best burley
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Editor's Column

TURNING THE PAGE

By Don Fowlkes, Agronomist, BSC

Our 2016 crop marketing season is now completed. The crop in general was bright and light. Brighter in color than normal and lighter in weight than normal. Of course, there were notable exceptions to this. And in many respects, the crop performed decently considering the unusually adverse growing and curing conditions.

We thank you for working with us in marketing this crop. And in preparing it for market. Most of you delivered tobacco that was clean, sound, and graded properly. Occasionally we still found NTRMs such as weeds, straw or hay, feathers, twine, suckers, and other materials. That is not a sustainable practice. Neither is mixed strip grading. Again, thanks to all of you who took pride in your crop and managed it properly. Even if it was not that good crop you had hoped for.

Now it's time to turn the page to the 2017 crop. The general style of burley tobacco we want continues to be the tannish red to red color line with medium to heavy body. The soil plus weather conditions play important roles in producing this style. But your crop management - what you do and when you do it- is also very important.

Variety selection can sometimes play a role in this, although disease resistances matched to your disease situation is first priority. And we see good color crops from many varieties. If you have been growing a certain variety for several years and consistently aren't satisfied with its color, grow a different variety as a trial. But make sure it retains whatever disease resistance traits you may need. And keep in mind that soil and weather can mask varietal differences.

Plant population can influence tobacco style. Check out the article on this topic in this newsletter. So can topping practices, but we'll discuss that in a later newsletter.

As always, we need to work together as we make our way producing the 2017 crop. You'll need to keep records and notes documenting everything you do related to this

crop. Good Agricultural Practices (GAP) and detailed recordkeeping are very important.

We at BSC look forward to working with you this year. And we appreciate your business and your commitment to growing the best burley. Please contact us whenever you have questions or just want to talk tobacco. Thank you!

BURLEY PRODUCTION OUTLOOK FOR 2017

By Daniel Green, CEO, BSC

For most tobacco growers, it is a great relief to have the 2016 crop behind them. Without a doubt, it was one of the most challenging crops in recent years, with excessive rainfall affecting yields and destroying many acres, followed by a dry curing season in some regions that negatively impacted quality. It has proven to be one of the smallest burley crops in history. In fact, going back as far as records have been kept, it is the smallest.

Most industry experts are estimating the 2016 burley crop at around 110 million pounds. With the exception of the recent 2015 and 2011 crops, which totaled around 140 million and 172 million pounds respectively, US burley growers have never produced anything as small as the 2016 crop. Besides these recent crops, you have to go all the way back to 1921 to find a year when we produced even less than 200 million pounds.

In 1921, 175 million pounds of burley were produced in the US, making it the smallest crop prior to 2011. According to historical sources, the decline in 1921 was not solely due to weather. A concerted effort by burley growers to organize and limit production in order to combat low prices was largely successful, resulting in a reduction of more than 100 million pounds from 1920 to 1921. However, production quickly rebounded in 1922 to more than 275 million pounds as prices improved.

So given that US growers produced the smallest crop in history, should we expect to see a rebound in 2017? The short answer: **NO**.

Unfortunately, US growers no longer enjoy the substantial market share of world burley production that we have produced in the past. In recent years, US burley market share has represented only around 10 percent of world production. While it is true that

this 10 percent is widely accepted as the best quality burley in the world, the other 90 percent has improved in quality significantly in recent years and US burley growers now have several close competitors. When accounting for value, many manufacturers are simply no longer willing to pay the premium for US burley.

On top of the ongoing price challenge, exchange rates have been very unfavorable for US burley growers in recent years. In 2016, Brazil's currency reached a level that was half the value that it was three years ago. In simple terms, this means US burley became twice as expensive to many manufacturers over this same period compared to Brazilian burley. This same situation applies to many other sourcing regions. While we have seen great improvement in exchange rates in recent months, selling US burley very much remains a price proposition.

Current estimates indicate that world burley production will decline in 2017 and this is encouraging news as we continue to work our way out of an oversupply situation. However, much of this decline will occur in countries producing filler style burley, such as Malawi, and the full benefits will not be felt in the US.

Besides the challenge of competing in the global marketplace, US growers have issues at home that will contribute to reductions in future contract quantities. The major issue on the supply side is that many growers continue to produce excess pounds beyond what is necessary to fill their contracts. This is an economic decision they feel is best for their farming operations.

The prices of the most popular alternatives to tobacco, such as row crops and cattle, have been stagnating and many farmers see tobacco as a safer alternative. Additionally, protections provided by the addition of quality adjustment to burley crop insurance has produced a "revenue guarantee" that is driving additional production. This is because many burley growers have found assurances that guarantee a price above the cost of production, even in the most difficult growing conditions. This excess production finds its way into the market and dramatically impacts both future contract quantities and prices.

For 2017, we strongly encourage growers to only produce enough tobacco to fill their contracts. The only way for the market to stabilize is for supply to fall into line with demand. Unfortunately, this will only come from reduced production or lower prices.

BSC will continue to do our part to assist our contract growers during this difficult market situation. We only offer our customers tobacco that has the quality, integrity, traceability and GAP compliance that is ensured from our direct contracting and receiving program. We do not import any tobacco and do not purchase any tobacco from auction markets or alternative sources. We can only contract for the volume we can sell and we ask all of our growers to strive to only produce enough to fill their contract volumes.

FERTILIZING THE 2017 CROP

By Don Fowlkes, Agronomist, BSC

Tobacco is not just any green plant. It's a unique plant which requires fertilizers formulated specifically for tobacco. Production Summary records show that growers used a wide range of fertilizers in 2016.

Basic fertilizer decisions include how much of the major nutrients, nitrogen (N), phosphorous (P), and potash (K), to apply per acre, what fertilizer materials to use to provide these nutrients, and when to apply them. The amounts needed to be applied depend on the amounts already in the soil and available to the crop in each field.

The only way to know the existing levels of nutrients is through soil sample analysis. If you did not soil test your tobacco fields in the fall of 2016, you need to do so now. That soil test will also tell you if you need to add lime to correct a low soil pH, which is reason enough to soil test. Low soil pH reduces the availability of fertilizer nutrients you apply to the crop. This can result in wasted fertilizer money, but also in reduced crop yield. Low pH causes "manganese toxicity" (see photo) and stunted, irregular crop growth. Don't assume the pH is okay; soil test to be certain. Lime is not expensive, but the impact of uncorrected low pH is.

Use your soil test results to determine your 2017 fertilization needs for lime, phosphorous (P), and potash (K), along with other nutrients such as boron (B) or sulfur (S). Nitrogen (N) is not generally analyzed in a soil test, because N test levels in the soil tend to be erratic and unreliable indicators of fertilization needs. University Extension recommendations in TN, VA, and NC for burley tobacco generally call for 150-200 lbs. or units of nitrogen per acre, depending on cropping history. Recommendations in KY are similar, with a recommendation of up to 250 lbs./A on fields that are not well drained. Please refer to your local University Extension resources for details and further guidance.

Special Needs for Tobacco. The potash (K) in tobacco fertilizers should come from sulfate of potash (0-0-50), not from muriate of potash (0-0-60). Sulfate of potash can come from straight sulfate of potash (0-0-50), potassium nitrate (13-0-44), or from a complete analysis fertilizer formulated for tobacco (such as 9-18-27 and others listed below).

Another decision is whether to use a pre-formulated "complete" fertilizer or a custom blended fertilizer and whether to buy bagged or bulk. As long as the fertilizer or blend uses sulfate of potash, price plus availability and personal preference generally guide that decision.

Specific examples include:

Commonly available tobacco fertilizers usually include some of the "complete" fertilizers such as 9-18-27, 6-12-18, 5-10-15, etc. Other common tobacco fertilizer materials include diammonium phosphate (DAP), which is a source of N and P with an analysis of 18-46-0; sulfate of potash (0-0-50) for potash or potassium; potassium nitrate (13-0-44) for potash; and urea (46-0-0) for pre-plant nitrogen only, which should never be used as a sidedress.

Your soil test results will guide you in how much P and K are needed. We have created some examples of how to get the total N-P-K needed for a soil testing high in P and medium in K and calling for 60 lbs. of P and 180 lbs. of K per acre. These examples are created for those wanting a total of 200 lbs. of N per acre.

Target: 200-60-180

Option A. Combination of pre-plant (using sulfate of potash for K source) and sidedress.

Fertilizer Material	Amount Applied/A	N-P-K per acre
DAP (18-46-0)	150 lbs.	27-69-0
Sulfate of Potash (0-0-50)	360 lbs.	0-0-180
Urea (46-0-0)	310 lbs.	143-0-0
Pre-plant total		170-69-180
Calcium nitrate (15.5-0-0)	200 lbs. sidedress	31-0-0
Total		201-69-180

Option B. Combination of pre-plant (using potassium nitrate for K source) and sidedress.

Fertilizer Material	Amount Applied/A	N-P-K per acre
9-18-27	350 lbs.	31-63-94
Potassium Nitrate (13-0-44)	200 lbs.	26-0-88
Urea (46-0-0)	217 lbs.	100-0-0
Pre-plant total		202-69-180
Calcium nitrate (15.5-0-0)	280 lbs.	43-0-0
Total		200-63-182

Option C. All pre-plant.

Fertilizer Material	Amount Applied/A	N-P-K per acre
DAP (18-46-0)	150 lbs.	27-69-0
Sulfate of Potash (0-0-50)	360 lbs.	0-0-180
Urea (46-0-0)	380 lbs.	175-0-0
Total		202-69-180

Example 2 is for a soil testing medium in P and high in K, calling for 90 lbs. of P per acre and 120 lbs. of K per acre, with a target of 200 lbs. of N per acre.

Target: 200-90-120

Option A. Combination of pre-plant and sidedress applications.

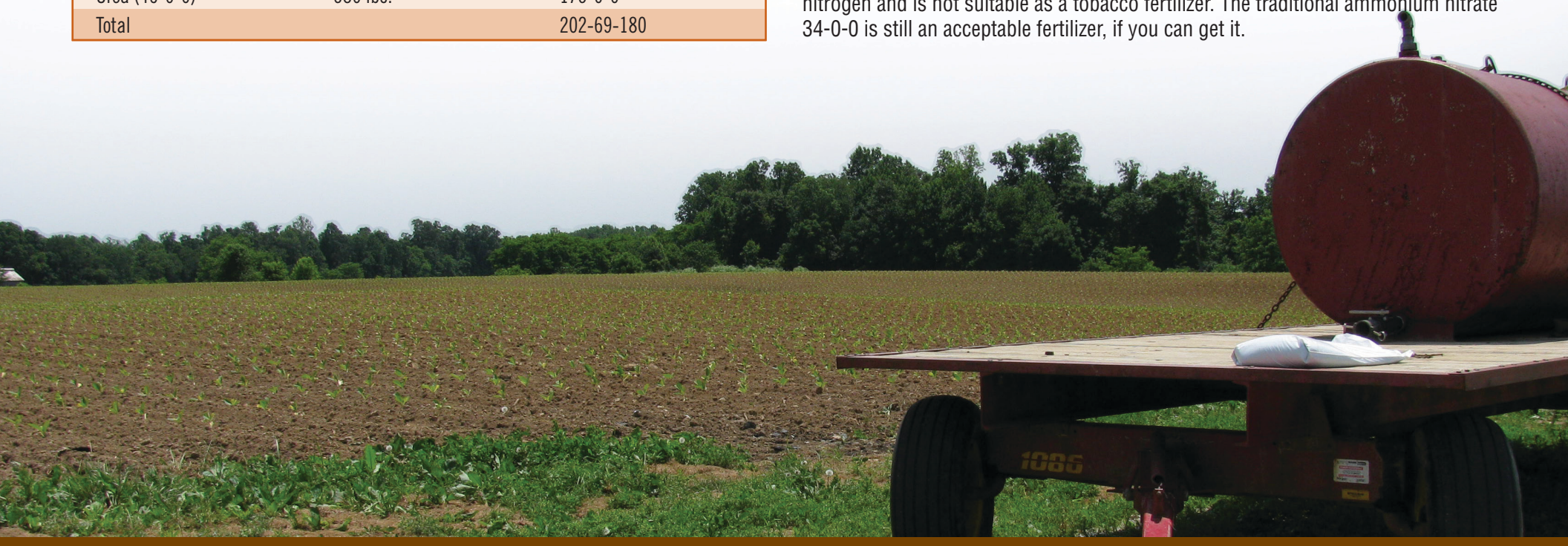
Fertilizer Material	Amount Applied/A	N-P-K per acre
9-18-27	500 lbs.	45-90-135
Urea (46-0-0)	200 lbs.	92-0-0
Pre-plant total		137-90-135
Calcium nitrate (15.5-0-0)	420 lbs. sidedress	63-0-0
Total		200-90-135

Option B. All pre-plant.

Fertilizer Material	Amount Applied/A	N-P-K per acre
9-18-27	500 lbs.	45-90-135
Urea (46-0-0)	340 lbs.	156-0-0
Total		201-90-135

Note about 34-0-0

Ammonium nitrate (34-0-0) has been commonly used in tobacco fertilization programs until recently, because ammonium nitrate has become expensive and difficult to find. Recently, a fertilizer material with the same 34-0-0 analysis entered the market in some areas. This non-ammonium nitrate 34-0-0 is not formulated for tobacco because unlike ammonium nitrate, this material contains slow release nitrogen and is not suitable as a tobacco fertilizer. The traditional ammonium nitrate 34-0-0 is still an acceptable fertilizer, if you can get it.



PAY ATTENTION TO PLANT POPULATION

By Don Fowlkes, Agronomist, BSC

Plant population, or the number of plants per acre, impacts the style of tobacco you grow. It will also affect labor, yield, and barn space.

A generation ago, burley plant populations of 9,000-10,000 plants per acre were common. In the 1980s and 1990s, as crop sizes and labor requirements/costs were increasing, many growers experimented with lowering plant populations. With grower-buyer contracting (2000-present), some growers went to higher populations in efforts to produce flyings (X) and tips (T).

Today, we see a wide range of plant populations. Our 2016 Production Summary records (thank you for filling those out and bringing them to us when you sold) show burley plant populations ranging from less than 6,000 to more than 10,000.

Broadly speaking, tobacco grown at lower plant populations is associated with more bodied and relatively darker color lines compared to tobacco grown at high populations. If you set 8,000-10,000 plants per acre in 2016, try a lower population in 2017, such as 7,000-7,500, and see how you like it. (Some growers like populations lower than that – they are set up to handle tobacco with big stalks and big leaves, often using scaffold wagons.)

There is no single "best" or ideal plant population. Research by Dr. Steve Isaacs (now at UK) and Dr. Darrell Mundy (now retired) at UT in the late 1980s documented several important effects of burley plant population. Yield per acre (not yield per plant) increases with increased plant population, but so do labor hours and barn space requirements. (See the table to the right for yield results from this research.) Most growers want to balance the benefits of reduced labor from lowering plant population with the benefits of increased yield per acre from increasing plant population. These are all based on their individual situations of land, labor, and barn space availability.

A slight reduction in yield/A associated with lowered plant population can be offset to a degree by ensuring an adequate interval between topping and harvest. For example, an additional week on the hill can make a difference, depending on one's normal practices.

In the context of crop style and industry preferences, a grower using a plant population of 8,000 or more who is wanting to produce a darker, more bodied style of burley tobacco should consider lowering his/her plant population to at least 7,000-7,500.

Plant population can be changed by changing your in-row spacing and/or between-row spacing. In-row spacing is usually easier to change than between-row spacing. It also has a greater impact on number of plants per acre than between-row spacing. In-row spacing changes are a matter of changing cogs or other adjustments on the transplanter (depending on the type of transplanter).

Our Production Summary sheets indicated 2016 between-row spacings ranged from 34 to 48 inches. Most common were the 42 and 48 inches. In-row spacings ranged from 12 to 24 inches.

The chart below shows the plant population for various combinations of between-row and in-row spacings. Find your spacings and population and see what widening the in-row spacing does for your plant population. A change of just 2 or 4 inches can make a huge difference.

Pay attention to your transplant spacings and plant population this year. Use a tape measure to check the in-row spacings often. Make sure your between-row spacing is where you would like it to be. With a 1-row or 2-row setter, a small undetected shift can affect plant population more than you may realize.

Plant Population Chart

Number of plants per acre for various combinations of between-row and in-row spacings.

	In-Row				
Between-Row	16"	18"	20"	22"	24"
36"	10,890	9680	8712	7920	7260
38"	10,317	9170	8254	7503	6878
40"	9804	8713	7842	7129	6535
42"	9334	8297	7467	6789	6223
44"	8912	7920	7128	6480	5940
46"	8523	7576	6818	6198	5682
48"	8168	7260	6534	5940	5445

Average yield per acre (lbs./A) for TN 86 grown at various plant populations from the spacings below. Research conducted by Isaacs and Mundy, University of Tennessee (Greeneville), 1985-1990.

	In-Row				
Between-Row	12"	18"	24"	30"	36"
36"	3955 lbs./A	3695	3200	2989	2664
42"	3732	3213	2946	2727	2478
48"	3286	3043	2729	2389	2179
54"	3095	2892	2518	2194	1961

AVOIDING PROBLEMS WITH OFF-TARGET HERBICIDES

G. Neil Rhodes, Jr., Professor and Extension Weed Management Specialist, University of Tennessee Extension

Burley tobacco producers enjoy a long tradition of producing a high-quality crop to help meet industry demand. While leaf quality has always been critical, at no time in our history has it been more important than now. A wide range of factors, including tobacco variety, nutrient management, disease, insect and weed management, topping and suckering, and post-harvest curing and handling affect leaf quality, profitability and grower productivity. Proper management of insecticides, fungicides and herbicides promotes optimum quality in terms of minimization of residues in cured leaf. The industry has proactively addressed this area of concern through directly working with growers and through a rigorous residue screening program.

Of equal importance is the issue of off-target movement of agricultural chemicals, often pasture herbicides, to tobacco fields. Instances of movement of synthetic auxin herbicides, such as 2,4-D and dicamba onto tobacco fields are well-documented over the last several decades. These unfortunate episodes continue to result in expensive fines and/or lawsuits; lost time, productivity and profitability for tobacco growers; crop rejection, and bad publicity for our industry. The development of "second generation" pasture herbicides, including aminopyralid (one of the active ingredients in GrazonNext HL), has increased the importance of this issue. Residues of these chemicals are much more persistent in plants and soils than 2,4-D and dicamba. The chemistry of these newer herbicides is very similar to picloram, an active ingredient in Grazon P+D, Tordon and other herbicides.

The bottom line: While synthetic auxin herbicides such as 2,4-D, dicamba and others are excellent materials for pasture weed management, they do not belong in tobacco. Tobacco is extremely sensitive to these herbicides; because "a little goes a long way" in terms of jeopardizing marketing of your crop. Fortunately, careful planning and diligence can prevent costly mistakes. The following are some suggestions.

Understand the factors that lead to herbicide drift. Herbicides can move off-target or drift in two ways: physical movement of spray droplets by wind, and by volatilization, which is the change of herbicide from a liquid to a vapor. The most frequent cause of herbicide drift is simply spraying when it is too windy. Having said that, completely calm conditions can also present risks in that temperature inversion (cool air close to the ground with warmer air above) may be present and winds can suddenly pick up without notice. The ideal situation is when there is a slight, steady breeze blowing from the tobacco field, rather than towards it. Producers are advised to use spray nozzles that produce relatively large droplets, set the pressure according to the nozzle manufacturer's recommendations, set boom height as close to the ground as possible while maintaining even spray coverage, and consider leaving unsprayed buffer zones near tobacco. Drift reduction additives may help, but they should only be used as one part of a well-planned drift prevention program; they cannot turn a day when the sprayer should be parked into a good day to spray.

With a sensitive crop such as tobacco, vapor drift can be just as damaging. The main factors that influence volatilization are the herbicide active ingredient and formulation and temperature. Pasture herbicides that present the greatest risk of vapor drift are 2,4-D ester and most formulations of dicamba. It is very important to remember that the term "low volatile ester" is very misleading. Low volatile ester, or as it is often labeled, 2,4-D LVE, is much more volatile than the salt or amine formulations of 2,4-D. The risk of volatilization of 2,4-D and dicamba increases as the temperature increases above 80 F and becomes substantial at 85 F and above. It is very important to remember that volatilization can happen not only on the day of application, but also for the next few days after application.

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OFF-TARGET HERBICIDES *continued*

Know your neighbors and be sure your neighbors know you. If you have a neighbor who has pastures and fence rows that might be sprayed, be sure they know the location of your tobacco fields. Make sure that they understand the sensitivity of tobacco to pasture and fence row herbicides and the factors that are involved in herbicide drift. Visiting with them ahead of time can go a long way toward preventing problems. The recent advent of dicamba tolerant soybean weed control programs will make this even more important for your tobacco.

Never use your tobacco sprayer to apply pasture herbicides. Pasture herbicides are very difficult to wash out of sprayers. Because of the sensitivity of tobacco to pasture herbicides, even minute traces of chemicals, such as 2,4-D, can cause serious damage. If you have pastures to spray, have a dedicated sprayer and don't use it in your tobacco.

Carefully plan rotations, movement of cattle, and use of manure. Aminopyralid and picloram will persist in soil, treated pasture grass and hay, and in manure produced by cattle that have grazed in treated pastures or that have been fed treated hay. These herbicides should only be used in permanent grass pastures or hayfields. They have no place in a crop rotation system. Take care when moving cattle that have grazed pastures or have been fed hay treated with aminopyralid or picloram to fields that you are planning to rotate to tobacco. Holding the cattle in an untreated pasture or loafing lot and feeding them untreated hay for a week before moving them to the field to be rotated will eliminate the problem. Similarly, manure from cattle that have grazed treated pastures or have been fed treated hay should not be spread on tobacco fields.

Ask the right questions if you are considering renting ground for tobacco production. Do not hesitate to ask the landlord for the history of herbicide applications for the past 5 to 6 years. This applies to fields that have been in row crop production, and it is particularly important for pastures or hay fields.

While following these suggestions will not completely eliminate the possibilities of problems, they will help you in the upcoming growing season. For further information, please contact your local county Extension office. You can also visit our herbicide stewardship website at herbicidestewardship.com for additional information.

BSC Today

In keeping with traditions that began with its founding in 1953, BSC serves its customers with integrity as a responsible global supplier of premium quality U.S. tobacco.

BSC is committed to grower sustainability through transparent business operations and the support of educational and research programs, and the implementation of Good Agricultural Practices (GAP). This commitment focuses on economic viability through quality leaf, safe labor practices, and respect for the environment.

Tobacco Tidbits

Twenty years ago: selected burley tobacco production statistics for Tennessee in 1997.

Selected Counties	# tobacco farms	Basic Quota	Effective Quota	Marketings
Claiborne	3,019	6.1 mil. lbs.	8.7 mil. lbs.	4.8 mil. lbs.
Grainger	2,098	3.6	5.2	3.0
Greene	5,533	11.5	17.4	8.9
Hawkins	4,060	6.0	9.0	4.3
Macon	2,049	4.9	6.8	8.0
Montgomery	1,359	2.4	3.3	3.2
Robertson	1,824	2.7	3.8	5.7
Sumner	2,639	5.8	7.6	5.1
Washington	3,423	5.8	8.9	5.7
Tennessee total	76,898	122.7 mil. lbs.	178.5 mil. lbs.	93.1 mil. lbs.

Source: Tennessee FSA

Small volumes of burley tobacco were grown in Kentucky as early as 1838. Among the many varieties of the dark, leathery air-cured leaf were stand up, rainbow white, red twist bud, little burley, and red burley (the most commonly grown variety).

bsc
Burley Stabilization Corporation
835 Bill Jones Industrial Dr.
Springfield, TN 37172