

Original Research Article

Understating Dilemma and Sophism of *Prosopis juliflora* Eradication in Sudan

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A B S T R A C T

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The objectives of the study are to understanding and finding answers for *Prosopis juliflora* (mesquite) eradication dilemma and sophism context in Sudan; and further proposed guidance for future plans. Moreover, it aims to review, scrutinize, and assess previous and existing works about mesquite in Sudan focusing on eradication activities and to proposed best practices and guidance for mesquite eradication. Different methods were used for collecting the data, including archive of themes and activities focused on mesquite issue in Sudan, were collected randomly. These include government efforts, projects reports, published and gray studies and researches, seminars, workshops and others. The main data sources are: Internet browser, Forest National Corporation (FNC) reports, UNEP Sudan Environmental Scanning Project Archive, the Sudan/Japan Alien Invasive Species project and more. The collected materials then categorized in to several themes. These were namely: “study and/or research”; “project and development reports”; “published work” and “gray literature”. Further, the articles classified into an agent manner such as FNC works, other governmental bodies, joint activates with FNC or Government, NGOs and others. Furthermore, the themes were grouped in to fields; these were: “Taxonomy” (T); “Silviculture” (S); “Utilization/Processing” (U); “Ecosystem and Environment” (EC); Socio-economic” (SE); “Eradication and Control” (ER) and “Others” (O), (Annex 1). Afterword, the outputs were scrutinized, assessed and studied focusing into mesquite dilemma and sophism. The main results explained that, the forestry sector (FNC) alone works regarding the eradication issue was not considerable (4%) with regard to the available articles, but they have been found more effective in the collaborated works with NGOs and other governmental bodies. This is also looks like a dilemma, as they should be more active in the aspect. The result also tackling of mesquite issue scientifically was reasonable specially the control and eradication aspect, but at the same time mesquite invasion is going on. This is also could be indicated as another sophism.

Introduction

The mesquite (*Prosopis juliflora*) has been introduced to the capital of the Sudan in 1917 as a tolerant drought species (Brown and Massey, 1929); and by 2000s it has nearly introduced to most of the Sudan (Jörn Laxén, 2007). Until late 1980s, mesquite was used for forest plantations, woodlots and shelter belts to protect sands from urban areas and agricultural lands; but after a while, it took over arable lands, pastures and started replacing local trees and grasses, chokes water sources (FAO, 2013a, b, c). The Sudan Forest National Corporation (FNC) and others reported that about 1.5 million hectares in irrigated areas are affected by mesquite (Abdel Magid, 2007; Abdalla Gafaar, 2011). As consequence, livelihood of many rural communities in Sudan has being affected. Accordingly, in 1995 the Government of Sudan considered mesquite as a noxious weed and a Presidential Decree for its eradication was issued. Since then many efforts, initiatives, projects, researches and studies have been carried out to “eradicate”, control, reduce risk or manage mesquite; but the problem exists and possible solutions are still in shadow. Therefore, it seems that mesquite eradication in Sudan tends to be like a “dilemma **” and “sophism**”. Thus, this study aims to assist in better understanding of these two issues and further proposed guidance for future plans.

In order to study the proposed mesquite eradication dilemma and sophism, 74 themes/article dealt with the topic in Sudan for the period 1940-2013 have been used. The data then reviewed, scrutinized, categorized and assessed. The results showed that nearly all the efforts done regarding mesquite issues were divided between donated projects or private initiatives (44% and 48% respectively). The

same results reflected on the performance of the mesquite activities, as we found that FNC individual efforts was very low but it was considerable when cooperated with others like NGOs and etc. The categorized mesquite themes indicated that before issuing the eradication decree, the activities regarding mesquite were seemed to be more organized and usually managed or corporate with FNC; but after words works looked like a common concern activities that generated the dilemma and sophism. It also has been found that about quarter of the articles were focused on “Eradication and/ control”, in the time that mesquite invasion was increasing too; that was another dilemma. The study found that that there is considerable scientific information about mesquite invasion but scattered and needs to be collected and correlated. The study concluded the choice between mesquite options to eradicate or control and management was the main issue led to quick and effective action (dilemma). Also the study found that the studied articles had various argumentation of mesquite eradication in Sudan (sophism).

Dilemma here refers to: a situation that requires a choice between options that seems equally unfavorable or mutually exclusive. Sophism Here refers to: a plausible but fallacious argument argumentation.

Problem

There is no definite reasons or specific answer why eradication of invasive mesquite *Prosopis* species in Sudan was not successful since the issue of the Presidential Decree in 1995; regardless the few points highlighted such as “high cost and short-term management plans” (Babiker, 2006; El Tayeb *et al.*, 2001; Khalid Mohammed Mustafa Abu Raida, 2013); “contradictory among community perceptions” and “lack of

genetic information” (Nada Babiker Hamza, 2010). Therefore, the issue of mesquite eradication stills a “dilemma” and “sophism” among the decision makers and communities where it invades. Therefore, better understanding and answers are needed.

The study has come up with the following objectives:

1. To have better understanding and finding answers for mesquite eradication dilemma and sophism context in Sudan; and further proposed guidance for future plans.
2. To review, scrutinize, and assess previous and existing works about mesquite in Sudan focusing on eradication activities.
3. To identify points of success or failure and gaps of mesquite eradication.
4. To proposed best practices and guidance for mesquite eradication.

Materials and Methods

For collecting the data, the following methods are used:

1. Available archive of themes and activities focused on mesquite issue Sudan, were collected randomly. These include government efforts, projects reports, published and gray studies and researches, seminars, workshops and others. The main data sources are: Internet browser, FNC reports, UNEP Sudan Environmental Scanning Project Archive, the Sudan/Japan Alien Invasive Species project and more.
2. The collected materials then categorized in to several themes. These were namely: “study and/or research”; “project and development reports”; “published work” and “gray literature.

Further, the articles classified in to an agent manner such as FNC works, other governmental bodies, joint activates with FNC or Government, NGOs and others.

3. Further, the themes were grouped in to fields; these were: “Taxonomy” (T); “Silviculture” (S); “Utilization/Processing” (U); “Ecosystem and Environment” (EC); Socio-economic” (SE); “Eradication and Control” (ER) and “Others” (O), (Annex 1).
4. Afterword, the outputs were scrutinized, assessed and studied focusing into mesquite dilemma and sophism.

Results and Discussion

Looking for Mesquite Dilemma and Sophism

In order to look for the proposed dilemma and sophism of mesquite, we used the results of the assessed and scrutinized themes which covering the period 1940-2013. It has been found that nearly half of the works were projects or developments projects, not only that but also more than 1/3rd of the works were published studies or researches, however the gray ones were also represents a considerable amount (Fig. 1 and 2). That was the first dilemma, as it seems that mesquite became an issue of projects finding. Not only have that, but also a stupendous outcome appears when looked to the articles from their agents’ manner. It has been found that nearly half of the works were on a private or group works base which was not clearly corporate with the plans of the FNC other governmental bodies whom were assumed to be the focal points to deal with mesquite issues. That was another clear dilemma and sophism.

Fig.1 Mesquite articles by subject and agent

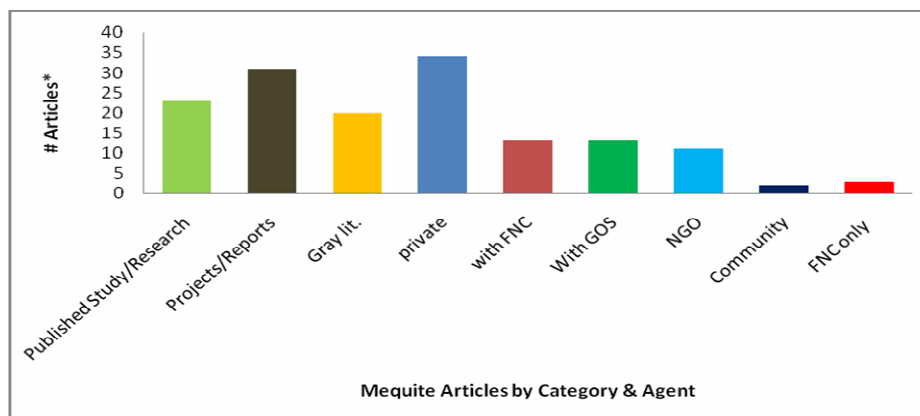


Fig.2 Mesquite articles by category

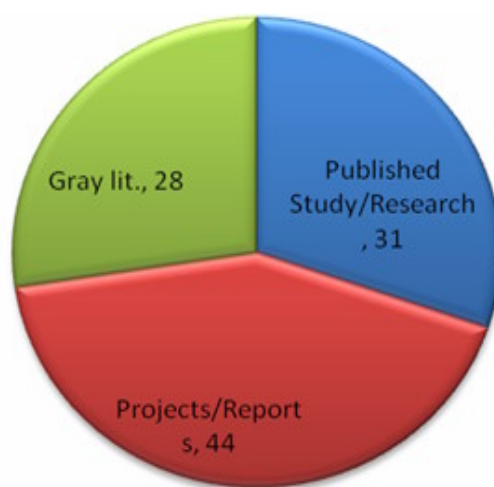


Fig.3 Mesquite articles by subject matter

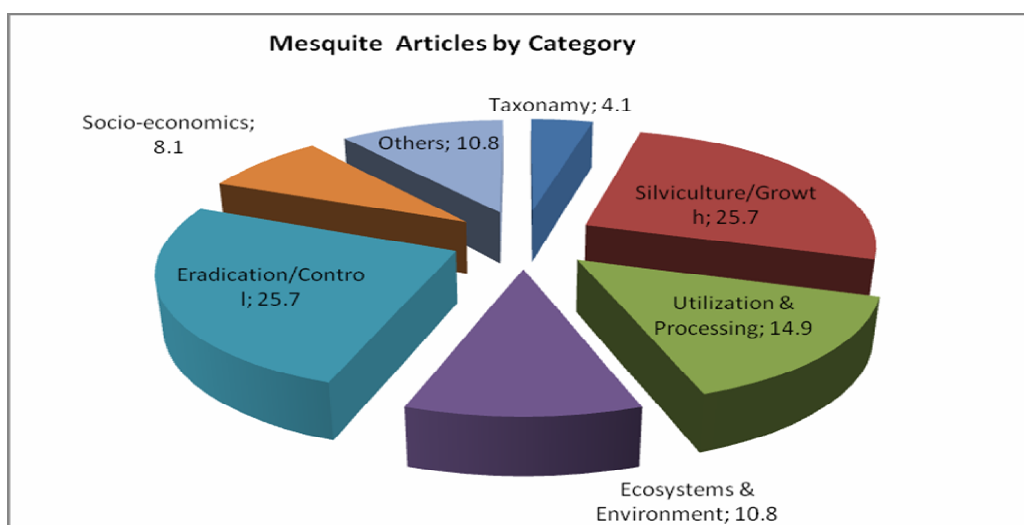


Fig.4 Mesquite articles by category and dates

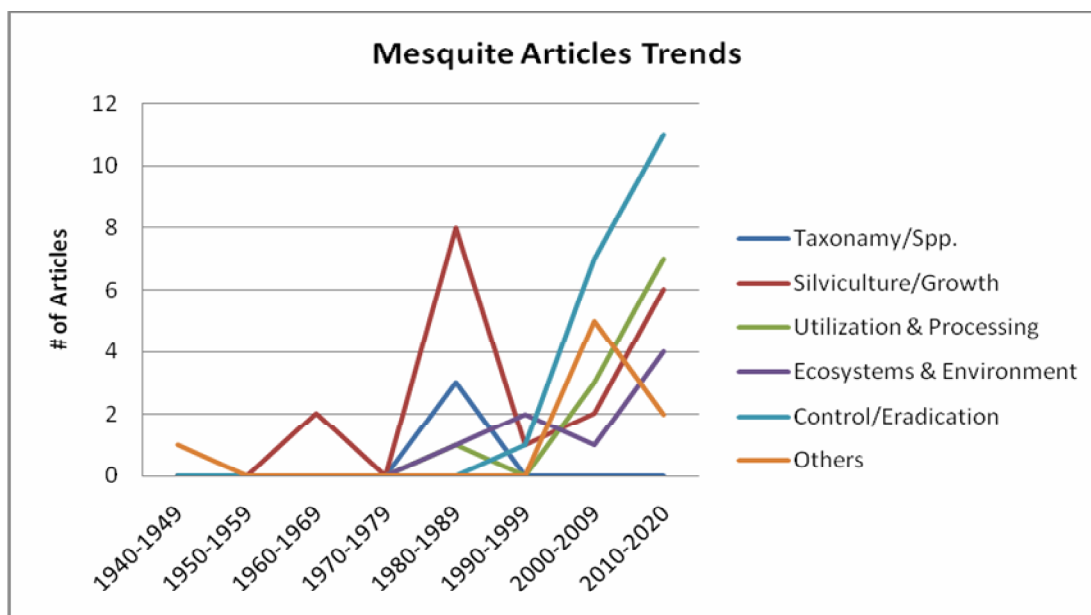
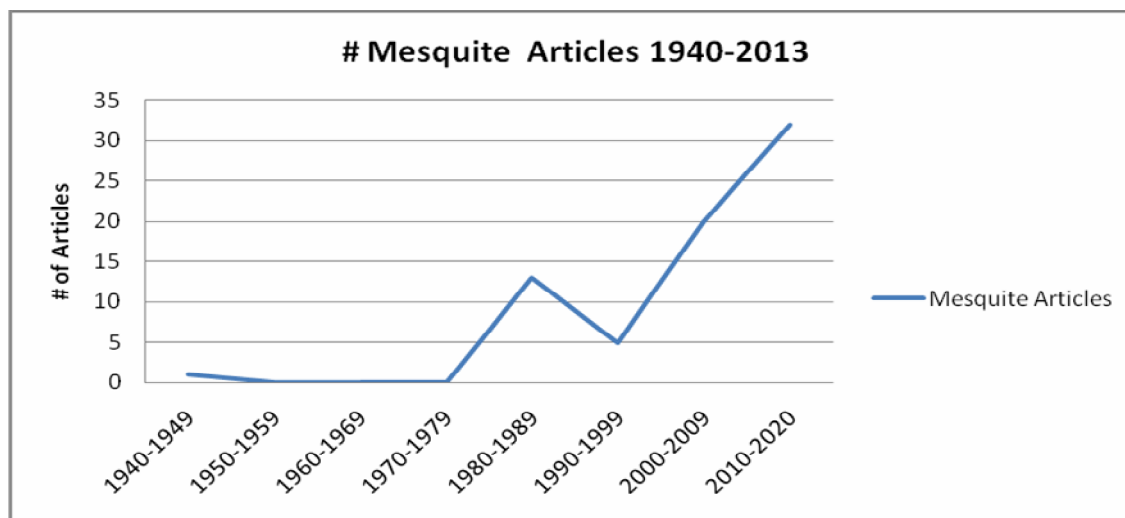


Fig.5 Mesquite articles trends



The other remarkable result could be highlighted is that; the forestry sector (FNC) own works regarding the eradication issue was not considerable (4%) with regard to the available articles, but they found more efficient in the collaborated works with NGOs and other governmental bodies. This is also looks like a dilemma, as they should be more active in the aspect.

Moreover, in order look in more detail for mesquite dilemma and sophism; the articles were further characterized in to their subject matter (Fig. 3). The results showed that the highest contents of the articles were for “Eradication” and “Silviculture” while, little works was carried out regarding the utilization and minor numbers for the “Socio-economic” and “Taxonomy”. This also a sophism, as most of the studies

mentioned that mesquite plantations were established to meet rural community needs from woods, but they did not much considered when dealing with eradication. Not only has that but also but in many locations mesquite invade private or community-owned lands in which any activity could not be performed without their permission or contribution. So, this is a real dilemma and sophism.

More mesquite eradication dilemma and sophism appears when listed the articles according to their dates of production (Fig. 4). From 1940s until end of 1970s and mid of 1980es, most of the works were considering the silviculture and growth parameters. Then in the 1990s start the ecosystem, environment and taxonomical works, while the silvicultural activities continue and reached its peak.

The articles regarding eradication and control began in time with the issue of the eradication decree (1995) and continue upward till date. Not only was that, but also the number of mesquite articles were increasing by time (Fig. 5). These results showed that tackling of mesquite issue scientifically was reasonable specially the control and eradication aspect, but at the same time mesquite invasion is going on. This is also could be indicated as another sophism. The findings also showed that the issue of mesquite increased sharply after the issued Eradication Decree.

The studied articles showed various views and argumentation which sometime tends to be a plausible but fallacious argument argumentation (sophism). Also the scrutinized articles showed that before issuing the eradication decree, the activities regarding mesquite were more organized and usually managed or cooperated with the forestry sectors, but afterwards it seems to be more an individual or scattered efforts.

This shows the different views about eradication from the various sectors. In other way, the mesquite eradication tends to be a concern of all, and this emerged the tragedy of the common which generates the dilemma and sophism for eradication. As mesquite eradication is highly costive, the results indicated that most of the work were carried out in term of joint projects and similar activities; this because, the FNC was established as a self-financed autonomous and could not carry on such big task by its own resources. The next dilemma and sophism is that, mesquite invasion are highly found in areas of higher moisture contents such as agricultural lands/schemes, abundant farms, river banks and Khors; and the problem is that, most of these areas are owned or managed by private sectors, tribes, families or individuals which having different perceptions regarding mesquite eradication.

Recommendations

The results have revealed the following recommendations:

1. To review and amend the mesquite eradication decree with focus on control, utilization and management.
2. To allocated budget by the Government for the issue of mesquite and assigned task to specified governmental body and try to link all activities to that body.
3. To involve the forestry sectors and local community the result of mesquite issue and plans.
4. To think about the socio-economics of mesquite and find substitute for the local community needs.
5. To focus in controlling of mesquite through utilization, processing and marketing.
6. More info about mesquite-land tenure and soil moisture contents are needed.

7. There is lack of database regarding mesquite, so the total area invaded by mesquite and its distribution and trends need to be provided.

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