduction out to afield (Mishra and Moorthy, 2006)

2.5.2.Cultural and Mechanical methods

Various cultural practices can kill ,suppress or delay *Cuscuta*, such control methods are inexpensive and can be combined with other methods to develop integrated management systems for *Cuscuta* Biology and Management of *Cuscuta* species(Mishra .J.S. 2006).

2.5.3 Seedbed Preparation

Under favorable Conditions, *Cuscuta* seeds germinate without host plant and seedlings die after eight days in absence of host .Shallow tillage or spraying of non– selective herbicides (Glyphosate or Paraquat) after seedling emergence but before sowing of reduces the *Cuscuta* infestation Allowing *Cuscuta* to germinate and then destroying tillage gave some level of controlled when combined with hand plucking (Sheer and Shad, 1989).

2.5.4 Hand pulling

Hand pulling is the simplest and most effective method of controlling *Cuscuta*. In this practice ,it is necessary to pull the infested host plant together with the parasite. If flowering and seed set have already occurred the pulled material must be removed from filed and eventually burnt.(Tojanovic and Mijatovic,1993)

2.5.5 Crop Rotation

Cuscuta does not parasite members of the *poaceae*. Hence, it can be controlled completely by crop rotation without a host plant nearby, *Cuscuta* seedlings emerge and die broadleaf weeds must be controlled in such to crop deprive *Cuscuta* of all host (Tojanovic and Mijatovic,1993).

2.5.6 Irrigation

Time of irrigation can sometimes be manipulated to help control dodder, Because its seed cannot germinate without moisture near the soil surface ,a period of *Cuscuta* control can be extended by delaying irrigation in certain corps such as alfalfa grown for seed production (Dawson *et al* .,1984). Also allows the crop canopy to increase in density ,and thus to be better able to shade *Cuscuta* Seedlings that emerge following irrigation.

2.5.7 Time of planting

Unlike root parasites, *Cuscuta* Seeds do not require a specific stimulant from hosts to induce germination. However seedlings die after 8-10 day in the absence of host(Mishra *et al*., 2003).

2.5.8 Mixed cropping

There is some possibility for control of Cuscutsa by mixed cropping of host crop with non-host corp.(Mishra *et al*., 2003)

2.5.9 Mechanical methods

In any crop grown in rows, such as alfalfa grown for seed production sugar beets ,carrots or onion ,timely cultivation can kill *Cuscuta* seedlings and their potential weed hosts. Once *Cuscuta* Is attached to host plant, only mechanical removal of the part .the host bearing the *Cuscuta* will control the parasite .*Cuscuta* seed not germinate if placed deeply (Mishra *et al* .,2003).*Cuscuta* infested land should greatly reduce the chances and establishing form the most recently shed seed but older seed in the soil maybe brought to surface by this practice Rotation in tillage I.E deep ploughing of *Cuscuta*.

2.5.10 Chemical control.

2.5.10.1 Foliage– applied herbicides

When a *Cuscuta* infestation has not been prevented, and infestation is too general for mechanical removal of individual plants**,** herbicides can be used to control the pest however ,the nature of attachment and association between host and parasite requires a highly selective herbicide to control the parasite without corp. damage. Hasser and Rubin (2003) reported that herbicide such as photosynthesis inhibitors have effect on *C. campestris* and acetolactate synthase inhibitors affect the growth of *C. campesris* .where applied on the host these phlom-mobile herbicides Accumulate selectively in the strong *C.*

campestris sink and inhibit parasite growth (Fer,) 984, Lui and fer,1990; Bewick *et al*.,1991; Nir *et al*.,(1996)- Some *Cuscuta* spp. reported to show resistance to Glyphosate (Hassar and Rubin,2003).

2.5.10.2. Selective soil-applied herbicides

Several soil –applied herbicides were found to kill *Cuscuta* seedlings before or soon after they emerge from soil, such treatments keep the *Cuscuta* from becoming attached to the host plant. Various crops plant to leate these herbicides consequently *Cuscuta* can be controlled selectively when these herbicides are applied appropriately. Tnflnalin controlled but only at rates several times higher than thus used controlled other weeds(Pawson,1967).(Mishra *et al*., 2004)

2.5.11 Biological Control

Insects and disease organisms may damage *Cuscuta.* Although damage may be severe, it is often incomplete and may develop two slowly to protect the host plant .In China, the fungus, Colletotrichum Gloeos porioides attacks *Cuscuta* (Zhang,1985) and has been used to control *Cuscuta* selectively in soybean (Li,1987). The fungus can be cultured. The spores are collected and applied uniformly to the *Cuscuta*-infested corp., where they germinate, grow and cause a disease. (Tojanovic, D. and Mijatovic, K. 1993. Distribution, biology and control of *Cuscuta* species in Yugoslavia. Proc. Its Symp. Parasitic Weeds, European Weed Res. Council, Malta. Thoday (Sykes), M.G. 1911. On the histological relations between *Cuscuta* and its host. *Annals of Botany* 25: 655-682.)

CHAPTER THREE

MATERIALS AND METHODS

3.1 Survey

Survey in Elgenana (Western Darfur States) N13.45. E22.43333 was carried out during October 2019 to determine host range of *Cuscuta* spp in this area, Global *Positioning System* (GPS) and Meter using in the survey. The survey was include areas (Arbotne, Gagara, Daram, Atherne, Kangot, Bagbag, Ardamata, and Umdoina) (Figure 1.) The host plants of *Cuscuta* spp. were collected from different localities of the Elgenana States identified by using recent standard books and scientist in weed science. The hosts were categorized according to their families. *Cuscuta* incidence was evaluated. The percentage of infection was recorded for each host at each locality and The calculations were based on the following formula:

$$\textbf{Incidence} = \frac{\textbf{No, of infected plants}}{\textbf{Total No of plant inspected}} \times 100$$

3.2 Sampling

7 samples of dodder (*Cuscuta* spp.) were collected from different locations as samples flow: Elgenana state (Figure1)

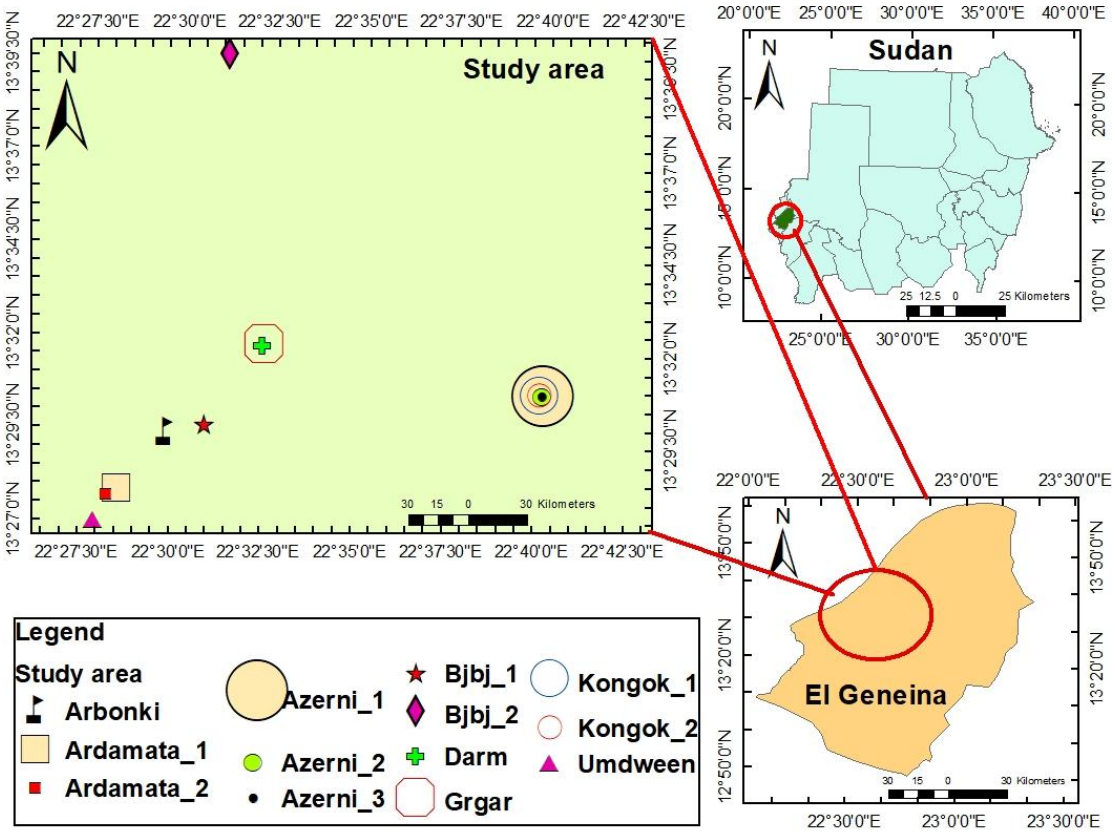

Fig. 1: Map of Western Darfur States (Elginana) showed the study area

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 The Survey

The study was carried out on the field dodder during autumn season 2019 in Western Darfur States (Elgenana) to determine its all host range of *Cuscuta* spp. distributed in the State using Global *Positioning System* (GPS) in the survey.

The survey covered several areas East, West ,North and South in the State (11 areas randomly in the Elgenana) . The results in **Table** (1) showed that dodder species found parasitizing on various hosts in the Elgenana, such as *(Xanthium barasicum, Eruca Sativa, Citrus aurantifolia and Amaranthus viridis*). The results revealed that the dodder have different host plants, including weeds, crops, vegetables, and other plants throughout the agricultural areas in the Elgenana. This findings in the agreement with Zaroug *et.al.*,(2010) .They found that dodder parasitizing 19 plant species belonging to 12 families among the most affected hosts ,were 5 vegetable crops (onion, tomato ,chickpeas ,Jews ,mallow and salad rocket) and fruit trees (lime) also agreement with Jayasing *et.al*., (2004) who reported that field dodder parasitizes 161 species of different life-forms belonging to 59 families comprising 27 crops ,22 weeds ,and 60 medicinal plants .of the recorded hosts, 24 were trees,42 were shrubs,12were creepers and 83were herbs ,the same authors indicated that *Cuscuta* differentiates between primary and secondary hosts and considerable grasses as secondary host of *Cuscuta* species can be responsible for the different host ranges, of the Furthermore, it was found that the reason why dodder parasitize plants from various life, forms in different proportion is not (only) the active host choice, but the characteristic features of the habitats. Dawson. *et .al* .,(1994); Holme *et.al*., (1997); Hutchison and Ashton (1980);they reported that dodder mainly

parasitizes alfalfa ,but also attacks some horticulture crops, legumes and broadleaf weeds ,though it is seldom found on woody plants, grasses, or cereals.

4.2 Dodder incidence

The incidence presence of filed dodder were estimated according to the following (total number of plants infected related to the total number of plants inspected (infection %). Result in **Table 2** showed incidence of filed dodder. High percentage incidence (100%) as the following Atherne (*Xanthim barsilcum*). however, the lowest incidence were recorded in um doina the (*Citrus aurantifolia*) (10%) and (*Corchorus oletorusf*) (10%). This results is agreement with Mahdi (2019), who reported that high percentage incidence (100%) was recorded in Khartoum state (Khartoum 2, Algile, jebal Auila, Toti, Alalaphon, Shambat, and Dar Alslam Om bada). On the other hand, lowest percentage incidence was recorded in Lime at Shambat area (1%). Results of Gezira state indicated that the dodder was found Parasitizing on North, South and West of the state. The host plants of it were Onion, Lokh, Alfalfa and Dahaser. Highest incidence (100%) was recorded in Gezira state at Hantoob and Madina Arab, while the lowest incidence was recorded at wad Al kawahala area (6.2%).

However, the most plants that dodder parasite them was found *Xanthium barsilieum* (100%) and *Amaranthus viridi* (60%).

Table 1. Host Plants of dodder (Cuscuta spp.) recorded in ELgenana

Area	Coordinates	Altitude(m)	Host plant
Arbotne	N1329.505 E0222.762	789	not found-
Gagara	N 13.13.976 E02232.449	805	not found--
Daram	N1331.923 E02232.391	811	not found--
Atherne	N1330.872 E02240.143	798	*Corchorus oletorusf*
Atherne	N1330.861 E02240.120	797	*Xanthium barsilieum*
Atherne	N1330.853 E02240.108	796	*Xanthium barsilieum*
Khangot	N1330.874 E02240.017	797	*Xanthium barsilieum*
Kangot	N1330.910 E02240.027	797	*Xanthium barsilieum*
Bagbag	N1329.731 E02230.873	770	Not found-
Bagbag	N1329.725 E02231.148	777	Not found
Ardamta	N1327.920 E02228.534	778	*Amaranthus viridi* *Eruca Sativa*
Ardamata	N1327.733 E02228.354	781	Not found
Um doina	N1327.044 E02227.919	784	*Corchorus oletorus* *Citrus aurantifolia*

Fig. 2. The dodder parasite on (*Eruca sativa*) Location Ardamta.

Fig. 3. The dodder parasite on (*Xanthim barascium*) Location Atherne .

Fig. 4. The dodder parasite on (*Corchorus oletorus*) Location Atherne

Fig. 5. The dodder Parasite on (*Xanthim barsilicum*) Location Atherne .

Fig. 6. dodder parasite on (*Eruca sativa*) Location Ardamta .

Fig. 7. The dodder parasite on (*Eruca sativa*) Location Ardamta

Fig. 8. The dodder parasite on (*Xanthim barsilicum*) Location Atherne.

Fig. 9. The dodder parasite on (*Corchorus oletorusf*) Location Atherne

Result in **Table 2** showed incidence of filed dodder. High percentage incidence(100%) as the following Atherne Ramtook .however ,gthe lowest incidence were recorded in um doina at the lime and Molokhia (10%).

Table 2. Incidence of *Cuscuta* Spp in Elgenana State.

No	Scientific name	Local name	Family	Incidence
1	Not found	Not found	Not found	0%
2	Not found	Not found	Not Found	0%
3	Not found	Not found	Not found	0%
4	*Corhors oletorus*	Molokhia	Malvales	70%
5	*Xanthim baraslicum*	Ramtook	Asteraceae	40%
6	Xanthim baraslicur	Ramtook	Asteraceae	100%
7	Xanthim baraslicur	Ramtook	Asteraceae	29%
8	Xanthim baraslicum	Ramtook	Asteraceae	100%
9	Not found	Not found	Not found	0%
10	Not found	Not found	Not found	0%
11	*Eruca sativa*	Algergir-	*Brassicaceae*	60%
	Amaranthus viridis	lesan altair	*Amaranthuceae*	
13	*Corchorus olitorus*	Mlokhia-	Malvales	10%
	Citrus aurantiifolia	Lemon	Rutaceae	10%

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

Conclusion

1- Dodder(*Cuscuta)* have been introduced to different parts of the world due to similarity of their seed to those of commercial crops ,especially legumes like alfalfa (*Medicagosativa L*)

2- *Cuscuta species* ,commonly known as dodder and it is one of the most invasive weeds

3- I n Sudan reported seven species and described their geographical distribution in country

4- The geographical distribution of*Cuscuta* in Sudan (*C. pedicellata*ladeb, In Khartoum, Gezira and Bahr Al Gazal state, and *C . pedniflora Ten* .In southern Darfur and Red Sea state found *C. Hyaline* and in the Northern States, Kassala, NorthernKordofan and Khartoum States)

5- The host of dodder in Western Darfour State(Algeanina) *(Xanthium baraslicum ,ErucaSativa, Citrus aurantiifoliaand Amaranthusviridis*

Recommendation

Further research is needed to determine the distribution of dodder in other areas of the Western Darfour State and to identify its host in this State.

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