

turning knowledge into practice

Tobacco Farmer Diversification: Implications for Tobacco Control

Presented by

*Robert H. Beach, PhD¹; Alison Snow Jones, PhD²;
and Stephen A. Johnston, PhD¹*

¹RTI International; ²Wake Forest University School of Medicine

Presented at

*The 133rd Annual Meeting of the American Public Health Association
Philadelphia, PA, December 10–14, 2005*



3040 Cornwallis Road
Phone 919-485-5579

■ P.O. Box 12194 ■
Fax 919-541-6683

Research Triangle Park, NC 27709
e-mail rbeach@rti.org

Outline

- Study overview
- Changing conditions in tobacco production
- Tobacco farmer interest and success in diversification
- Implications for tobacco control

Original Study Research Questions

- Can an intervention promoting tobacco diversification lessen the dependence of tobacco farmers on tobacco-related income?
- Assuming tobacco dependence is reduced:
 - As tobacco farmers become less dependent on tobacco, will their attitudes towards tobacco control policies change?
 - As tobacco farmers become less dependent on tobacco, will their attitudes towards tobacco manufacturers change?

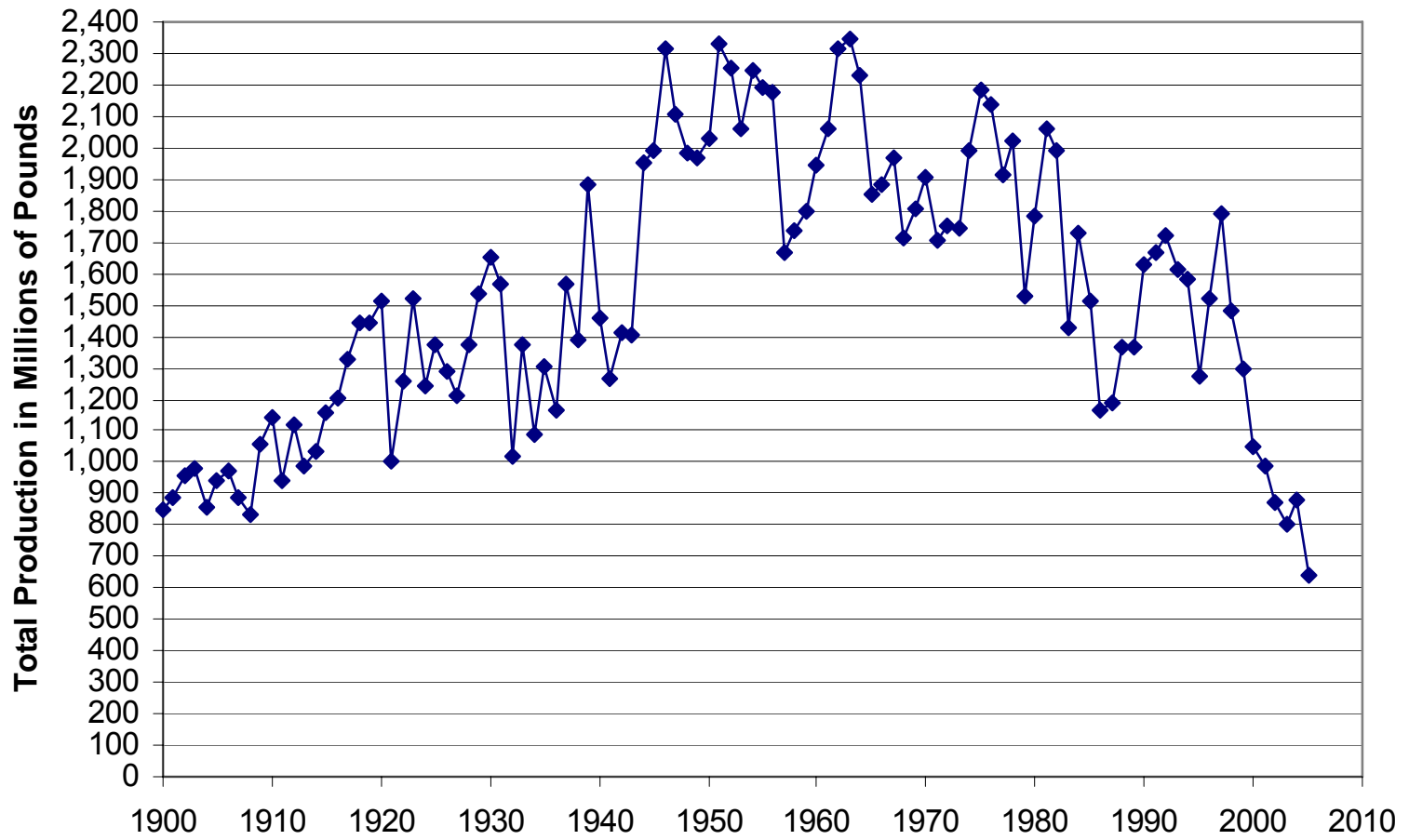
Study Overview

- Develop survey and collect data from NC tobacco farmers on farm and household characteristics, tobacco production and marketing, and attitudes regarding various programs, policies, and entities affecting tobacco markets
 - Largest tobacco-producing state, about 40% of national production
- Evaluate tobacco farmer attitudes towards and interest in diversification into alternatives to tobacco
- Examine ability of tobacco farmers and tobacco-dependent communities to adjust to changes taking place
- Track changes in attitudes towards tobacco control and tobacco manufacturers over time
- Evaluate effectiveness of providing information about diversification opportunities and funding sources to tobacco farmers

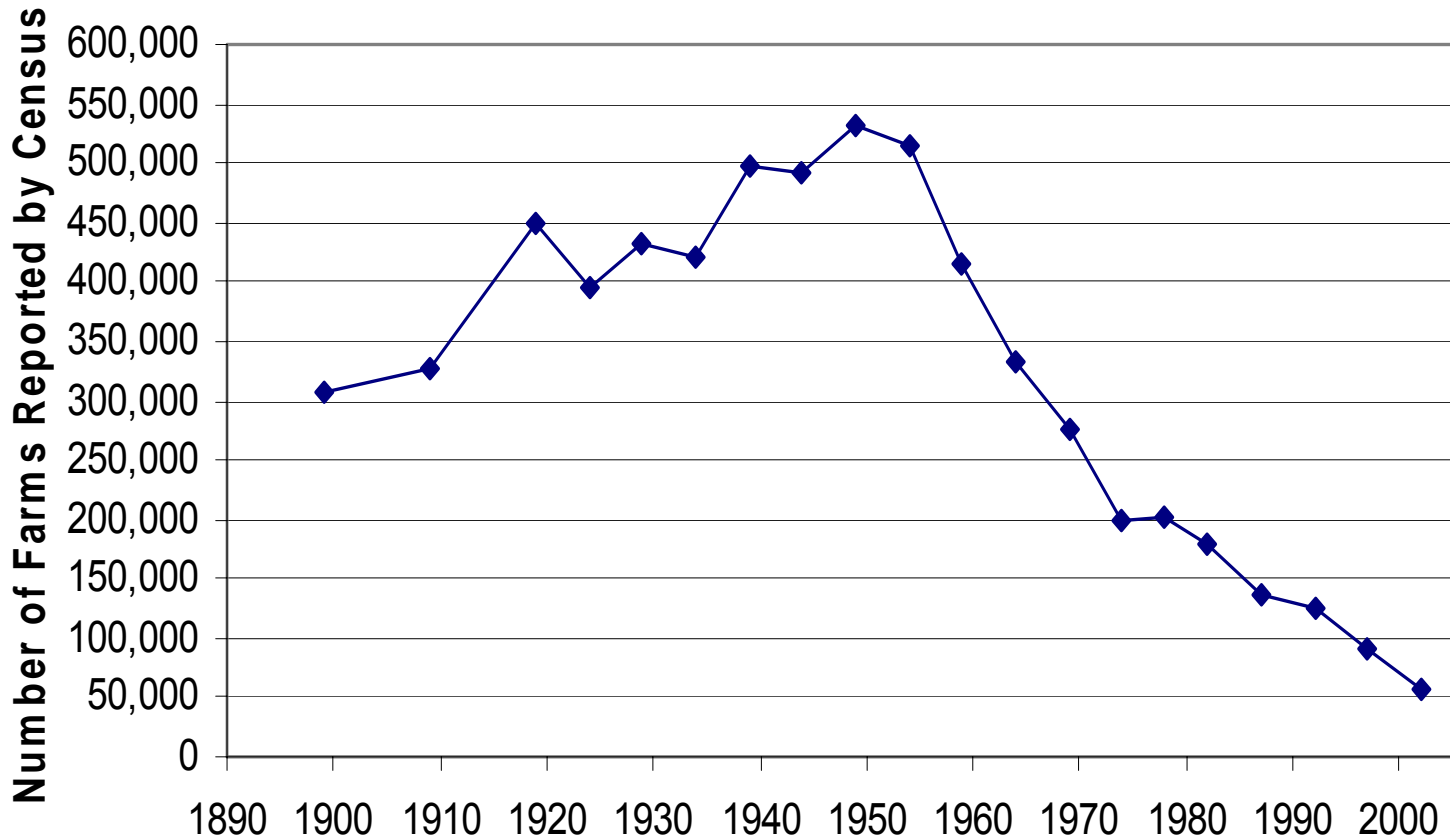
Rapidly Changing Tobacco Market Conditions

- Falling demand for domestic tobacco
- Increasing reliance on international trade
- Rising production costs
- Sharp reductions in quota levels, followed by October 2004 termination of the quota system and price supports
- Rapid development of direct contracting with manufacturers
 - From very little before 1999 to 80% of flue-cured by 2001
- Following long period as highly profitable crop, USDA data have shown negative residual returns in 4 of the past 5 years

U.S. Tobacco Production



U.S. Farms Growing Tobacco



Tobacco Quota and Price Support Programs

- Quota program with price supports was instituted in 1930s to limit production and keep prices up
- Farmers had to own or lease marketing quota to grow tobacco
 - Right to grow could not be transferred across county lines (except burley tobacco in TN)
- Contributed to making tobacco a very profitable crop
- Over past 30 years, US prices rose to about 50% higher than world price
 - Percentage of imported tobacco soared
- Quotas were cut by about 60% between 1997 and 2004
 - Number of farms growing tobacco dropped by 39% between 1997 and 2002

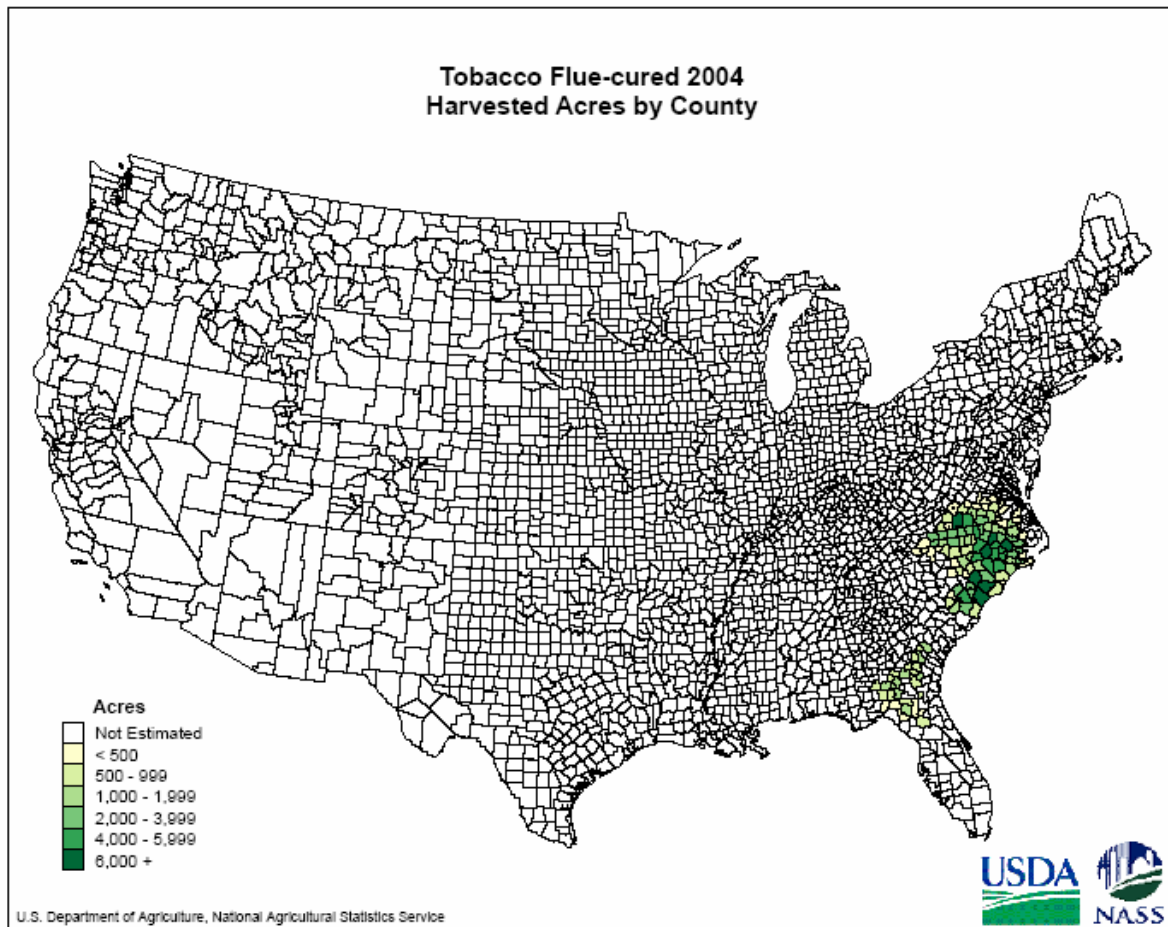
Tobacco Quota Buyout

- Removal of quotas and price supports will
 - Lower tobacco prices
 - Allow geographic relocation of production
- Expected to speed transition to fewer, larger tobacco farms
- Smaller and older farmers are likely to stop growing tobacco
 - In our most recent survey in Jan 2004 (pre-buyout), about a third of respondents indicated they would exit if there were a buyout
- Tobacco farmers and quota holders will receive buyout payments for the next 10 years to aid in transition, though top 20% of recipients will receive about 80% of payments

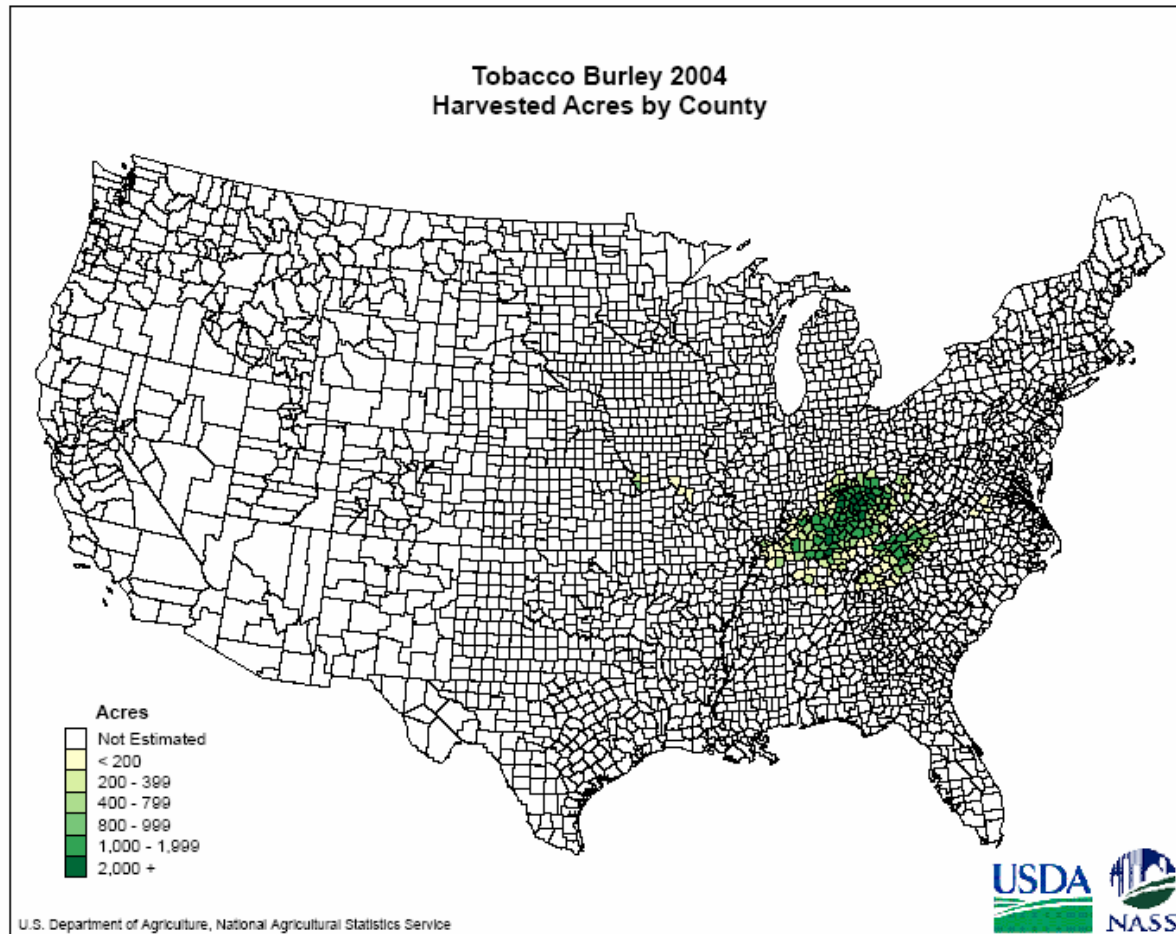
Diversification

- As the number of tobacco farms and income from tobacco has declined, there has been a great deal of interest in developing alternative sources of income, particularly in tobacco-dependent communities of the southeastern U.S.
 - Tobacco is grown in over 500 U.S. counties in 23 states, but production is concentrated in selected regions of NC, KY, VA, TN, SC, and GA
- An influx of buyout funds could provide opportunities for investment in new enterprises, but it has proven difficult in the past to identify sufficiently profitable substitutes for tobacco

U.S. Flue-cured Tobacco Production



U.S. Burley Tobacco Production



Data

- Panel survey of NC tobacco farmers drawn from 14 of the 15 highest-producing counties for flue-cured tobacco in the state
 - Fielded 1997, 1999, 2001, 2004 (and another round late '05)
- Combined with secondary data on market variables
- HH Characteristics
 - Demographics (age, gender, race), education, tobacco use, self-indicated barriers to diversification, treatment county
- Resource Endowments
 - Total acreage owned, indicator variables for married, children

Data (continued)

- Market Incentives
 - Expected tobacco revenue per acre, index of expected revenue for other crops, average county wage, quota lease price, indicator variable for proximity to urban county
- Risk and Uncertainty
 - County-level tobacco yield variance, index of yield variance for other crops
- Time dummies to capture changes in tobacco quotas and other policies impacting tobacco production

Regressions

- ACRESGROWN - acres of tobacco grown (some of those in sample have 0 because they lease out all of their quota)
 - Estimated as 2-part model with decision to grow tobacco (0/1), then decision on how much to grow
- ACTIVE – actively seeking opportunities for farm diversification
 - Estimated as probit using clustering by HH, same for 3 below
- INCPROFIT – identified ways to increase profitability of alternative products through processing or marketing activities
- OFFFARM – household has off-farm income
- OWNOFF – farm operator works off-farm

Results: Tobacco Acreage Grown, Decision to Grow Tobacco

- Farm operators with college degrees were significantly less likely to grow tobacco themselves rather than leasing to others; those that are
- Married operators more likely to grow tobacco
- Farmers that use tobacco products were less likely to continue growing tobacco, whereas we expected the opposite
 - Personal tobacco use does not appear to reduce diversification
- HH that indicated a lack of interest in diversification or the lack of other agricultural products as profitable as tobacco as barriers were significantly more likely to grow tobacco

Results: Tobacco Acreage Grown, Acreage

- Time dummy variables very large and significant, reflecting changes in quota levels
- HH headed by white males have significantly more acreage
- Tobacco acreage increases with age, but at decreasing rate
- Tobacco acreage increases with resource endowments (land)
- HH that indicated a need for additional skills before they could diversify had significantly more tobacco acreage
- Expected revenue from alternative crops and location in an urban or adjacent county have the expected negative impacts on tobacco acreage

Results: Actively Seeking Diversification Opportunities

- Almost 68% seeking on-farm diversification opportunities
- Most strongly related to having educational attainment of high school graduate or above
- HH headed by white males are significantly less likely to show interest in diversification than households headed by women or minorities
- Being married had positive effect, consistent with greater HH time resources making it easier to diversify
- Tobacco lease price had expected positive sign
- Treatment effect during program (1997-2001), but not after end

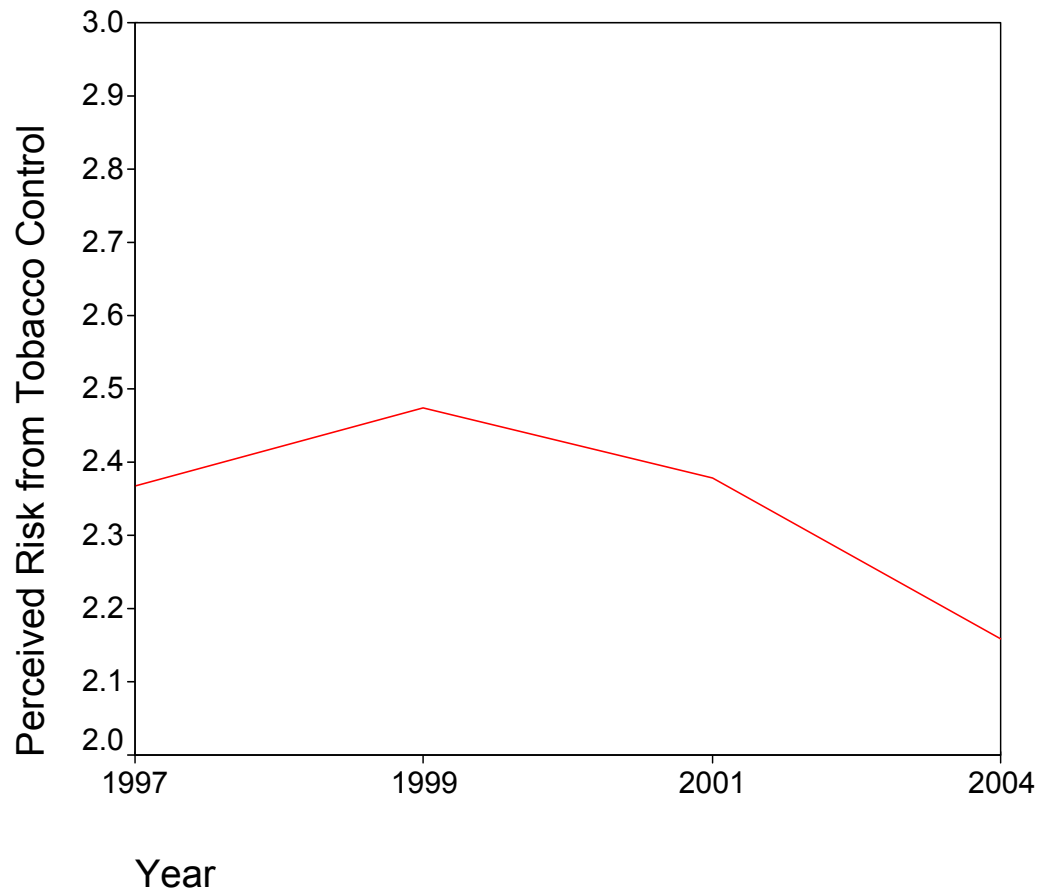
Results: Increase Profitability of Farm Products through Processing or Marketing

- About 45% have increased profitability on non-tobacco products through processing or marketing innovations
- Few significant variables
- Total acreage owned has positive effect
- Higher yield risk for tobacco and other crops both increase the probability of increasing profits, which may suggest that HH in higher-risk counties had greater potential for increasing profits

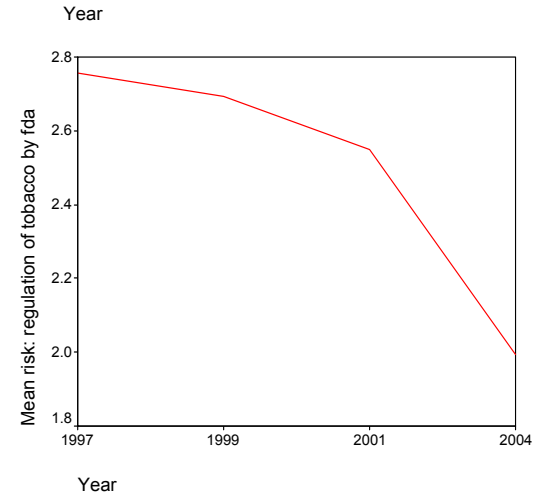
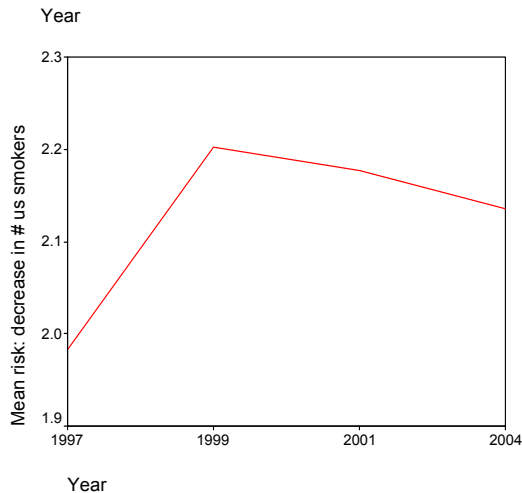
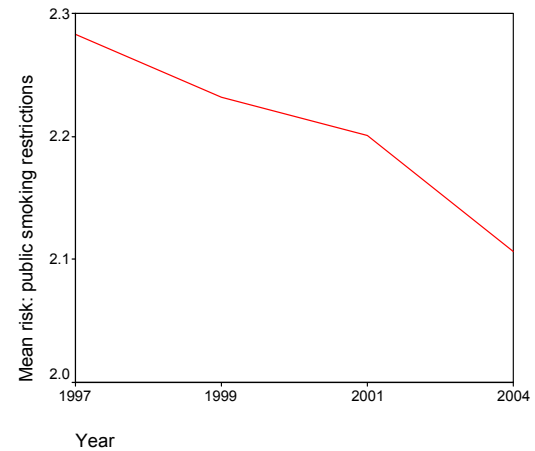
Results: Off-farm Income

- 51% have off-farm income, 19% of operators work off-farm
- Age and education are important determinants:
 - Positive effect of age, negative for age squared
 - Education levels of having attending at least some college increase probability of having off-farm income
 - As expected, being married has positive effect
- Self-identified barrier that more skills are needed to successfully diversify on-farm had positive effect
- Qualitative results for farm operators working off-farm are similar, except that that off-farm wage is highly significant, total acreage has a negative impact, and being male and being married both had negative effects on the probability of the farm operator working off-farm

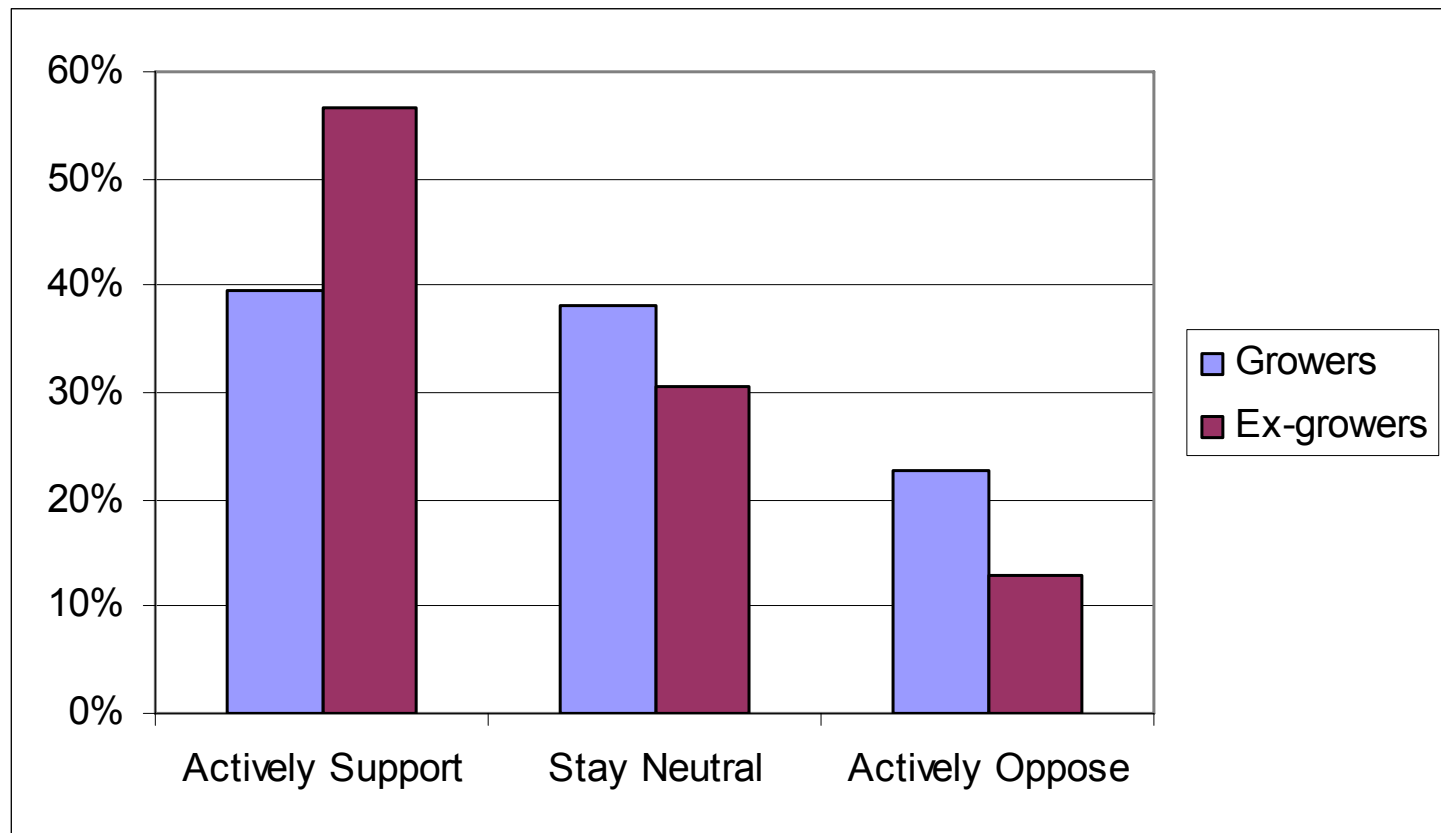
Tobacco Farmer-Perceived Risk from Tobacco Control Policies (Aggregate)



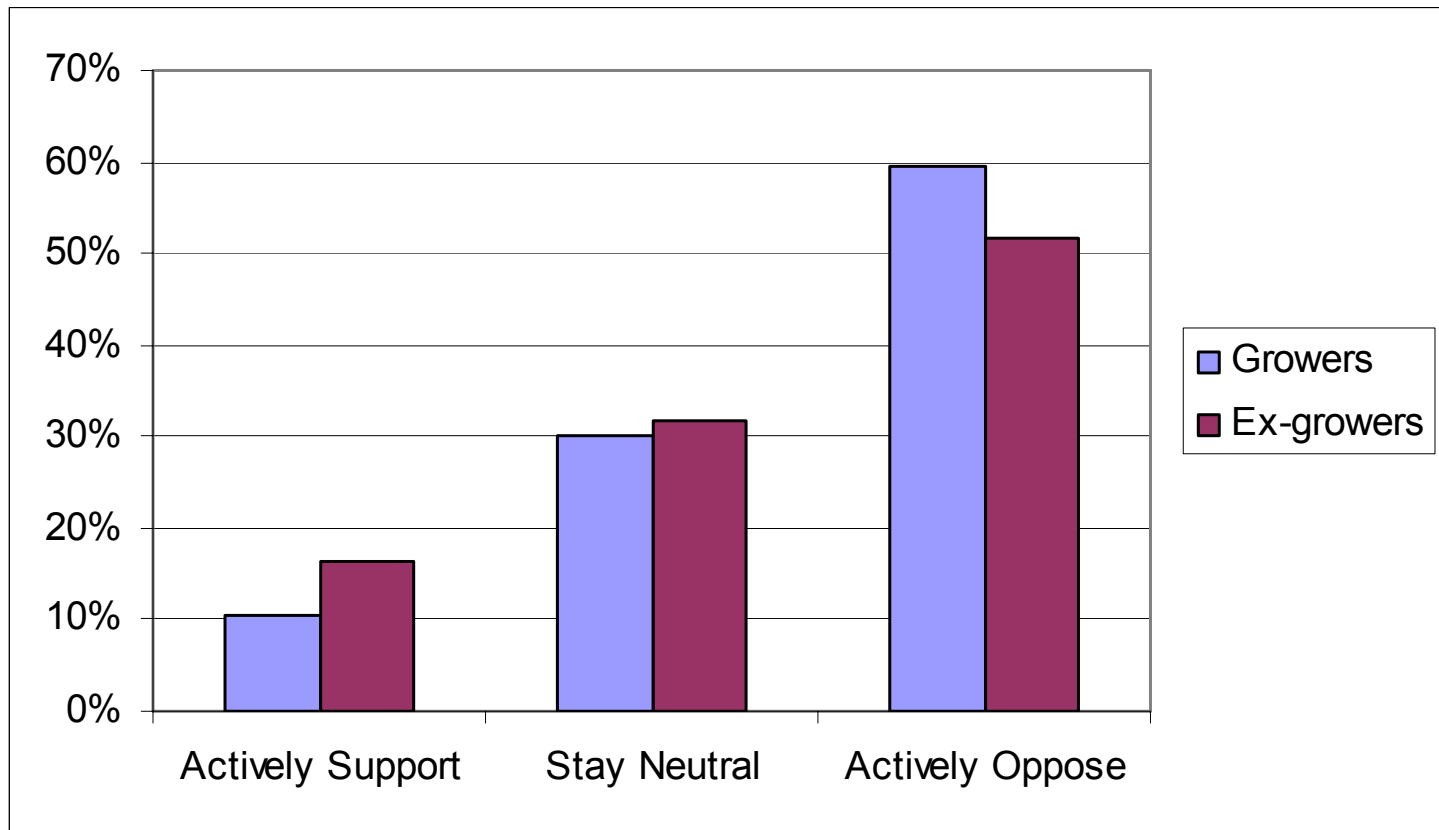
Tobacco Farmer-Perceived Risk of Individual Public Health Policies



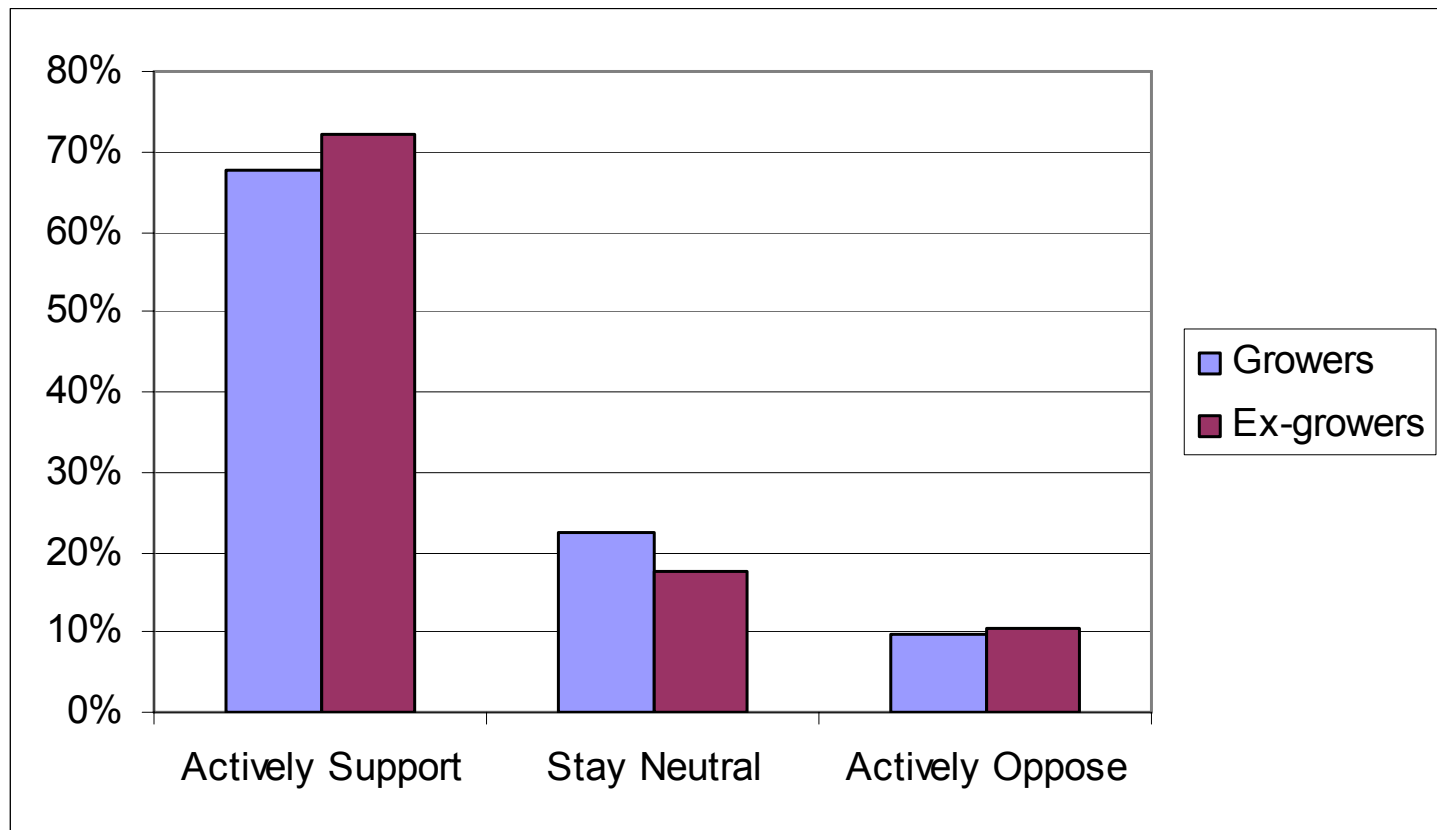
Farmer Support for Tobacco Control Policies: Ban on Smoking at Schools



Farmer Support for Tobacco Control Policies: Encouraging Restaurants to Voluntarily Ban Smoking



Farmer Support for Tobacco Control Policies: Support Fines for Businesses Selling to Youth



Effect of Grower Dependence on Tobacco-Related Income

- Among those that still derive income from tobacco, tobacco income share had no significant effect on their support for:
 - smoking ban at schools
 - enforcement of fines for businesses selling to youthBut it did have a highly significant negative effect on:
 - Support for voluntary restaurant ban on smoking
- There was also a highly significant positive effect of tobacco income share on perceived risk of public smoking restrictions
- Being in a county receiving the tobacco diversification program also had significant effects in the expected direction

Conclusions

- Changes taking place in tobacco markets have increased interest in identifying potential substitute income sources for tobacco farmers and their communities
- Results generally show that farmers are interested in diversifying their income, but identify many barriers and less than half have identified any ways to increase profitability of alternative products
- Providing programs to encourage diversification may be necessary to aid in transition to other agricultural products
- Confounding influence of the impending buyout, which created incentives to grow tobacco and hold on to quota in order to qualify for buyout payments, could partially account for limited influence of economic incentives
- Farmer attitudes towards tobacco control policies have been changing in recent years and they perceive less risk from smoking restrictions and are more supportive of (or less opposed to) tobacco control policies as they derive a smaller share of income from tobacco or stop growing tobacco altogether