

Kentucky FARM AND HOME *Science*

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READ—

Physical
Properties of
Cigarettes

Reducing
Tobacco
Labor

Older Men's
Economic
Problems

Agricultural
Science
Center

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The Cover



This tractor with fork-lift attachment shows the ease by which loaded tobacco frames can be transported from the field to the curing barn. Loading the frames is illustrated on page 5. An article describing some of the research underway by U.K. agricultural engineers to reduce tobacco labor starts on page 4.

Old-time Regular Cigarette Contains More Tobacco Than Filter Type

U.K. agronomists continue research on cigarette physical properties; study began in 1956

By **FRANK B. BORRIES, JR.**
Department of Public Information

The old time regular cigarette—except for the “king-size” non-filter—contains more tobacco than its newer cousin, the popular filter type.

That's one finding of the U.K. Ag Experiment Station's agronomy department's investigation into physical properties of cigarettes. The project is continuing.

Agronomist W. O. Atkinson says the trend toward “smaller” cigarettes—smokes of less circumference or with filter tips which replace some of the tobacco—started several years ago. The trend apparently has slowed now.

Other things noted in the lengthy check are (1) higher use of reconstituted tobacco; and (2) a gradual trend toward lower nicotine content (making a milder smoke). The six big companies now use reconstituted tobacco in varying amounts; reconstituted tobacco is ground-up leaves, stems and fragments

rolled into long, flat sheets with an adhesive material added, reshredded and used in cigarettes. The practice allows use of perfectly smokable tobacco materials formerly discarded as waste. The process is sometimes called “homogenization.”

Nicotine content has dropped from a former average content of 2.5 percent (or even higher) to an average of about 1.5 percent, with a top of only 1.75 percent.

The initial investigation began about 1956, Atkinson said. Leading brands from the top six manufacturers are purchased at varied locations in the U.S. The brands studied constitute an estimated 90 percent of cigarettes produced in the U.S.

The samples (two cigarettes from each package) are stripped down and the tobacco separated into component parts, i.e. flue-cured, burley, Turkish, stem, and homogenized (reconstituted) fractions. Of the remaining cigarettes, 10 are weighed and measured for tobacco column size and filter length. Then the tobacco is analyzed for alkaloid content (nicotine percentage).

Cigarette Size Decreased

For a time during the investigation, the size of the cigarettes was found to be decreasing. This was due chiefly to either a smaller tobacco column or an increased filter length.

This trend continued until about 1959, Atkinson said. Since then, sizes have remained about the same.

“Except for the king-size (non-filter) cigarette, we found that by 1959 no cigarette contained as much tobacco as the old so-called ‘regular’ cigarette,” he said.

Filter-tip cigarettes began to be very popular about 1955, he said. The smaller circumference of cigarettes and the use of filters meant tobacco companies could make more cigarettes from the same amount of tobacco.

Use of reconstituted tobacco started about the same time. At first only three major companies used it to any extent. But by early 1960, all six major manufacturers were using reconstituted tobacco in varying quantities—enough in volume that it was apparent the cigarettes were not experimental types. Atkinson noted

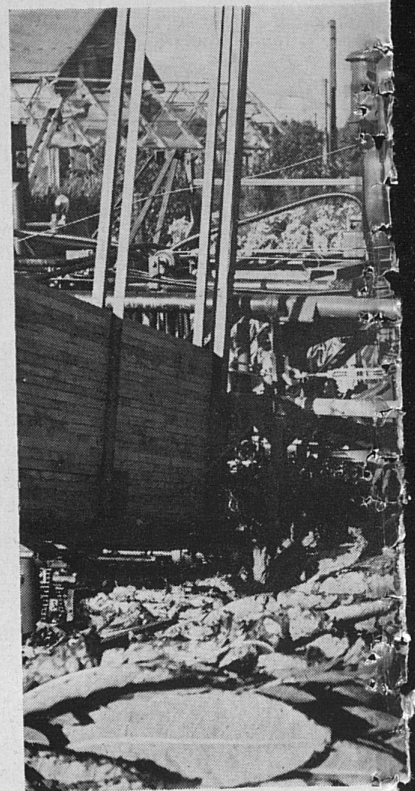
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Agronomy staff member, Mrs. Grace Shepherd, separating a cigarette into its component parts—is on phase of the research on cigarette physical properties.



Rear view of the tobacco harvester (pilot model). Tobacco plants come from the right front, are cut, conveyed to position of cylinder in bottom foreground, speared automatically, and then transferred to tobacco stick. The loaded sticks are transferred to an accompanying wagon by the broad canvas belt on which loaded sticks are now lying.



TWO DEVELOPMENTS TRIED BY AG ENGINEERS WHO Seek Ways to Cut Tobacco Labor

By FRANK B. BORRIES, JR.
Department of Public Information

Two devices designed to cut tobacco-crop labor considerably are still being "researched" by the Kentucky Agricultural Experiment Station.

They are a tobacco-harvesting machine and a system of loading and carrying to the barn sticks of tobacco from the field.

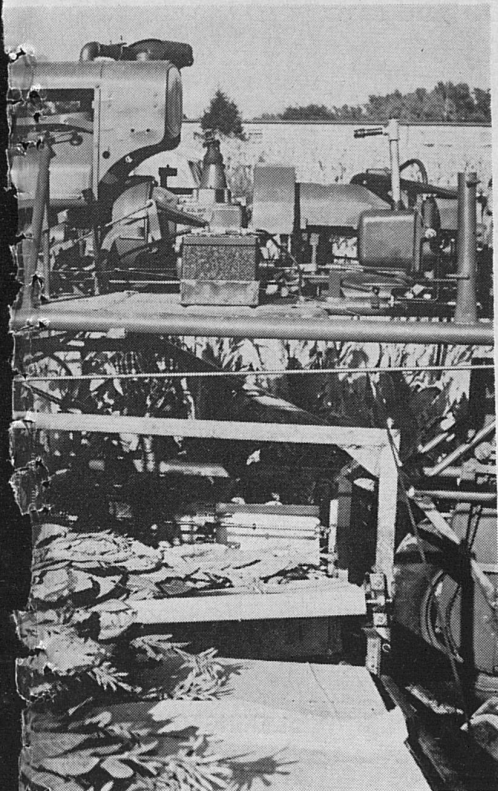
Both are still in the experimental stage. However, the tobacco harvester was tried on a field crop this year and worked better than its agricultural engineer designers and builders had thought it would.

The other system—open frames 12 feet long, 8 feet wide and 5 feet high, made of 2x4 lumber—also was tried. The open frames were loaded with sticks of tobacco in the field, transported to a barn, and stacked by a fork-loader attachment on a tractor. Proponents

of this system see many possible uses and emphasize its potential value first as a labor-saver, and second, as a departure from the use of costly tobacco barns.

Work on the harvester has been in progress for more than two years. It is a fairly complicated machine because of the many operations involved in cutting, spearing and placing stalks on sticks and loading them on a wagon. Yet, despite its inherently complicated nature, the machine essentially is simple in design.

The standing tobacco is cut by two circular cutter blades at the front. The cut stalk is then transported to the rear and held in position for a fixed, metal spear. As the stalk is speared, it topples slowly from an upright position to a horizontal one. The stalk then is moved up over the spear and a tobacco stick is inserted by stages through the split in the stalk. When a stick is loaded with a certain number of stalks, it is automatically deposited on a wide canvas belt and re-



(Left) Side view of harvester in operation. Tobacco stalks in foreground have been put on sticks; canvas belt is moving them to pickup wagon (not shown). Sticks are racked at left in vertical magazine and fed automatically from bottom of the pile.

moved from the harvester directly to either the ground or an accompanying wagon.

Warren Smith, designer and builder, was pleased with its first field operation recently.

"It had some 'bugs' in it that we'll have to work out. But it worked better its first time out than any other machine we've ever run across that was fresh from the drawing board. It has great possibilities."

The "bugs" are considered minor. In one case, the operators had difficulty regulating the device by which the loaded stick is detached and a fresh stick dropped in the loading position behind the fixed spear.

The potential value of the machine as a labor-saver is considerable. It is designed to handle about six sticks a minute. The average man can cut and spear about one and a half sticks a minute.

Loading Frames Used

The open-frame storage device also is promising. It would enable a producer to rack his loaded sticks in the field, haul them to the barn, and stack them atop each other in the barn.

E. M. Smith, engineer, says the system is definitely NOT a curing device. Tobacco in these open frames still must be cured as usual. But, by placing the loaded

(Continued on Page 7)



Field workers on a central Kentucky farm placing sticked tobacco into open loading frames. The fork-lift attachment on the tractor (left background) enables the operator to haul the loaded frames to the curing barn and stack them atop each other. If successful, the system would eliminate much of the customary barn labor and would also reduce safety hazards associated with housing tobacco.

Interviews with 532 Casey County and Lexington men 60 and over reveals contrasts between rural and city dwellers in a study of

Economic Problems of Older Men

By E. GRANT YOUMANS¹
Department of Rural Sociology

In recent decades public attention has been focused upon the many social and economic problems confronting older persons in the United States. Very few systematic studies, however, have been made comparing the economic conditions of rural and urban older persons.

In 1959 a representative sample of men aged 60 and over living in Casey county and Lexington, Kentucky, were interviewed in their homes.² The Casey county sample (all rural) numbered 312 and the Lexington sample (all urban) 220. No men in institutions were included. They were asked questions about their work and retirement, about their income, property, and housing, and about any feelings of deprivation that they might have.

Economic Conditions

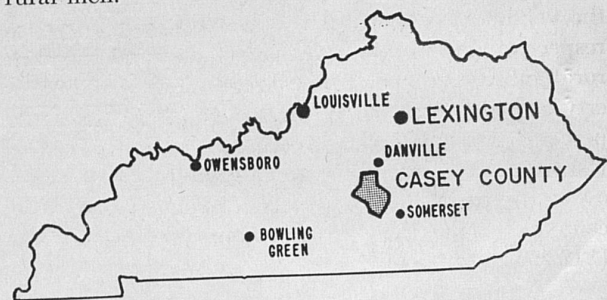
Half the men (48 percent) reported they were employed, and a larger proportion of rural than of urban men were working (52 and 42 percent). Men in the higher status occupations tended to remain in the work force longer than those in the lower status jobs. Retired men said poor health was the main reason for retiring.

The average annual income of the men was \$1,130. Four percent of them had no income, and 9 percent had annual incomes of \$5,000 or more. Urban men had markedly higher average annual incomes than the rural men—\$2,256 and \$815, respectively.

Most (93 percent) of the men lived in private homes, and 73 percent owned their own homes. Less than half the homes (45 percent) were rated in good condition (that is, with no major defects) and about one-third (36 percent) were rated as clean, neat, and

attractively furnished. The urban men's homes were in much better condition than the rural men's homes.

The average value of the property and assets owned by the men was \$5,055, a figure which included the value of insurance policies and other intangibles, as well as real property. Ten percent of the men had no assets, and 11 percent owned some property but valued it at less than \$1,000. Seven percent valued their property at \$30,000 or more. On the average, urban men valued their property much higher than did the rural men—\$9,393 and \$3,943, respectively. The urban men also owned or had access to many more facilities and equipment in the home than did the rural men.



The 532 men surveyed lived in Casey County and in Lexington. Casey County, in south-central Kentucky, is relatively isolated from any large urban area.

Economic Losses With Age

The economic conditions of the oldest men (aged 75 and over) were decidedly inferior to those of the youngest men (aged 60 to 64). Eighty-eight percent of the rural men aged 60 to 64 were employed, but only 28 percent of the rural men aged 75 and over were working—a difference of 60 percentage points. Among urban men, the difference in the number employed was 58 percentage points—from 76 percent of the youngest to 18 percent of the oldest being employed.

As might be expected, income losses with advances in age coincided with changes in employment status. The average income of the oldest rural men (\$668) was 40 percent less than the average income of the youngest rural men (\$1,105); that of the oldest urban men was \$1,399, 58 percent less than the average of \$3,333 for the youngest urban men.

¹ Economic Research Service, U. S. Department of Agriculture.

² The survey was made jointly by the Department of Rural Sociology, University of Kentucky, and the Farm Population Branch, Economic and Statistical Analysis Division, Economic Research Service, U.S. Department of Agriculture. A more detailed progress report on the economic status of older men in Kentucky, by E. Grant Youmans, is Kentucky Agricultural Experiment Station Progress Report 105, "Economic Status and Attitudes of Older Men in Selected Rural and Urban Areas of Kentucky."

Housing conditions of the youngest men were better than those of the oldest men.

Among rural men, a comparison between the youngest and oldest showed (1) no decrease with age in the percentage living in private homes, (2) a decrease of 10 percentage points in home ownership, (3) a decrease of 9 percentage points in the proportions of homes rated in good condition, and (4) a decrease of 7 percentage points in the proportions of homes with good upkeep.

Among urban men, a comparison of the housing conditions of the youngest and oldest men showed (1) a decrease with age of 9 percentage points in the proportions living in private homes, (2) a decrease of 15 percentage points in home ownership, (3) a decrease of 7 percentage points in the proportions of homes in good condition, and (4) a decrease of 24 percentage points in the proportions of homes with good upkeep.

The oldest men owned markedly less property than the youngest men, and the percentage differences, in respect to age, were approximately the same for both rural and urban men. The average value of the property owned by the oldest rural men (\$3,555) was 34 percent less than the average for the youngest (\$5,417). Similarly, the average value of the property owned by the oldest urban men (\$7,916) was 35 percent less than that of the youngest urban men (\$12,272).

Economic Deprivation

Since the economic conditions of the oldest men (75 and over) were decidedly inferior to those of the youngest men (aged 60 to 64), it might be expected that the oldest men would be more dissatisfied with these conditions. This expectation was not supported by the responses of the men. The men were asked two questions about their economic situation: (1) "Are there any things you dislike about your present living quarters?" (2) "Do you have to go without some things because you don't have enough money?"

One-fourth of the total sample of men said there were some things they disliked about their living quarters, and two-fifths said they went without things because they lacked money. However, it was the youngest men (aged 60 to 64) and not the oldest men (75 and over) who expressed the greater dissatisfaction with their economic situation. A slightly larger proportion of the youngest than of the oldest men said they disliked their living quarters (26 and 23 percent), but a markedly larger proportion of the youngest than of

the oldest men said they went without things because they did not have enough money (52 and 38 percent).

Several hypotheses may be suggested to account for the greater dissatisfaction among the youngest men. The youngest men were more actively engaged in productive work. They probably had greater economic responsibilities, higher expectations for economic achievements, and more unmet wants and needs. They consequently felt more deprived economically. In contrast, the oldest men were less involved in paid work. They probably had fewer economic responsibilities, lower expectations for economic achievements, and fewer unmet wants and needs. They consequently felt less deprived economically than did the youngest men. With advances in age, the men appeared to have made adjustments to their economic conditions.

Seek Ways to Cut Tobacco Labor

(Continued from Page 5)

sticks in the open frames, the operator can avoid the standard housing of the sticks in high barns. The holding frames, it is pointed out, are loaded with the same spacing as sticks actually put on the barn tier rails (9 inches apart).

A fork-lift on a tractor can stack the frames as high as 20 feet, even higher if a producer wanted to purchase a special-type fork lift. This of course would avoid the expensive, laborious, and hazardous system of handing single sticks upward from the ground by hand until the barn tiers are filled from the top down.

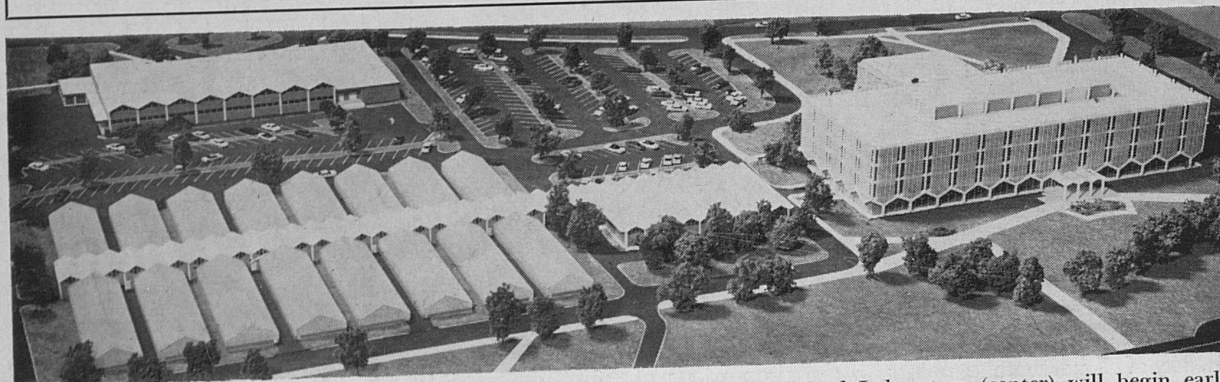
It also could be a labor-saver at stripping time, too, because the fork lift can take down the open, loaded frames quickly. Producers today must send a crew back up into the barn to hand down the loaded sticks. This is expensive and also hazardous.

Creeping Alfalfa Variety Work Shows Promise

U.K. Agricultural Experiment Station agronomists say they have developed some creeping alfalfa plants which may grow successfully in Kentucky. Such plants spread by underground "creepers."

Creeping alfalfa, which has been available in far-northern states but not adapted here, is valuable for many reasons. One is that such a variety would tolerate cattle grazing much better than standard, non-creeping varieties. A second is that reseeding would not be necessary so often. A third reason is that seeding rates might be lower.

U.K. Agricultural Science Center



This is the architect's model of the new Agricultural Science Center, to be constructed on the University Farm, immediately south of the Medical Center. Building of the first three greenhouses and header house (left) is already underway. Construction of the main Laboratory and Office Build-

ing (right) and Seed Laboratory (center) will begin early in 1962. In the upper left corner is the Food Technology and Animal Nutrition Building. It and the remainder of the greenhouses and header house will be erected later as additional funds become available.

Cigarette Physical Properties

(Continued from Page 3)

that the reconstituted material is used to a greater degree in filter cigarettes. The content of cigarettes as to type of tobacco—flue-cured, burley, Turkish, etc.—remains in a "fairly narrow range."

The proportions cannot be held to precise percentages. This is due principally to the quality or total available supply of flue-cured or burley crops each season. One year's crop might make it necessary to use less burley or less flue-cured; the next year the maker might have to use more burley or more flue-cured. An example of this was a physical analysis of a cigarette brand from *one* company, purchased in five U.S. locations. The burley content range, for instance, ran from 31 to 44 percent despite the fact this was only one brand. (Maryland, a burn-quality tobacco used in cigarettes, was included with burley because of the difficulty of separating the two types by sight alone. It is an estimated 3 to 5 percent of most brands.)

Atkinson said the investigation shows a slight decrease in the percentage of burley in most brands this year (1961); but he thinks that an increase in total number of cigarettes manufactured is responsible.

"There has been a steady trend to lower nicotine content during the study. No doubt some of this is due to the tobacco crops available. A good growing year means less nicotine in the plants. Part of it is also due to the use of the reconstituted tobacco used in filter cigarettes. Stems, lower in nicotine content, are used in reconstituted tobacco along with adhesives which act as dilutents," he explained.

Atkinson said it was "not unusual" a few years ago to find cigarettes with a nicotine content of 2.5 percent (or higher). Now the average is about 1.5 percent, with a top of 1.75 percent. Some newer brands are as low as 1 percent.

Apparently the companies are heeding consumer desires for lower nicotine content, since the lower nicotine level implies a milder smoke.

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