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The Way We Irrigate Can and Should Make a Difference

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Many areas of the state have experienced severe drought conditions during 1995. As a consequence, drought management and water use efficiency have once again surfaced as major concerns. If history repeats itself, these concerns will vanish with the next general area-wide rain. The development and implementation of drought management techniques and efficient water use systems will then no longer be a high priority.

Fortunately, the duration of the dry periods and the time required to replenish water supplies, with the '50s being an exception, have been short. As a result, urban growth and crop productivity have not been seriously impacted. However, as urban population growth continues to increase at a rapid rate and irrigated crop production continues to expand, correspondingly, an accelerated increase in demand on our water supplies is being experienced. Without the development and implementation of drought management and efficient water use techniques, each succeeding drought will have a greater and greater impact on irrigated agriculture and the state municipalities.

Those close to the water issues feel that water use policies and regulations will eventually be developed to insure an adequate water supply for the urban sector. They also feel that the policies and/or regulations will be developed based on emotional and political considerations and not on need or fact. The ability of the agricultural community to influence policy and/or regulations is continuing to decrease and the urban population continues to increase. Although crop producers can do little to curb urban water use or to influence water use regulation, they can have a significant impact on the state water supply and its use. They can do so by adaptating water conserving cultural practices, converting existing irrigation systems in such a manner as to increase water use efficiency, and installimg new, more efficient water-use irrigation systems.

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APPEARING WITHIN . . .

Nutrient Management Practices to Minimize Nonpoint Source Pollution

*This article appeared in **Water Quality Newsletter**, September 1994*

Best management practices (BMPs) are defined as practices or combinations of practices which are the most effective practical means of preventing or reducing pollution generated by nonpoint sources to a level compatible with water quality goals. Because erosion and runoff are the two major transport modes for nonpoint source pollutants to move to surface water resources, practices which reduce erosion or runoff are considered as potential best management practices. Similarly, practices which limit the buildup of nutrients which could lead to groundwater pollution are considered best management practices. Practices which ensure safe usage of agricultural chemicals are also considered potential best management practices. In general, soil conservation and water quality maintenance are mutually beneficial; therefore, the BMPs described here should be recognized as the best means of abating agricultural and silvicultural nonpoint source pollution resulting from fertilizer nutrients. Both economic and environmental concerns should be considered.

1. Soil test to evaluate pH and nutrient status of soil to:
   - determine the amounts of additional nutrients needed to reach designated yield goals and lime needed to correct soil acidity problems
   - avoid excessive fertilization to reduce nutrient losses via leaching and runoff
   - identify other yield-limiting factors such as high levels of salts or sodium which may affect soil structure, infiltration rates, surface runoff and ultimately groundwater quality
2. Base fertilizer applications on:
   - realistic yield goals and moisture prospects
   - past fertilization practices
   - previous cropping history
3. Manage low soil pH by liming according to soil test to:
   - reduce soil acidity
   - improve fertilizer efficiency
   - improve decomposition of crop residues and soil aggregate formation
   - enhance effectiveness of certain soil-applied herbicides
4. Time nitrogen applications to:
   - correspond closely with crop uptake patterns
   - increase nutrient use efficiency
   - minimize leaching and runoff losses
5. Band or incorporate surface applications of fertilizers when possible to:
   - increase accessibility of plant roots to fertilizer nutrients
   - reduce volatilization losses of ammonia N sources
   - reduce nutrient losses from erosion and runoff
6. Use animal manures and organic materials:
   - when available and economically feasible
   - to improve soil tilth, water holding capacity, etc.
   - to reduce need for commercial inorganic fertilizers
7. Rotate crops when feasible to:
   - improve total nutrient recovery due to different crop rooting patterns
   - reduce erosion and runoff
   - reduce disease, insects, and weeds
8. Use legumes where adapted to:
   - replace all or part of crop needs for commercial N fertilizer
   - reduce erosion and nutrient losses
   - maintain residue cover on soil surface
9. Control nutrient losses in erosion and runoff by:
   - utilizing appropriate erosion controls
   - adopting conservation tillage practices where appropriate
   - properly managing crop residues
   - implementing other soil and water conservation practices where possible.
10. Handle and apply fertilizer correctly to:
    - properly clean and dispose of excess fertilizers, containers, wash water, etc.
    - store fertilizers in a safe place

NEW FEDERAL LABELS FOR PYRETHROIDS. **Commercial vegetable producers should be aware that some of the newer pyrethroids have been receiving full federal labels on a variety of crops. Examples include Baythroid on carrots, peppers, radishes, and tomatoes, and Karate on broccoli, cabbage, lettuce, onions, tomatoes, and peanuts. The Karate label also includes sorghum midge on grain sorghum (we just received a section 18 for Asana for this same use). Overall, it appears the EPA is finally releasing the pyrethroids for expanded label request, so this whole picture could change rapidly.**

Stormy Sparks, Assistant Professor & Extension Entomologist, TAMU Center, Weslaco

"Non-vegetable" Vegetables

*By M. J. Stephens, in **Vegetarian**, June 19, 1995, published by the University of Florida*

The culinary reputation of most vegetables is based primarily on the edible qualities of one or sometimes two primary parts of the plant. For example, the tomato is the leading garden vegetable due to the popular appeal of its fruit, while the turnip contributes both its root and its leaves as table fare. For home gardeners who grow and have the entire vegetable plant at their disposal, other plant parts may be edible, although perhaps not so tasty as the main product. For non-gardeners, however, there is little option for eating parts other than those offered for sale. The list below is of ordinary garden vegetables with both commonly eaten parts and less-frequently eaten parts. Obviously, in a list such as this, there may be quite a few omissions. Although many of the secondary plant parts are edible, their popularity as food items is diminished by lack of proper flavor or unfavorable texture. For example, the leaves of practically all the cabbage family are edible, but the strong flavors of some species are disagreeable or too strong for most people's tastes. The edible leaves and stem tips of sweet potato vines are well known in many parts of the world. Often considered a poor man's food, sweet potato foliage has a rich protein content that helps supplement the nutritional value of the roots.

As for all vegetable parts, there is a great deal of variation within varieties in flavor and culinary characteristics of these secondary parts. For example, some sweet-potato stem tips in certain varieties are bitter with a resinous flavor that is too strong. Quite often, cooking is necessary to make the parts edible. Raw leaves eaten fresh may even be slightly toxic in some cases.

VEGETABLE	COMMON EDIBLE PART	OTHER EDIBLE PARTS

NORTH AMERICAN DIRECT MARKETING CONFERENCE, FEBRUARY 22-24, 1996

The 11th Annual North American Farmers' Direct Marketing Conference will be hosted by New York and the seven New England states in Saratoga Springs, New York February 22-24. The conference is being cosponsored by direct farm marketing associations, agriculture departments, the Extension services in New York, Massachusetts, and other northeastern states, as well as the North American Farmers' Direct Marketing Association. Texas producers interested in this type of marketing should attend this meeting. The trade show, which runs concurrently with the educational program, will include 80 to 100 exhibitors displaying supplies and services for farm direct marketers. On February 20-22, there will be a three-day pre-conference tour of innovative farm markets in New England.

Headquarters for the conference are the Saratoga Springs Sheraton and City Center, located in the resort community of Saratoga Springs, New York, 25 miles north of Albany off Route 87, the Northway. Major airlines are served by the Albany airport, and shuttle services will be arranged. Hotel reservations can be booked by calling the Sheraton at (518) 584-4000. For conference information, contact Coordinator Charlie Touchette at (413) 527-6572. Inquiries regarding trade show exhibit space should be directed to trade show coordinators Toby and Jane Cargin (607) 692-4642.

Currently, furrow irrigation is the predominant method of supplying supplemental crop water in Texas. Overhead high-volume center-point pivot sprinkler systems are the next most common method. Both of these systems are among the least efficient methods of supplying supplement water to crops. At best, furrow irrigation has a 60% water-use efficiency. With this technique, two-thirds of the field has a full water surface area exposed to evaporation. The addition of surge valves to the conventional furrow irrigation systems have been shown to result in a 10 to 40% water savings. Cost of these conversions is minimal.

The water-use efficiency of overhead high-volume sprinkler systems also falls in the furrow-irrigation efficiency range. These systems have considerable water loss occurring from evaporation and wind drift. Converting these center pivots to a partial-drop system or one having the nozzles located approximately 4 feet above the soil surface can improve efficiency to equal that of surge irrigation (80%) during a normal season.

Conversion of existing center pivots to or purchasing an LEPA system can greatly improve water-use efficiency of the center-pivots concept (up to 95% efficient). With the LEPA system, nozzles are located in the furrow just above the soil surface. Reductions from evaporation and wind drift are achieved. When this concept is used in combination with furrow diking, even greater efficiency can be achieved.

Perhaps the most efficient irrigation system available for use by vegetable growers is drip irrigation in combination with plastic-mulched beds. With this system, water is applied within the row next to plants or to their root systems in frequent low-volume applications. The furrows between the beds remain dry. When the bed surfaces are mulched with plastic, no surface evaporation occurs. In TAEX demonstrations over the past two years, 83 and 74% reductions in water use were found when compared to the conventional furrow irrigation method.

Conversion to or selecting one of the above techniques can make a difference in agricultural water use. Not only are yields increased and pumping costs reduced, but, more importantly, they help to conserve our most precious and limited natural resource - WATER. Hopefully irrigated-crop agriculture will take the lead in reducing water use and prevent the need for reallocation to our urban communities as a result of a perceived wasteful use of the state's limited water supply.

Source for efficiency ratings and system characteristics: ***The Cross Section,*** Vol. 41(8), August 1995.

COMING EVENTS: MARK YOUR CALENDAR!!

- ***Trans Pecos Drip-irrigated Vegetable Production Conference and Trade Show. Tuesday, Oct. 24, 1995. Ft. Stockton Contact: Joe Henggeler at (915) 336-8585.***
- ***Open House and Barbecue, Asgrow Seed Company. Nov. 9, 1995, 3 - 6 PM. Weslaco. Contact: David Drews at 1-800-234-1056.***

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