

# Search Guide for the medusahead web application

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## How to search studies and treatments in the database

**Objective:** This section will help the user to search the data in the database

**First steps:** Open the FileMaker pro Database file called “Medusahead application” on your computer or you can access it online:

<https://129.123.22.55/fmi/webd#Medusahead%20application> (coming soon). The main menu will appear (Figure 1) and click on the button “Search data”. A page as below will come up (Figure 7)

**User privileges:** All users will be allowed to search data.

The screenshot shows the 'Search studies and treatments' interface. At the top, there are six dropdown menus for keyword selection: Rangeland vegetation (Sagebrush Steppe), State (Utah), Study type (Research), Study objective (Medusahead control), Tool (with a pop-up menu showing Biological, Burning, Grazing, Herbicide, and Seeding), and Unique grade (Good). Below these are buttons for 'Search', 'Clear search and sort', and 'Back to main menu'. A 'Sort studies by' section contains buttons for State, Type, Objective, and Tool. The main table displays search results with columns for Year of publication, Study title, Study and expert information, Treatment methods and results, and Tool(s). The results are as follows:

Year of publication	Study title	Study and expert information	Treatment methods and results	Tool(s)
2012	Selective Control of Medusahead (Taeniatherum caput-medusae) in California Sagebrush Scrub using Low Rates of Glyphosate	Study and expert information	Treatment methods and results	Herbicide
2009	Are early summer wildfires an opportunity to revegetate exotic annual grass-invaded plant communities?	Study and expert information	Treatment methods and results	Burning; Seeding;
2014	Restoration of Exotic Annual Grass-Invaded Rangelands: Importance of Seed Mix Composition	Study and expert information	Treatment methods and results	Burning; Herbicide; Seeding;

Figure 7 : Search studies and treatments

### 1. Keyword selection and search engine

Search studies and treatments according to 6 dropdown menus of keywords. You can select one term from each list or you can choose not to select a term from a dropdown menu. If you choose not to select from one of the menus then the search will include all the terms within that menu. For example, if you fail to select a state then data from all states will be reported in your search. In the tool menu you can pick one or a combination of tools according to your interests. The search uses only an “AND” search. This means that the search engine will pull out only studies and treatments that match with the combination of keywords. In the page above (Figure 7), the system will pull out only studies and treatments that have all keywords selected (Sagebrush steppe and Utah and research and medusahead control and burning-herbicide-seeding and good).

When you select a rangeland vegetation type, the database will pull out studies that have treatments in locations included in the rangeland vegetation type selected. According to the study objective you select, the database will pull out different studies. If you select the medusahead control objective then you will get studies that only evaluated medusahead control after treatment. If you select desirables impact as the study objective then only

studies that measured desirables will be displayed. When you select medusahead control and desirables impact as study objective you will get only studies that measured both medusahead control and desirable establishment.

The unique grade menu allows you to select a treatment or combination of treatments by their success. Unique grade categories are comprised of a medusahead control grade and a desirable plant species grade alone or combined into a global grade (Figure 8). Medusahead control grades are based on percent reduction categories. Desirable plant grades are based on an increase, decrease or no change categories.

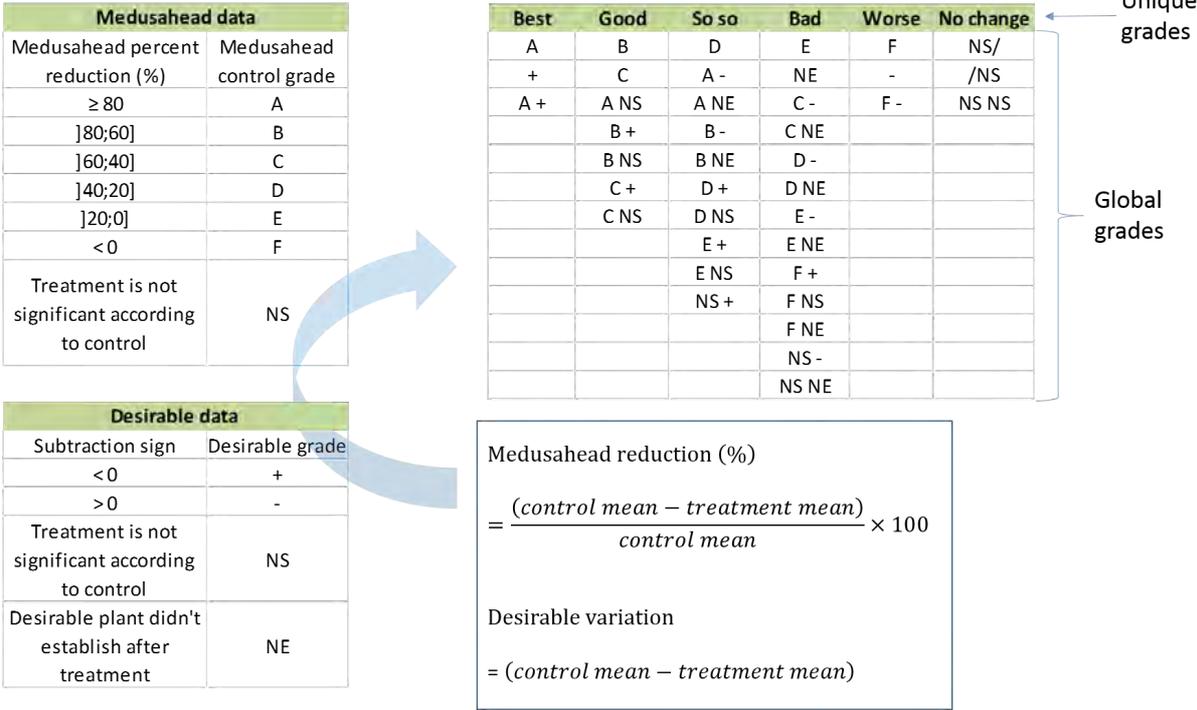


Figure 8 : Treatment grading

You can search again based on previous search findings by adding more keywords to the selection and hit “search” again. Thus, it will refine the search. If keyword selection doesn’t match with any studies, then a message will come up and suggest you to clear the previous search and enter new keywords. This message will come back until the keyword selection matches with studies available in the database.

### 7. Searching studies

Before any search, all studies available in the database are listed (Figure 7). Once all keywords are selected, click on the “Search” button on the top right corner. The list of studies matching your keywords will be displayed. Each study is described by its year of publication and title.

You can access study information with location(s) and expert details (Figure 9) with the button “Study and expert information”. You can access treatments details (Figure 10) with the button “Treatment methods and results”.

Study information with location(s) and expert details
Back to search

Stu_Author: <input type="text" value="Kyser B. Guy et al."/>	State_Name: <input type="text" value="California"/>
Stu_Journal: <input type="text" value="Invasive Plant Science and Management"/>	Type_Name: <input type="text" value="Research"/>
Stu_Title: <input type="text" value="Selective Control of Medusahead"/>	Objective_Name: <input type="text" value="Medusahead control and desirables Impact"/>
Stu_YearPublication: <input type="text" value="2012"/>	ExpeCondition_Name: <input type="text" value="Field"/>

Stu\_Summary:

Stu\_Link:

Expert\_FirstName:

Expert\_LastName:

Expert\_Organism:

Expert\_JobTitle:

Expert\_Email:

Expert\_PhoneNumber:

Tools used in study:  Biological  Burning  Grazing  Herbicide  Seeding

Location #	Veg_Name	Loca_EcologicalSite	Loca_SiteName	Loca_GPS
1	Sagebrush Steppe	N/A	Approximately 12km south of Alturas	41.23 N, 120.30 W

Figure 9 : Study information with location(s) and expert details after a search

Study title: Selective Control of Medusahead (Taeniattherum caput-medusae) in California Sagebrush Scrub
Back

Rangeland vegetation: Sagebrush Steppe  
 Ecological site: N/A  
 Location: Approximately 12km south of Alturas  
 GPS coordinates: 41.23 N, 120.30 W

Row #	Location #	Global Grade	Sprayed	Year	Timing	MedusaheadPhenology	Rate	Chemical	Method
1	1	CNS	Yes	2009	March 18	Seedlings 5 cm	79 g ae/ha	Glyphosate	Ground
2	1	BNS	Yes	2009	May 8	Tillering	79 g ae/ha	Glyphosate	Ground
3	1	BNS	Yes	2009	May 27	Boot	79 g ae/ha	Glyphosate	Ground
4	1	BNS	Yes	2009	March 18	Seedlings 5 cm	158 g ae/ha	Glyphosate	Ground
5	1	ANS	Yes	2009	May 8	Tillering	158 g ae/ha	Glyphosate	Ground
6	1	ANS	Yes	2009	May 27	Boot	158 g ae/ha	Glyphosate	Ground
7	1	ANS	Yes	2009	March 18	Seedlings 5 cm	236 g ae/ha	Glyphosate	Ground

Figure 10 : Treatment details with global grade after a search

On both pages (Figure 9 and 10), all information is locked to avoid you editing data. A row number will help you to switch between tabs to understand the whole treatment. The global grade is available for each treatment to better appreciate the treatment result.

## 8. Sorting studies

Studies are automatically sorted by year of publication. After a search attempt, you can sort studies based on a sort criteria among four choices. According to the sort criteria chosen, criteria value(s) will be detailed for each study. If several studies have same criteria values, then these studies will also be sorted by year of publication (Figure 7)

## Example of summaries

### Example 1:

Study title: Control of Medusahead (*Taeniatherum caput-medusae*) Using Timely Sheep Grazing (DiTomaso et al., 2008).

Summary: The best time to reduce medusahead cover = medusahead at the boot stage. Mid-spring grazing reduced thatch and increased species richness and diversity. After mid-spring grazing, medusahead is unable to recover and produce new inflorescence due to the lack of soil moisture. There is a problem of logistics to be able to bring high animal density in a short period of time. Grazing medusahead has a negative impact on individual animal performance.

### Example 2:

Study title: Selective Control of Medusahead (*Taeniatherum caput-medusae*) in California Sagebrush Scrub using Low Rates of Glyphosate (Kyser et al., 2012)

Summary: Best timing for application = medusahead at tillering stage. Low rates of glyphosate (160 g ae/ha to 348 g ae/ha) achieved 95% reduction in medusahead cover and filled seeds. These application conditions would have minimal impact on big sagebrush. Need multi-year treatment to deplete the soil seed bank. Cost effective option for ranchers and land managers.

### Example 3:

Study title: Control of Medusahead (*Taeniatherum caput-medusae*) and Other Annual Grasses with Imazapic (Kyser et al., 2007).

Summary: Good tolerance of perennial grasses to low rates of imazapic. Medusahead and other invasive annuals are effectively suppressed after litter is removed by mowing, raking or burning. When rate increased plant cover decrease especially annual grasses. The margin of safety for desirable species is narrow. Each site should be evaluated before application to define chemical, timing and rate to improve medusahead control.

### Example 4:

Study title: Site Characteristics Determine the Success of Prescribed Burning for Medusahead (*Taeniatherum caput-medusae*) Control (Kyser et al., 2008)

Summary: Best timing = medusahead seedhead maturing. Burning seems to be a relevant strategy to control medusahead in warmer winter areas (California) rather than cooler winter areas (intermountain regions). In California, window for burning is longer because flowering period of medusahead is longer (March-june). Dried forage fuel from annuals is more abundant thus easier to carry a fire with higher intensity and may damage seeds. Moreover there is less risk to negatively impact other desirable plants species which have

already dried up at the time of burning. Competitive species should establish after burning to increase chances of success durability.

**Example 5:**

Study title: Medusahead Control with Fall- and Spring-Applied Herbicides on Northern Utah Foothills (Monaco et al., 2005)

Summary: Surface area burning at the low-litter site = 10% while for the high-litter site = 80%. Higher herbicide rates increased medusahead control and bare ground but this was affected by site, season, and herbicide. The low- and high-litter sites did not differ in perennial grass cover 2 years after treatment. Annual forb cover was greater, but perennial forb cover was lower at the low-litter site compared to the high-litter site. Several treatment combinations maintained greater than 50% medusahead control two years after herbicide applications Sulfometuron controlled medusahead better than imazapic when sprayed in fall rather than spring.

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TOPIC: Research and development

Title: A web application to exchange knowledge about medusahead management in the western US  
Titre: Une application web pour échanger sur la gestion de la tête de méduse dans l'ouest Américain

Keywords: medusahead, control, revegetation, rangeland, database, web application  
Mots clés: tête de méduse, contrôl, restauration, parcours, base de données, application web

Summary:

Medusahead has already invaded nearly one million hectares in the western US. Controlling this invasive plant is essential to reduce its negative impacts on rangelands. However, only approximate results have been found. In this paper, we analyzed medusahead problem under several aspects in order to bring out main action means that could be investigated to improve management efficiency. We decided to build an application based on a database which would help to exchange knowledge about medusahead knowledge in the western US. We used the MERISE method to model data. We created a method to select main information from studies and a way to classify weed management practices. We implemented our solution on a content management system adapted to our situation. We also took a step back to evaluate strengths and limits of our application. This application is intended to propose a different view to refine medusahead management as well as to evolve according to user needs.

Résumé:

La tête de méduse a déjà envahi environ un million d'hectares dans l'ouest des Etats Unis. La gestion de cette adventice est nécessaire dans l'intention de réduire ses impacts négatifs sur les espaces de parcours. En revanche, seulement des résultats approximatifs ont été obtenus. Dans le cadre de ce mémoire de fin d'études, nous avons analysé le cas de cette plante sous différents aspects dans le but de faire ressortir les principaux leviers d'actions afin d'améliorer sa gestion. Nous avons décidé de créer une application basée sur une base de données. L'objectif est de faciliter les échanges de savoirs autour de la gestion de la tête de méduse dans l'ouest des Etats Unis. Nous nous sommes servis de la méthode MERISE pour modéliser les données. Nous avons mis au point une méthode pour sélectionner les informations principales depuis différents types de publications. De plus, nous avons proposé un moyen de classier les pratiques de gestion de la plante invasive testées en fonction de différents paramètres. Nous avons ensuite développé notre solution grâce à un logiciel de gestion de contenu adapté à nos besoins. Finalement, nous avons pris soin d'évaluer les forces et les limites du travail réalisé. Notre application propose une vue différente, nécessaire pour affiner la gestion de la tête de méduse dans l'ouest des Etats Unis. Cette application est ensuite destinée à évoluer en fonction des besoins des utilisateurs.

Number of volumes: 1  
Number of pages of the main document: 30

Requested by: Utah State University