

Best Management Practices for Tobacco Production



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Introduction

Tobacco producers are very conscious of the need to control nutrients and soil erosion to maintain quality production. Thus, many progressive farmers are currently using practices that are referred to as BMPs under the Water Quality Management Plan.

Best Management Practices (BMPs) are measures that may be used to reduce the potential for water pollution. They are common sense structural, cultural, and management techniques. This publication will look at those measures which the tobacco producers may use to conserve soil and water.

The State Water Quality Management Plan, also known as the Section 208 Plan, is a result of the passage of the Federal Water Pollution Act Amendments of 1972 (PL 92-500) and the Clean Water Act of 1977. More information about these acts and the resulting programs can be found in "Best Management Practices for Agriculture and Forestry", publication 4 WCB 1, January 1980.

Tobacco Production and Water Quality

Crop production activities resulting in water pollution are considered as a nonpoint source. Pollutants may reach state waters through surface runoff or by percolation to groundwater. Nonpoint pollution usually results from rainfall or snowmelt. Most pollution from agricultural crop production is the result of erosion and runoff.

The major contaminants in runoff are sediment, nutrients, pesticides, organic materials, and sometimes disease producing organisms. [For a discussion of the water quality/erosion runoff relationships, the reader is referred to extension publication 4 WCB 3, June 1980, entitled "Best Management Practices for Row-Crop Agriculture".]

Benefits of Best Management Practices

The benefits of improved water quality will be both public and private. The public benefit from improved water quality will be increased beneficial use of water supplies, fisheries, and

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recreational facilities.

The farmer should benefit from improved soil fertility, soil physical condition, and crop growth and also from a possible reduction in the amount of commercial fertilizer and pesticides needed. In addition, land will be conserved for future generations. It is the objective of the Water Quality Plan to assist agriculture in maintaining production while meeting the requirements of the water quality acts.

BMPs for Tobacco Production

The requirements of tobacco production are unlike those of most row crops. This publication will be restricted to a discussion of those BMPs which appear to be practical for tobacco production. To understand the Best Management Practices approach to water quality improvement, the previously mentioned publication, "Best Management Practices for Row Crop Agriculture", should be studied.

The need to break up and cover the old plant residue requires fall tillage. A winter cover crop can be used for protection of soil that has produced burley, dark fired, sun cured, and flue cured tobacco. If adequate land is available, rotations are recommended to help reduce erosion, improve the soil structure, aid in disease and insect control, and improve water quality.

Because of the need to carefully regulate available nitrogen, conservation tillage practices such as planting into sod or small grain are not practical for flue cured tobacco. However, planting into sod or small grain has been used for burley tobacco (Figure 1). This practice has produced good quality, cleaner tobacco but usually has reduced yields by five to ten percent. Since burley is grown in small plots often surrounded by grass or hay, it might be considered that a special form of strip cropping is already in use.

Care in tillage of the soil is needed. Excessive tillage before planting results in a powdery surface that is subject to wind and water erosion.



Figure 1. Burley tobacco planted into small grain residue.

Cultivations should be limited to only those that are definitely needed. Contour tillage will aid in reducing erosion (Figure 2).

Good surface drainage is a must. This is one reason many farmers ridge their tobacco. The ridges should be across the slope, but each row must have drainage to prevent water from standing. A limited amount of surface grading should be considered to provide for surface drainage without having excessively crooked rows. Each ridge serves as a small terrace but unless care is taken, a ridge may be overtopped causing lower ridges to wash out, possibly starting a gully. Grassed waterways or subsurface outlets for terrace systems may serve as the outlet for each row.

Terraces are used in tobacco production (Figure 3). The newer concepts of parallel terrace design should aid in making them more practical. Where a normal terrace system cannot be constructed, a system of sediment and water control basins may be practical. These basins are formed by a series of short terrace ridges across minor water courses. They are often used in place of grassed waterways. Diversions should be used to intercept runoff from higher lands. Careful planning of ridging, contouring, and terraces can provide the needed erosion and water quality control.

The principles of integrated pest management should be used to limit pesticide applications to those that are economically sound. Consider the degree of pest infestation, time of year, stage of plant growth, and climatic conditions to determine when and how much pesticide to apply. The use of rotations can reduce the need for pesticides to control some insects and diseases.

Irrigation is commonly practiced for flue cured tobacco. Good system design and management will prevent overwatering. When the probability of rain is high, irrigation should be limited to reduce the potential for runoff.



Figure 2. Tobacco in contour rows.

TABLE 1

Practices which may be used by the tobacco producer for improving water quality.

Crop Rotations
Winter Cover Crops
Limit Tillage and Cultivations
Cross Slope Tillage and Contouring

Row Ridging
Surface Drainage
Surface Grading
Grassed Waterways

Contouring
Terraces
Sediment and Water Control Basins
Diversions

Limit Pesticide Use
Integrated Pest Management
Irrigation System Design
Irrigation System Management

How BMPs Are Selected

The selection of BMPs for water quality improvement is specific to the problem and to the individual operation. Working with the owner or operator, the planner will review the problems, the soils, the farm operation, and present conservation practices to determine which BMPs can be applied to meet the water quality objectives. In essence, the planner will assist the farmer in developing a water quality plan.

Most plans will consist of several BMPs combined into a farm conservation system. In some cases, alternative plans may be developed for review and selection. Neighbor cooperation may be desirable for the best solution. For example, a grassed waterway might be needed to serve more than one farm.



Figure 3. Tobacco in contour terraces.

Where Is Assistance Available?

Many local, state, and federal agencies are cooperating in providing assistance to the landowner in developing and implementing a water quality improvement plan. The State Water Control Board has overall responsibility for water quality planning and implementation in Virginia. However, the management of the agricultural portion of this plan has been delegated to the Soil and Water Conservation Commission, with the Soil and Water Conservation Districts assuming the leadership role at the local level.

Information about water quality planning and techniques may be obtained at the local office of the Cooperative Extension Service. The Soil and Water Conservation District and the USDA Soil Conservation Service can also provide information. These offices have many publications available on individual practices which will be of value to the farm operator.

Technical assistance for planning and implementation of BMPs is available from the Soil Conservation Service through the local Soil and Water Conservation District.

Financial assistance to aid in implementation of BMPs is available through the Agricultural Stabilization and Conservation Service (ASCS). Other state and federal programs may become available in the future.

Summary

The intent of most BMPs is to decrease the generation of pollutants rather than treat what is produced. BMPs must be properly planned, designed, and installed. Concern and good management by the farm operator will be necessary for a reduction of agricultural nonpoint pollution to become a reality.

Other Publications of Interest

Best Management Practices for Row Crop Agriculture, Extension Publication 4 WBC 3, June 1980.

Best Management Practices for Agriculture and Forestry, Extension Publication 4 WCB 1, January 1980.

Producing Sun Cured Tobacco, Extension Publication 874, February 1980.

1980 Dark Fired Tobacco Production Guide, SP-31, February 1980.

1980 Flue Cured Tobacco Production Guide, SP-29, January 1980.

Burley Tobacco Production Guide, March 1978.