

# Farm Mechanization FACTSHEET

## WETLAND MEADOW DEVELOPMENT

Organic wetlands occupy a large percentage of the total land base within the Cariboo. Similar wetlands can be found in the Prince George, Vanderhoof and Kamloops areas, but occupy a smaller area.

Since the early development of the ranching industry in the Interior, the improved organic wetlands have provided extensive grazing and a major source of winter feed. Forage yields on native wetlands are generally low. The reliability of wetlands forage production can be improved markedly by water control measures, sometimes relatively simple ones. These measures allow for draining in wet years and sub-irrigation and/or flooding in dry ones.

The application of fertilizer and seeding to domestic forage crops such as reed canary grass has shown that forage production on meadows can be markedly increased. With proper development and management, forage yield on wetland meadows can be increased six-fold to three tons of hay per acre or more. It is quite evident that organic wetlands are suitable as a potential source of forage production.

### MEADOW DEVELOPMENT

To develop organic wetlands, brush control, drainage, water control, tillage, seeding and fertilization are required. Equipment for developing these meadows is now more readily available.



A DEVELOPED MEADOW

## LAND CLEARING

Dense brush or brush that is over 8 feet tall should be cleared as the first step. Sparse brush that is less than 8 feet tall can be buried during the plowing operation, however, cutting the brush in advance will result in a smoother surface after plowing.

## TOPOGRAPHIC SURVEY

A topographic survey is required as part of the meadow development process. The survey will enable the proper design of ditches and water control structures.

## WATER CONTROL

Equipment suitable for ditching in wet meadows is available. Many ditching methods have been used in a variety of conditions, however, a low ground pressure excavator on tracks has proven the most efficient in the majority of conditions. Water control is critical to the management of meadows. The Ministry can recommend control structure designs.



**SHEET METAL WATER CONTROL STRUCTURE**

## TILLAGE

The Ministry of Agriculture developed a breaking plow suitable for use on these willow-bound wet meadows. To date, several hundred acres of varied brush, moisture and soil conditions were plowed using the wetland breaking plow with very good results.



**WETLAND BREAKING PLOW**

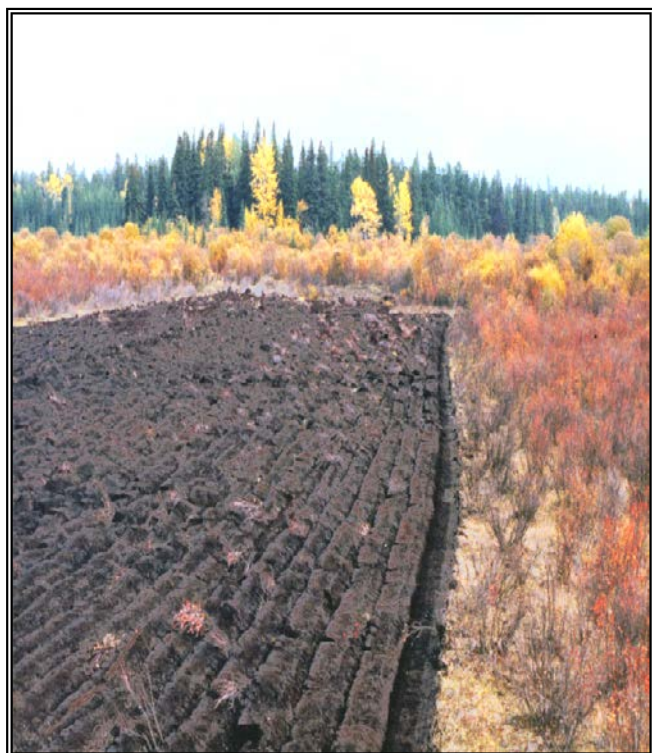
The plow has 28 inch single bottom with 4 ft frame clearance. The large moldboard is designed to completely turn the furrow even in dense willow conditions up to 8 feet high. A smoother surface is achieved if tall brush is mowed or removed before plowing. A fixed knife coulter is used to shear through the brush. The plow is supported by 3 large floatation wheels. Each wheel has an individually controlled hydraulic cylinder for vertical adjustment that enables uniform plowing depth in varied meadow moisture conditions. The plow is drawn by a low-ground-pressure (LGP) 65 hp crawler and is on-land hitched (offset) to improve the floatation and traction of the crawler in wet conditions.

The plow is available through a contractor. Although the plow will work in wet conditions, drainage and water control should be installed prior to plowing. This will enable the rancher to disc and seed the site and obtain a productive meadow as quickly after plowing as possible.

Discing the plowed meadow is difficult with conventional tractors (rubber wheeled or crawlers) when the meadow is soft. Under these conditions, it may be necessary to use a LGP crawler to pull the disc. The contractor may offer this service at the cost of \$40.00 per hour using the rancher's disc to work the meadow plowed by the contractor. Under most conditions, a double pass with the disc is all that is necessary. The discing rate will vary with field conditions and size of the disc, however, the effective field capacity should be approximately 2 ac/hr or more per pass.



**MEADOWS SEED TO TAME GRASS**



**WILLOWS PLOWED UNDER**

## SEEDING

Equipment with large rubber tires, tracks or dual wheels may be required to prevent the machinery from bogging down. Seeding and fertilizing may be done with a conventional drill or broadcast, if followed by light harrowing. Packing is the last very essential operation to firm the seedbed and allow moisture to reach the seedlings. Late fall seedings are successful, providing they are done late enough (after about October 1) so that germination will not occur until the following spring.

## ECONOMICS

Costs of development may vary tremendously depending on conditions. The following costs offer some guidelines, however, these must be confirmed by cost estimates for individual sites. The costs below were applicable when early work on wetland development was done in the late 1980's and are still useful in outlining relative differences.

Brush clearing	\$300 / acre
Ditching	
- main ditch	\$0.6 / ft
- perimeter ditch	\$0.2 / ft
Water control	\$1000 –1500 / dam
Plowing	\$115 / ac
Discing	\$40 / ac
Seeding, harrowing, rolling	\$30 / ac
Seed	\$50 / ac
Fertilizer	\$70 / ac

Brush clearing may not be required in many instances due to lack of large or dense brush. The ditching and water control structures will be more cost efficient for larger meadows. To determine whether or not development or improvement of wetlands should be pursued, the pertinent costs and benefits should be considered. The benefits of meadow development are increased hay production to an average of 3 tons per acre. The costs of

producing this meadow hay can be compared to the price of purchased hay of equal quality including freight and other delivery costs associated with acquiring hay. The publication *Forage Production on Poorly Drained Soils (in the Southern Interior of BC)* has cost/benefit worksheets and is available through Ministry offices.

## **WATER PERMITS**

Meadow development will impact upon a stream under the definition of the Water Act. Ranchers planning to develop a meadow are obligated to

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contact their local BC Ministry of Environment office to obtain the required approvals to carry out work in and/or about a stream. You are also encouraged to discuss your meadow development proposal with your District Agriculturist at an early stage to determine what steps are required and what assistance is available. The *How to Obtain an Approval Under the Water Act in BC* pamphlet produced by the BC Ministry of Environment is available through their offices or any ‘Agriculture’ office.

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### **FOR FURTHER INFORMATION CONTACT**

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