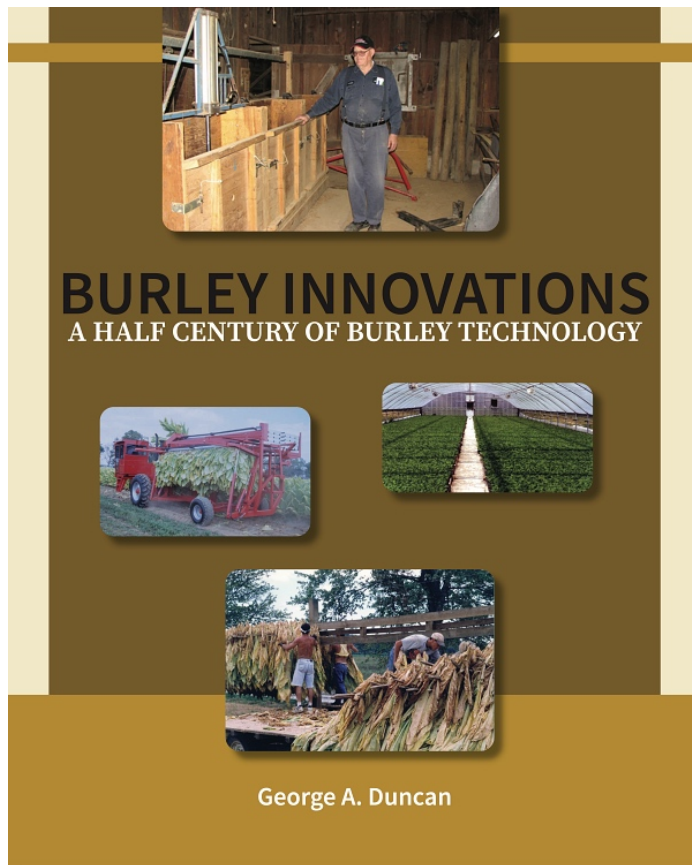




This book describes numerous innovative methods, structures, machines and methods that have been devoted to Kentucky agriculture, particularly burley tobacco, over a half century of the golden leaf era.

BURLEY INNOVATIONS: A HALF CENTURY OF BURLEY TECHNOLOGY

By George A Duncan

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BURLEY INNOVATIONS

A HALF CENTURY OF BURLEY TECHNOLOGY



George A. Duncan

ABOUT THE AUTHOR

GEORGE A. DUNCAN, PHD, PE

George A. Duncan devoted a professional career to advancing technology for Kentucky farmers, families and businesses. He began life as a youth, as the only child of Dillard and Elizabeth Duncan on the small family farm near Auburn, Kentucky, tinkering with an erector set, a Lionel train set and a few other ‘modern’ toys in the 1940s. He ‘invented’ his special motorized bike with a 2x8 board, a salvaged one-cylinder gasoline engine and the front and rear assemblies of a scrapped bicycle into a V-belt driven bike. Push-off to get started and short the spark to stop! *The first powered skate-board!* What a fascination and pleasure as a pre-driver to go visit friends and shoot hoops a few miles away on Sunday afternoons.

Adjusting and maintaining a small assortment of farm machinery under his Dad’s watchful eye honed his skills with mechanical devices. Fabricating transistorized circuits from *Popular Electronics* opened his perspectives to the world of future computer technology. His school teacher-mother made sure he did his homework on time, completely and accurately.

In his junior year at Auburn High he read an article about a new curriculum at the University of Kentucky-Agricultural Engineering! That was it—engineering in agriculture! He packed up his new clothes in the fall of 1957 and left home for the first time in his life. A four-year Kentucky Farm Bureau scholarship paid a large portion of tuition and lodging in those years.

Upon completing dozens of class papers, a thesis, hundreds of news articles for the Cooperative Extension Service, journal papers, a dissertation, sharing family life with a wife for sixty-plus years and three wonderful children, spouses and two grandsons, I am completing a book on my personal experiences and with colleagues on burley technology over half a century.

I retired in 2007 as Extension Professor and Extension Specialist from the Biosystems and Agricultural Engineering Department, University of Kentucky College of Agriculture, Food and Environment with fifty three years as student, staff or faculty.

For you who have dealt with the golden leaf, I trust you will share in the joy of reminiscing the tough days and searching for those wonderful labor-saving methods and machines that have been attempted. For all readers, read on with interest about more than 140 burley innovations and trials with new burley technology and the people who blazed the trail.



George Duncan

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EPILOGUE

Tobacco has been an important crop for domestic and export use since colonial days. The value of the crop was a major factor in old country and new country trade during those early years. The discovery of a special yellowish plant in the 1870s led to the prominence of 'burley' as a distinct crop in Kentucky and surrounding states for the last century.

The production of a burley crop was, and still is, labor intensive. Many efforts have been made to 'mechanize' the crop. The bulky plant was not easily handled by machinery. Traditional curing was a slow natural-air process occurring over a five- to six-week period. Harvested plants were sheltered and exposed to rather narrow moisture (relative humidity) and temperature ranges. Kentucky's fall climate and the burley curing environment were compatible to produce the tan to brown color and quality leaf desired by the commercial companies.



Fig. 10-31 An era has ended. Copy from Bowling Green Daily News (KPNS).

machines, 18 leaf removal (stripping) devices, and over a dozen curing barn and lower cost field structure plans. Small harvesting aids had the greatest number of commercial fabrication and sales—over 300 machines. Additionally, about a dozen of the pull-type notching harvesters and three of the automated-notching harvesters were manufactured and sold. Several hundred of the tobacco leaf removal machines were fabricated and sold in a three to four year flurry of purchases.

Creative designs and innovations by universities, entrepreneurs and commercial entities have sought to reduce the toil and drudgery of burley production labor through mechanization while maintaining or improving the quality of the leaf. Notable success has been achieved with reduction of the total worker-hours from over 310 worker-hours per acre to approximately 153 worker-hours per acre in the last half century.

Numerous technological innovations have been reviewed and presented in this book, including 19 prototype harvesting

Major improvements were shown for float bed transplant production, carousel transplanters, hiboy sprayers, more labor efficient barn and curing structures and loose-leaf baling.

Float-bed transplant production was rapidly adopted by producers and replaced plant beds in less than a decade.

Loose-leaf baling techniques and regulation changes took six years to be tested and approved, and four years to take over 90 percent of the market. The loose-leaf baling method was credited with saving Kentucky producers about \$30 million per year in labor costs.

Likewise, genetic improvement of varieties provided greater yields, sustained quality characteristics and gave more disease resistance. Efficient fertility practices and approved chemicals contributed further to profitable production.

The golden years of burley production have flourished and faded. Decreasing domestic usage and reduced commercial demand for high quality burley along with foreign competition took a toll on burley production. The 2019 production was the lowest Kentucky acreage (41 thousand acres) and poundage (77.9 million pounds) since the 1930s.

Air-cured burley production has tumbled from the ridges and valleys of Kentucky and other states never to be restored to crop dominance again. Alternatives to tobacco have been proposed and tried. Increasing all field crop, cattle, swine, horse, poultry, forestry, greenhouse, specialty crop and other enterprises will help compensate for the loss. Burley producing families must adapt and change. There is no other choice to sustain the agricultural livelihood of Kentucky farmers.

A Farewell Tribute to Burley

Air-cured burley once stood tall,
then air-cured burley had a great fall.

All the domestic tobacco leaders who tried to sustain
couldn't return air-cured burley to dominance again.

Air-cured burley long reigned as king,
it made the cash registers ring.

The leaf was good as gold,
Christmas came when the leaf sold.

Mortgages and loans were paid,
tuition and clothes deposits made.

Once the golden leaf was proudly engraved on public edifices to adorn
but eventually the product succumbed to public scorn.

Epilogue

Market demand vanished from the hills and vale
never again restored for extensive sale.

Scientific endeavors faded like a mystery,
technological innovations became history.

There laid hands of burley
all neat and non-curly

replaced by a loose-leaf bale
ready for highest-bid sale.

Its destiny vaguely known,
might never be replaced by a new crop grown.

What else is there to grow
the farm community would like to know.

Farming must go on
when burley is gone.

The youth have left home
to seek degrees and the world roam.

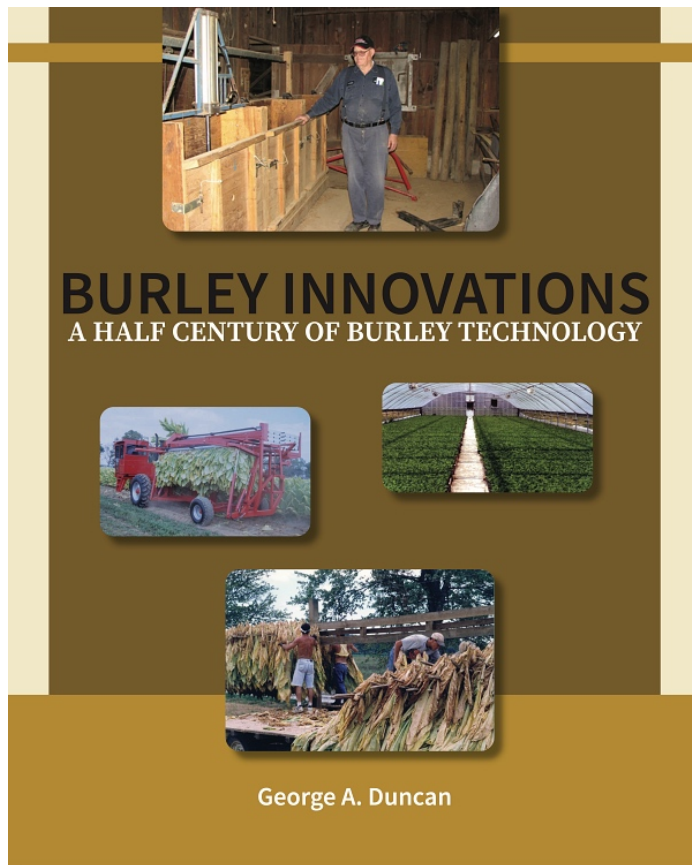
Parents left looking out the windows early
longing to see a golden crop of burley.

Forever we shall remember the days
when burley was revered and paid the ways.
Never again, farewell burley.



Fig. E-1. Mature burley plants ready for harvest.

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September 29, 2020



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