

MIGRANT AND SEASONAL FARMWORKER
ENUMERATION PROFILES STUDY
NORTH CAROLINA

FINAL

prepared for the

**Migrant Health Program
Bureau of Primary Health Care
Health Resources and Services Administration**

by

**Alice C. Larson, Ph.D.
Larson Assistance Services**

P.O. Box 801
Vashon Island, WA 98070
206-463-9000 (voice)
206-463-9400 (fax)
las@wolfenet.com (e-mail)

September, 2000

PREFACE

The mission of the Bureau of Primary Health Care (BPHC), Health Resources and Services Administration, Department of Health and Human Services is to increase access to comprehensive primary and preventive health care and to improve the health status of under served and vulnerable populations. To achieve this mission the Migrant Health Program (MHP), BPHC provides support to organizations which offer technical assistance to or directly deliver primary health care services to migrant and seasonal farmworkers (MSFWs). In order to better plan, develop and evaluate health care service delivery and utilization, information is needed on the numbers and distribution of farmworkers at the national, state, and county levels. Moreover, the legislation which authorizes the Migrant Health Program, Section 330g of the Public Health Service Act, requires that priorities for assistance be assigned to areas where the greatest need exists. Therefore, the MHP periodically seeks to obtain updated information about MSFWs; where they are working and living and what crops are being harvested, in order to more appropriately target limited resources to areas of greatest MSFW need.

These MHP enumeration reports are some of the few sources offering MSFW estimates at the county level. The last time such data was published by the MHP was in March 1990 with "An ATLAS of State Profiles Which Estimate Number of Migrant and Seasonal Farmworkers and Members of Their Families." This time with the Office of Pesticide Programs, U.S. Environmental Protection Agency as a funding partner, the MHP awarded a grant to the National Center for Farmworker Health, Inc. (NCFH). The NCFH consequently contracted with Alice C. Larson, Ph.D. of Larson Assistance Services to research and develop state estimates.

In the previous publication "ATLAS of State Profiles" the counting of MSFWs was done on a state-by-state basis which depended on the available data resources within each state, then a consultant was used to validate each state's submission. For this publication, Dr. Larson, assisted by a team of consultants, used a systematic approach to estimate the number of farmworkers included under the MHP definition. Please note that in this document farmworker dependents and family members within their households are labeled "non-farmworkers" although they are clearly included in the MHP definition. This research included the determination of the number of workers needed for specific seasonal hand labor tasks, and the examination of state employment records, local sources of information and large-scale databases (i.e., the National Agricultural Workers Survey of the U.S. Department of Labor, the National Farmworker Database of the Association of Farmworker Opportunity Programs, the Uniform Data System of the Bureau of Primary Health Care and

the Census of Agriculture of the Bureau of the Census and U.S. Department of Agriculture). A major part of this effort involved the review of draft estimates by local and national knowledgeable individuals.

In this document, the MHP presents currently updated MSFW information beginning with ten states: Arkansas, California, Florida, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, Texas and Washington. The MHP hopes to continue these collaborative efforts with other federal agencies and organizations in order to update the remaining states impacted and benefiting by the labor of our Nation's farmworkers.

Readers may wish to address questions or comments concerning these state estimates directly to Alice C. Larson, Ph.D., P.O. Box 801, Vashon Island, WA 98070 or via e-mail to las@wolfenet.com. It is our hope and expectation that all federal, state, local public and private entities providing services to MSFWs will use this state and county specific enumeration data to plan, develop and implement improved services to our Nation's farmworkers.

The Migrant Health Program, BPHC gratefully acknowledges the efforts of the many groups across the nation who have made this publication possible. Our thanks not only to those who directly reviewed and commented on the estimates, but to those who participated and assisted along the way.



Adolfo Mata, Chief
Migrant Health Program
Division of Community and Migrant Health
Bureau of Primary Health Care
Health Resources and Services Administration
Department of Health & Human Services

ACKNOWLEDGEMENTS

The research team is extremely grateful to the many people in North Carolina who offered information, data and suggestions that helped make this study possible. In addition, those who took the time to review draft documents offered a major contribution to improving the end result.

Estimating migrant and seasonal farmworkers and their non-farmworker household members is an extremely challenging task. This research has attempted to examine existing data and develop a reasonable approach to the estimation process. The user should carefully consider the description of study parameters to understand what is included or excluded from the final figures and the limitations of the research.

It is hoped this document will be found to be helpful in meeting the need for descriptive information on the migrant and seasonal farmworker population.

TABLE OF CONTENTS

	<u>Page</u>
DOCUMENT DESCRIPTION	
A. Background	1
B. Study Purpose	1
C. Definition	1
D. Limitations	2
E. General Process	2
F. Enumeration Methodology	5
G. Resources Utilized for North Carolina Estimates	8
 TABLES	
North Carolina MSFW Enumeration Profiles Estimates – Final	13
North Carolina Demand for Labor Factors – Final	16
 MAPS	
MSFW Estimates by County, Workers Only	17
Estimates for MSFW Workers and Non-Workers by County	18
 BIBLIOGRAPHY	19

DOCUMENT DESCRIPTION

A. BACKGROUND

The Migrant Health Program of the Bureau of Primary Health Care, Health Resources and Services Administration, U.S. Department of Health and Human Services has periodically undertaken an estimation of the population targeted for services by federally funded Migrant Health Centers. The results have helped better plan service utilization including determining if resources are appropriate to the need and identification of unserved areas. Four such studies have previously been undertaken; the last was published in 1990, *The Migrant Health Atlas*.

The Migrant Health Program is updating this information beginning with ten states: Arkansas, California, Florida, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, Texas and Washington. Final reports, titled “Migrant and Seasonal Farmworker Enumeration Profiles Study” (MSFW EPS) were prepared for each target state.

The National Center for Farmworker Health was engaged by the Migrant Health Program to act as its agent in securing, monitoring and finalizing an end product. In July 1998, agreement was reached with Larson Assistance Services to research and develop state estimates. Alice C. Larson, Ph.D., with the assistance of a team of consultants, is responsible for this document containing MSFW estimates for North Carolina.

B. STUDY PURPOSE

The MSFW EPS offers state-based information at the county level for the following three population sub-groups:

- Migrant farmworkers and seasonal farmworkers.
- Non-farmworkers present in the same household as migrant farmworkers and seasonal farmworkers (defined by the term “accompanied”).
- Number of people (“children and youth”) under age 20 in six age groups.

C. DEFINITION

The MSFW definition used for this study is that of the Migrant Health Program. It

describes a seasonal farmworker as:

“An individual whose principal employment [51% of time] is in agriculture on a seasonal basis, who has been so employed within the last twenty-four months.”

A migrant farmworker meets the same definition but “establishes for the purposes of such employment a temporary abode.” (*U.S. Code, Public Health Services Act, “Migrant Health”*)

Included in the scope of study are individuals engaged in field and orchard agriculture; packing and sorting procedures in food processing; horticultural specialties (including nursery operations, greenhouse activities and crops grown under cover); and reforestation. Excluded from study are those working with livestock, poultry, and fisheries.

D. LIMITATIONS

This study is limited in scope in that only secondary source material, including existing database information, and knowledgeable individuals, have been utilized to generate information. This has meant taking reports and databases prepared for other purposes and adjusting them, as possible, for the MSFW EPS. Limited resources and time have prohibited primary research directly with farmworkers.

In addition, by employing only secondary source information, the definition of who is included as a migrant or seasonal farmworker is often tied to the parameters used by the generating source. Wherever possible, screens were used to exclude those not covered by the Migrant Health Program definition.

E. GENERAL PROCESS

1. Basic Investigation Techniques

The research conducted within each state had four major phases:

- (1) Basic data gathering and preparation of First Draft Estimate.
- (2) Review by local knowledgeable individuals and revision of First Draft Estimate.
- (3) Completion of Second Draft Estimate and additional review by a wider audience of knowledgeable individuals.
- (4) Revision as necessary and issuance of Final Estimate.

2. National Databases

Prior to completion of any state profile, two national databases were analyzed specifically for this study. They represent the two largest continuous direct surveys of MSFWs in the country as of 1999.

The National Farmworker Database (NFD) of the Association of Farmworker Opportunity Programs contains information on clients eligible for services at job training programs targeted to MSFWs (Workforce Investment Act – WIA 167 Programs; formerly JTPA 402 Programs). This database, tied to programs throughout the country, contains 65,000 individuals and includes basic demographic, family characteristic and work history information. Figures from 1994 through August 1998 were used for this study and provided national and some state data.

The National Agricultural Workers Survey (NAWS) of the U.S. Department of Labor (coordinated by Aguirre International) is a survey conducted three times annually gathering similar information through random selection of targeted counties, employers and subjects. Demographic, family and work history information is similar to the NFD. Data for a five-year period (1993-97) were used in the MSFW EPS, which included over 11,000 respondents offering national and regional information.

A third national database used to develop factor information was Migrant Health Program statistics prepared annually by each federally funded migrant health center. These gave the number of migrant farmworker and seasonal farmworker patients served. Data for 1996 and 1997, where available, were averaged.

3. State Specific Steps

Work on each target state began with a mass mailing to identified service organizations assisting MSFWs, government agencies involved with agriculture, farm employer and crop commodity groups, special interagency MSFW committees and others. These included: migrant health centers, primary care associations, migrant education programs, migrant head start programs, legal services, job training programs, housing assistance centers, grower associations, extension service and agricultural economics departments of state land grant universities and other agents. State government agencies involved with agriculture, education, employment, forestry, health, labor and welfare were contacted.

Each was sent an introductory letter and questionnaire listing study factors for which information was sought. Those contacted were asked to provide anything they might have directly or list other resource documents or personnel.

Follow-up contacts were made with numerous individuals and internet sites from a variety of programs and agencies (a range of 14-54 for each of the ten target states) looking for state-specific information such as client-related demographics, enrollment data, crop production figures and acreage statistics. Although many different individuals, agencies, organizations and businesses were contacted, the list was in no way exhaustive of all of those involved with agriculture and MSFWs in each state. It is expected most of the key knowledgeable individuals were reached, many of whom were identified by questionnaire respondents.

Once all state specific information was received, factor information was extracted. Sources were compared and analyzed to account for any differences. Results were contrasted against national database information and conclusions drawn regarding the best factor, data range or average to use. Draft estimates and maps were then prepared for review.

4. Review of Draft Estimates

The Draft One document was sent out for review to knowledgeable individuals in the state who had provided information for preparation of the estimates, assisted in some other manner, or expressed an interest in receiving a copy.

Reviewers were asked to comment on methodological steps, resources utilized and factors employed. If they found something they felt was incorrect, they were requested to offer suggestions for improvement in the form of specific information which could be incorporated into the estimates. Where clarification was needed after receipt of comments, direct conversation or exchange of correspondence were utilized to assure a complete understanding of the issues raised or obtain additional information. Often additional research was necessary to determine the appropriate direction to correct the estimates.

After consideration of all issues raised from a variety of sources, revisions were made as necessary. Draft Two estimates, tables, maps and supporting documents were then prepared and shared with Draft One reviewers as well as other local and national sources. Comments were again incorporated into the Final Report. In all, ten people helped review and refine the North Carolina estimates and document.

One issue brought up by North Carolina reviewers was the heavy presence of H2A workers in the state. North Carolina noted the largest concentration (10,000) of such workers in 1999 of any state. Because most of these individuals are employed in tobacco and the method used to estimate workers in field crops involved calculations based on tasks performed, H2A workers, or rather the jobs they perform, are included. This technique means final estimates are not sensitive to annual increases or decreases in H2A worker numbers.

F. ENUMERATION METHODOLOGY

The four separate industry classifications within the study MSFW definition; field agriculture, nursery/greenhouse -- crops grown under cover, food processing and reforestation; were each addressed differently. An adjustment was made to final worker estimates to account for duplicate counts within and across counties. Finally, population sub-groups and children's and youth's ages were calculated.

1. Field Agriculture

The field agriculture estimate used a "demand for labor" (DFL) process that examines the number of workers needed to perform temporary agricultural tasks, primarily harvesting. The results estimate full-time equivalent (FTE) workers required for the task during the period of peak labor demand. Calculations, prepared for each county, are derived through a formula using four elements:

$$DFL = \frac{A \times H}{W \times S}$$

Where:

A = crop acreage.

H = hours needed to perform a specific task (e.g., harvest) on one acre of the crop.

W = work hours per farmworker per day during maximum activity.

S = season length for peak work activity.

2. Nursery/Greenhouse and Crops Grown Under Cover

Nursery/greenhouse workers and those involved in crops grown under cover were more difficult to estimate than workers in field agriculture as many different categories fall within these classifications. This includes: bedding plants, cut flowers, florist greens, floriculture, flower seed crops, foliage plants, greenhouse vegetables, mushroom production, potted flowering plants, sod and vegetable seed crops. Some products are grown in covered structures while others are raised in open acreage. Tasks differ with the type of product and production needs.

For these industry categories, the best resource was found to be direct

employment reports. Statewide monthly figures were used to subtract the lowest employment month from the highest month to obtain a rough estimate of “temporary” laborers. Results for a three-year period were averaged to avoid any aberration attributable to a single year. The county proportion of the state acreage and enclosed space total for nursery/greenhouse operations and crops grown under cover was calculated and multiplied by the statewide employment estimate to determine each county’s temporary worker share.

3. Food Processing

Those employed temporarily in the food processing industry are also very difficult to estimate. Examination was made of many sources to assess both the extent of employment and distribution by county.

Three Standard Industrial Classification (SIC) codes were identified as most likely to meet the Migrant Health Program definition used in this study. Information specific to relevant companies in each county was pulled from a national directory of food processors. This provided estimates of total number of employees.

The same source used to estimate nursery/greenhouse workers provided the average highest and lowest monthly employment figures for food processing employees. This information was only available statewide. Calculations were made to determine the percent of temporary to permanent workers. This percentage was applied to each county in the respective state to estimate the number of temporary food processing workers.

4. Reforestation

Reforestation activity is different from work in the other industry classifications as stands of trees are left to grow from five to forty-five years or longer. This means only a proportion of timberland in a state is engaged by tree planters each year. As the exact location of this labor differs annually, a worker estimate can only be provided on a statewide basis.

A DFL approach was taken to estimate tree planters using statewide data. Research found two different sets of factors for the DFL elements. Accordingly, two estimates were prepared resulting in a range. The final worker figure became the midpoint of this estimation range.

5. Adjustment for Duplication

An adjustment was made to account for those employed in more than one job

covered by the MSFW definition. This involved dividing all worker estimates by a factor for average jobs per MSFW. These adjusted county estimates could then be more appropriately added to develop a state total.

6. Sub-Group Estimates

Sub-groups estimated for the study included migrant farmworkers, seasonal farmworkers, non-farmworker family members accompanying farmworkers and children and youth in specified age groups. Migrant farmworkers encompassed individuals who migrated only within the state (intrastate migrants), and those who traveled out of state for farm work (interstate migrants).

Both “non-farmworkers” and “children and youth” were estimated. The first group included anyone of any age in the household who was not employed in farm work. The latter group covered anyone in the household from ages less than one through nineteen. Although the category “children and youth” involves those of a young age who would be considered non-farmworkers, it also includes older individuals who may be farmworkers.

Sub-group calculations were made, at a county level, as follows:

- Apply percent identified as migrant workers and percent identified as seasonal workers to adjusted MSFW estimates.
- Determine the percent of each sub-group, migrant workers and seasonal workers, accompanied. This is as opposed to workers who represent single person households; for example, 14 unrelated men living in one household would represent 14 single person households.
- Divide the group of accompanied workers by the average number of farmworkers per household to determine the number of accompanied households.
- Multiply the number of accompanied households by the average number of other members per household to derive the number of “non-farmworkers.”

The following age groupings were determined to be the most useful descriptors for the population considered “children and youth,” given the needs of funding sources and health care programs: under 1 year, 1-4, 5-12, 13-14, 15-18, and 19. Factors were found for the number of individuals in each accompanied household who were less than 20 years old. These were multiplied by the estimate of accompanied migrant and seasonal households to find total number of migrant and seasonal children and youth. A variety of sources were then examined to derive percent of the population in each age group.

G. RESOURCES UTILIZED FOR NORTH CAROLINA ESTIMATES

Factor information was gathered from the primary sources listed below. In addition and where available, local information was utilized as a check or as a replacement for broader national or regional data.

1. Field Agriculture

Crops Requiring Temporary Hand Laborers: NFD and NAWS direct survey data on respondent work history were examined on a state basis (NFD) and at the regional level (NAWS) to determine the crops and tasks worked. This information was then discussed with local knowledgeable experts including individuals from North Carolina State University and the North Carolina Department of Agriculture and Consumer Services (NCDA&CS).

Acreage: 1997 Census of Agriculture (COA) acreage for identified hand labor crops by county were used. This included cut Christmas trees. After discussion with agricultural experts and others, it was determined crops of fewer than ten acres are less likely to employ hired workers and more likely to use family members. Accordingly, any crop in a county with such small acreage was dropped. No North Carolina county reported under ten acres of tobacco.

Hours for Task: “Crop budgets” and other special reports prepared by agricultural economists and extension specialists as a guide to crop production were utilized to determine hours needed to perform major hand labor tasks on each crop. For North Carolina, these included such budgets for various years from 1982–1996, prepared by the North Carolina State University College of Agriculture and Life Sciences, and a special report, *Flue-Cured Tobacco Farming: Two Decades of Change* (U.S. Department of Agriculture, Economic Research Service, 1994). This latter document offered “hours for task” information for specific tobacco growing regions in the State.

In addition, the *Migrant Enumeration Project, 1993* (Larson and Plascencia) had updated earlier 1970s-80s estimates. These were supplemented through a search of other budgets specific to the study target states.

Where state specific information was available and determined to be reasonably accurate for a given crop, it was used. Otherwise an average of other sources was applied. The results vary per crop.

Work Hours: The NAWS was found to be the only national source for hours per week and days per week worked by MSFWs. The latest five-year averages showed 38.6 hours/week during a five-day work week. The resulting 7.7 hours/day factor was used in the calculation.

Season Length: Peak hand labor season dates specific to North Carolina were obtained from "Usual Planting and Harvesting Dates" (NCDA&CS, 1996) and information prepared by the North Carolina Office of Rural Health and Resource Development. Additional data were taken from the *Migrant Enumeration Project* with updates from state specific publications of the U.S. Department of Agriculture. Calendar days were converted to work days by dividing the total number by seven to determine number of weeks and then multiplying by five for number of average MSFW work days per week (as noted in NAWS data).

2. Nursery/Greenhouse and Crops Grown Under Cover

The "Employment and Wages Monthly Employment," *ES 202* report (U.S. Department of Labor, Bureau of Labor Statistics) provided monthly employment totals for SIC 0181: nursery/greenhouse – ornamental floriculture and nursery products; and SIC 0182: food crops grown under cover including mushrooms. The estimate used the difference between highest and lowest monthly employment figures averaged for the three year period, 1995-1997. The result yielded a statewide figure.

County data from the 1997 COA for nursery and greenhouse acres in the open and square feet under glass were used to proportion the state nursery/greenhouse worker estimate into counties. COA figures for mushroom and greenhouse vegetable acreage and square feet under glass were similarly used to proportion the statewide estimate for crops grown under cover.

3. Food Processing

Two separate methods were used for estimating food processing workers within the three SICs.

ES 202 reports for SIC 2033 (canned fruits and vegetables) and SIC 2037 (frozen fruits, fruit juices and vegetables) were utilized in a technique similar to the estimate for nursery/greenhouse workers but to derive the percent difference between high and low monthly employment. This was taken to represent percent of total employed that could be considered temporary workers within these two SIC industry classifications.

Information from the *Directory of Canning, Freezing, Preserving Industries, 1998-99* (Edward E. Judge and Sons) determined companies engaged in activities within these two SICs and a range for total employment at each site. The mid-point of this range was used to represent exact number of employees. City locations were attributed to counties as cross-referenced in *Bullinger's 1997 Postal and Shippers Guide* (Alfer Leland). Total food processing employment

per county was tabulated, and the percent calculated to be temporary workers within each county was applied.

For SIC 0723 (crop preparation for market), the ES 202 high/low employment reports were utilized to determine number of statewide temporary workers, similar to the nursery/greenhouse estimation process. This was then allocated to counties on the percentage share used for the other two food processing SICs.

4. Reforestation

For each of the two different estimates made for reforestation workers, the same resource was used for two of the DFL factors:

Acreage information was obtained from *Tree Planting in the United States*, an annual publication of the United States Department of Agriculture, Forest Service. The years 1992-1996 created a five-year average.

Work Hours were generally agreed to be eight per day as reported by various forestry experts.

The DFL factors “hours for task” and “season length” differed for each estimate and came from the following two sources.

(1) *Number and Characteristics of Migrants in Mississippi* (Larson, 1992), presented tree planting DFL characteristics from field research discussion with knowledgeable experts. This source reported: 1½ acres of seedlings planted per 8 hour day or 5.33 hours/acre; 73 days peak season length, calculated at 13 weeks working an average 6 days/week minus 5 days during the season in which weather conditions would prohibit work.

(2) Conversation with Michael Economopoulos, South Eastern Forestry Contractors Association (1998), reported the following factor information: 3 acres planted per 8 hour day or 2.67 hours/acre; 40 days season length, calculated at 8 weeks for an average of 5 days/week.

5. Adjustment Factor

No data on jobs per county or jobs per state could be located. The only information found was from both NFD and NAWS for average jobs/worker for approximately a twelve-month period. For lack of better factor information, the resulting figures from these two sources, at a national level, were averaged to derive a factor of 1.665 jobs/worker.

6. Sub-Groups

Migrant/Seasonal: Three sources were averaged: NAWS regional percents, figures from seven federally funded health centers serving MSFWs in North Carolina, and estimates of the North Carolina Employment Security Commission Rural Manpower Office. NFD state specific information was not used as draft document reviewers felt it was slanted toward seasonal workers. The resulting averages were discussed extensively with draft reviewers and with those attending the 1999 annual meeting of the North Carolina Farmworker Services Coordinating Committee. The conclusion of this extensive research and discussion determined 62.5% of the MSFW population were migrant farmworkers and 37.5% were seasonal farmworkers.

Accompanied: An average of the following sources were used for percent of migrant workers accompanied by relatives and seasonal workers residing in multiple person families.

For migrant workers, a combination of NFD North Carolina specific, NAWS regional and North Carolina Migrant Education program data were used. The latter source was determined by estimating the total number of migrant workers represented by Migrant Education child enrollment as a percentage of the estimated total number of migrant workers. It was felt NFD might overestimate the number of accompanied workers as more individuals with dependents might seek assistance from the program represented by this source, while Migrant Education might underestimate assuming not all migrant children in the State are identified. The percentage figure used, 33.3% accompanied, was an average of these three sources.

Calculations for the percentage of seasonal workers accompanied used a combination of NFD North Carolina specific and NAWS regional information, resulting in an estimate of 68.7% accompanied.

It should be noted that information received from Tri County Community Health Center verified both the migrant and seasonal percent accompanied estimates (Brown, 1999).

Farmworkers Per Household: The only source found was NAWS regional information of 1.52 farmworkers per accompanied household for migrants and 1.60 for seasonals.

Non-Farmworkers Per Household ("Dependents"): An average of NFD North Carolina specific and NAWS regional factors were used to determine total household size. Farmworkers per household were subtracted to calculate non-farmworkers per household: 1.80 for migrants and 1.91 for seasonals.

7. Children and Youth by Age Groups

“Children and youth,” as defined in the MSFW EPS are those ages infant through 19. Whether or not these individuals perform farm work does not matter for purposes of this calculation, and therefore, the group “MSFW farmworkers” and the group “children and youth” are not mutually exclusive.

NAWS national figures on children and youth per household were used to determine the number of those under 20 years of age (1.50 for migrants; 1.53 for seasonals). The result found 20,736 migrant and 24,872 seasonal children and youth.

These individuals were divided into the following age groups using percentages from national NAWS information:

Migrants: under 1 = 6.5%, ages 1-4 = 26.6%, ages 5-12 = 38.2%, ages 13-14 = 8.2%, ages 15-18 = 16.4%, and age 19 = 4.1%.

Seasonals: under 1 = 4.7%, ages 1-4 = 22.2%, ages 5-12 = 39.7%, ages 13-14 = 10.7%, ages 15-18 = 19.0%, and age 19 = 3.7%.

TABLE ONE
NORTH CAROLINA MSFW ENUMERATION PROFILES ESTIMATES
FINAL

FIELD AGRICULTURE, NURSERY/GREENHOUSE AND FOOD PROCESSING

County	Adjusted MSFW Farmworker Estimate	Migrant Farmworkers	Seasonal Farmworkers	Non-Farmworkers In Migrant Households	Non-Farmworkers In Seasonal Households	MSFWs & Farmworkers And Non-Farmworkers
Alamance	820	512	307	202	252	1,274
Alexander	300	187	112	74	92	466
Alleghany	853	533	320	210	262	1,325
Anson	34	21	13	8	10	52
Ashe	1,381	863	518	340	425	2,145
Avery	773	483	290	190	238	1,201
Beaufort	1,128	705	423	278	347	1,753
Bertie	1,866	1,166	700	460	574	2,899
Bladen	1,758	1,099	659	433	541	2,732
Brunswick	406	254	152	100	125	631
Buncombe	305	190	114	75	94	474
Burke	61	38	23	15	19	95
Cabarrus	17	10	6	4	5	26
Caldwell	140	88	53	35	43	218
Camden	161	101	60	40	49	250
Carteret	270	169	101	67	83	420
Caswell	1,593	996	597	393	490	2,475
Catawba	18	11	7	5	6	28
Chatham	337	210	126	83	104	523
Cherokee	27	17	10	7	8	42
Chowan	536	335	201	132	165	834
Clay	16	10	6	4	5	25
Cleveland	240	150	90	59	74	373
Columbus	2,284	1,427	856	563	702	3,549
Craven	1,306	816	490	322	402	2,030
Cumberland	665	416	250	164	205	1,034
Currituck	47	30	18	12	15	73
Dare	0	0	0	0	0	0
Davidson	546	341	205	135	168	849
Davie	176	110	66	43	54	274
Duplin	2,516	1,573	944	620	774	3,910
Durham	440	275	165	108	135	684
Edgecombe	2,544	1,590	954	627	783	3,954
Forsyth	814	509	305	201	250	1,265
Franklin	2,192	1,370	822	540	674	3,407
Gaston	30	19	11	7	9	47
Gates	405	253	152	100	125	630
Graham	14	9	5	4	4	22
Granville	2,633	1,646	988	649	810	4,092
Greene	2,263	1,415	849	558	696	3,517
Guilford	1,466	916	550	361	451	2,277
Halifax	2,147	1,342	805	529	660	3,336
Harnett	1,884	1,177	706	464	579	2,927

County	Adjusted MSFW Farmworker Estimate	Migrant Farmworkers	Seasonal Farmworkers	Non-Farmworkers In Migrant Households	Non-Farmworkers In Seasonal Households	MSFWs & Farmworkers And Non-Farmworkers
Haywood	321	201	121	79	99	499
Henderson	2,210	1,381	829	545	680	3,434
Hertford	1,105	691	414	272	340	1,717
Hoke	401	250	150	99	123	622
Hyde	470	294	176	116	145	731
Iredell	145	90	54	36	44	225
Jackson	446	279	167	110	137	693
Johnston	4,597	2,873	1,724	1,133	1,414	7,144
Jones	913	571	342	225	281	1,419
Lee	932	583	350	230	287	1,449
Lenoir	2,821	1,763	1,058	695	867	4,383
Lincoln	336	210	126	83	103	523
Macon	42	26	16	10	13	66
Madison	516	322	193	127	159	802
Martin	1,969	1,231	738	485	606	3,060
McDowell	84	53	32	21	26	131
Mecklenburg	2	1	1	1	1	3
Mitchell	250	156	94	62	77	389
Montgomery	200	125	75	49	62	311
Moore	699	437	262	172	215	1,086
Nash	5,135	3,209	1,925	1,265	1,579	7,979
New Hanover	1	1	0	0	0	2
Northampton	1,439	899	540	355	443	2,236
Onslow	645	403	242	159	198	1,002
Orange	488	305	183	120	150	758
Pamlico	300	187	112	74	92	466
Pasquotank	618	386	232	152	190	960
Pender	773	483	290	191	238	1,201
Perquimans	182	114	68	45	56	282
Person	1,636	1,022	613	403	503	2,542
Pitt	4,251	2,657	1,594	1,048	1,307	6,606
Polk	120	75	45	30	37	186
Randolph	476	298	179	117	146	740
Richmond	337	211	126	83	104	524
Robeson	3,117	1,948	1,169	768	959	4,844
Rockingham	1,945	1,215	729	479	598	3,022
Rowan	228	143	86	56	70	354
Rutherford	24	15	9	6	7	37
Sampson	4,179	2,612	1,567	1,030	1,285	6,495
Scotland	194	121	73	48	60	302
Stanly	33	21	12	8	10	51
Stokes	1,814	1,134	680	447	558	2,819
Surry	2,057	1,286	771	507	633	3,196
Swain	17	11	6	4	5	27
Transylvania	58	36	22	14	18	90
Tyrell	132	83	50	33	41	206
Union	65	40	24	16	20	100
Vance	1,224	765	459	302	377	1,902
Wake	3,296	2,060	1,236	812	1,014	5,121

County	Adjusted MSFW Farmworker Estimate	Migrant Farmworkers	Seasonal Farmworkers	Non-Farmworkers In Migrant Households	Non-Farmworkers In Seasonal Households	MSFWs & Farmworkers And Non-Farmworkers
Warren	822	513	308	202	253	1,277
Washington	498	311	187	123	153	773
Watauga	531	332	199	131	163	825
Wayne	2,838	1,774	1,064	700	873	4,411
Wilkes	340	212	127	84	105	528
Wilson	3,106	1,941	1,165	765	955	4,827
Yadkin	1,238	773	464	305	381	1,923
Yancey	289	180	108	71	89	448
Total State	100,316	62,697	37,618	24,724	30,851	155,891
Reforestation						
Total State	644	403	242	159	198	1,001
Grand State Total	100,960	63,100	37,860	24,883	31,049	156,893

NOTE: County numbers have been rounded and, therefore, may not exactly add to totals.

CHILDREN AND YOUTH BY AGE GROUPS (STATEWIDE)

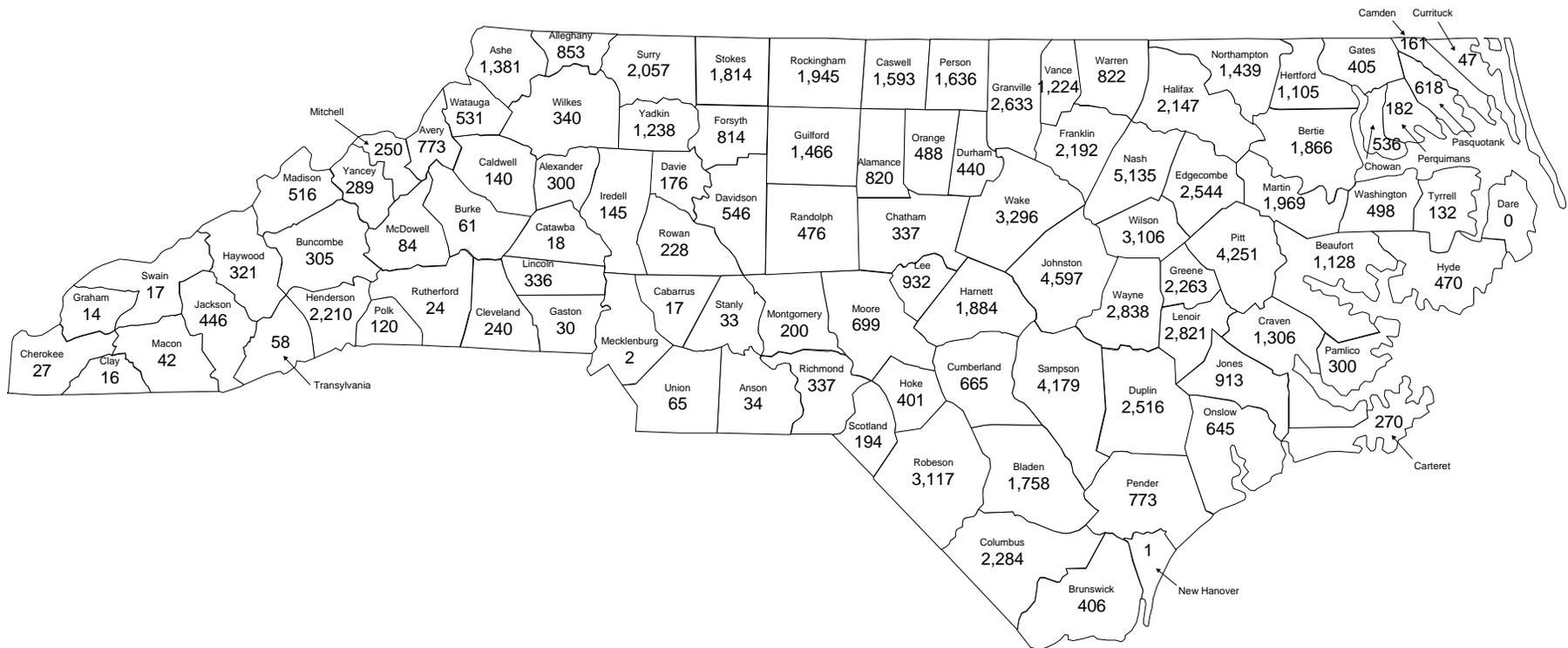
Age Groups	Migrant Percent	Number of Migrant Children And Youth	Seasonal Percent	Number of Seasonal Children And Youth
< 1	6.5%	1,348	4.7%	1,169
1-4	26.6%	5,516	22.2%	5,522
5-12	38.2%	7,921	39.7%	9,874
13-14	8.2%	1,700	10.7%	2,661
15-18	16.4%	3,401	19.0%	4,726
19	4.1%	850	3.7%	920
Total	100.0%	20,736	100.0%	24,872

NOTE: "Children and Youth" are defined as those under 20 years of age. Some may be farmworkers

TABLE TWO
NORTH CAROLINA DEMAND FOR LABOR FACTORS
FINAL

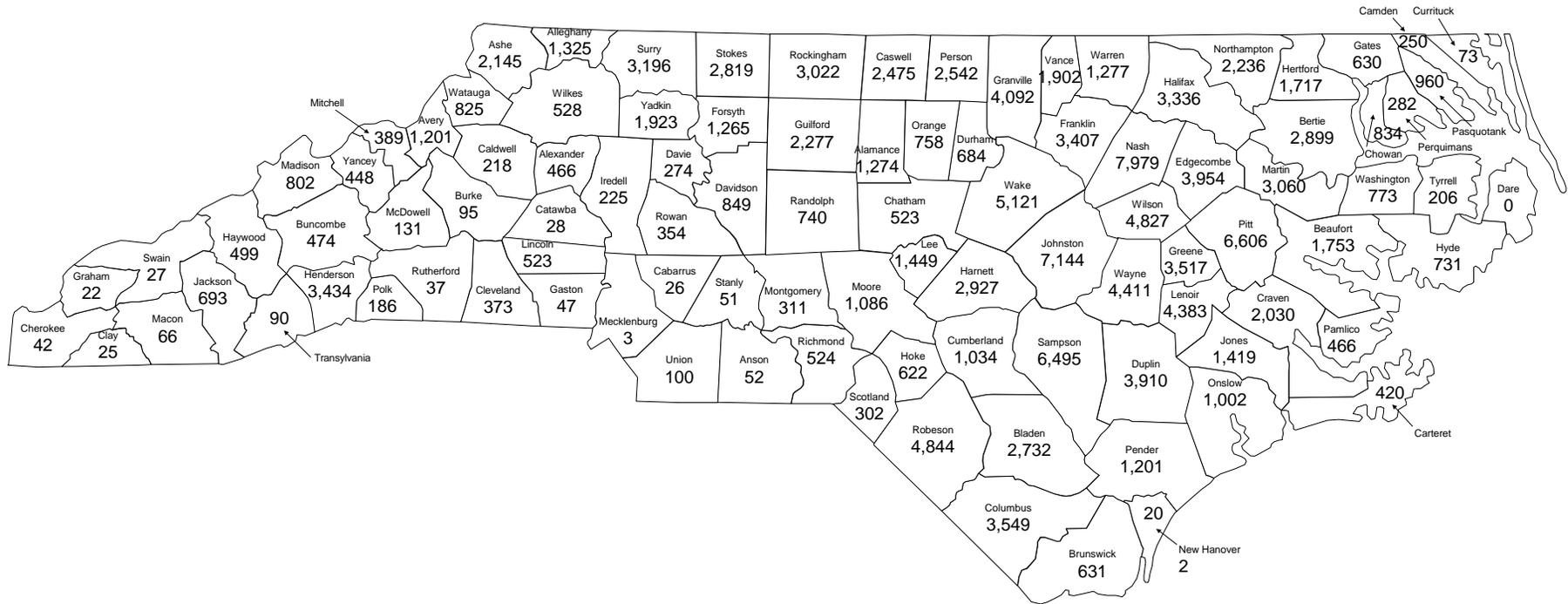
Crop	Hours For Task	Daily Work Hours	Peak Season Length (Work Days)
Apples	91.00	7.7	32.21
Asparagus	72.50	7.7	34.00
Berries	198.87	7.7	27.98
Blueberries	181.50	7.7	31.79
Cantaloupes	40.00	7.7	30.79
Christmas Trees	31.70	7.7	21.43
Collards	131.25	7.7	28.00
Cotton	2.945	7.7	44.29
Cucumbers	77.00	7.7	21.79
Eggplant	151.20	7.7	58.00
Grapes	48.75	7.7	86.00
Green Peas	28.00	7.7	17.00
Head Cabbage	69.42	7.7	43.33
Hot Peppers	159.80	7.7	52.00
Lima Beans	9.00	7.7	24.00
Mustard Greens	178.00	7.7	28.00
Nectarines	39.50	7.7	66.00
Okra	165.00	7.7	33.95
Peaches	81.65	7.7	33.07
Peanuts	8.05	7.7	14.29
Pecans	15.00	7.7	14.00
Potatoes	21.96	7.7	29.29
Pumpkins	27.33	7.7	38.00
Snap Beans	37.92	7.7	29.52
Southern Peas	6.00	7.7	19.91
Squash	69.54	7.7	21.00
Strawberries	355.10	7.7	22.14
Sweet Corn	36.67	7.7	33.57
Sweet Peppers	141.00	7.7	22.14
Sweet Potatoes	52.56	7.7	52.14
Tobacco-Burley	69.50	7.7	26.43
Tobacco-Flue Cured	74.00	7.7	25.00
Pee Dee-Lumber River	64.00	7.7	25.00
Coastal Plain	84.00	7.7	25.00
Piedmont	103.00	7.7	25.00
Other	82.67	7.7	25.00
Tomatoes	266.67	7.7	45.00
Turnip Greens	119.50	7.7	28.00
Turnips	26.00	7.7	37.80
Watermelons	45.33	7.7	26.43

North Carolina Estimates For MSFW Workers Only By County Final



Reforestation Statewide: 664
 Grand Total -- MSFW in North Carolina: 100,960

North Carolina Estimates For MSFW Workers And Non-Workers By County Final



Reforestation -- Workers and Non-Workers Statewide: 1,001
 Grand Total -- MSFW Workers and Non-Workers in North Carolina: 156,893

BIBLIOGRAPHY

- Abt Associates, *Study of WIC Participant and Program Characteristics 1996, Final Report*, prepared for the U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis and Evaluation, Alexandria, VA 1998.
- Aguirre International and the U.S. Department of Labor, "National Agricultural Workers Survey," Washington, D.C.
- Association of Farmworker Opportunity Programs, "National Farmworker Database," Arlington, VA.
- Brown, Sharon, Tri County Community Health Center, conversation October 2, 1998.
- Capehart, Tom and Annette Clauson, *Flue-Cured Tobacco Farms Selected Characteristics*, Agricultural Economic Report Number 653, U.S. Department of Agriculture, Economic Research Service, Washington, D.C., 1991.
- Clauson, Annette L. and Verner N. Grise, *Flue-Cured Tobacco Farming: Two Decades of Change*, Agricultural Economic Report Number 692, U.S. Department of Agriculture, Economic Research Service, Washington, D.C., 1994.
- Clauson, Annette L., *Characteristics of Burley Tobacco Farms*, Agricultural Economic Report Number 600, U.S. Department of Agriculture, Economic Research Service, Washington, D.C., 1988.
- Economopoulos, Michael, South Eastern Forestry Contractors Association, "Options for Tree Planting Labor, (published in the *Forest Farmer*), Leslie, AR.
- Edward E. Judge and Sons, Inc., compiler, *The Directory of Canning, Freezing, Preserving Industries, 1998-99* Westminster, MD., 1998.
- Larson, Alice C. and Luis Plascencia, *Migrant Enumeration Project*, contract with the Project Advisory Group, Legal Services, Washington, D.C., 1993.
- Larson, Alice C., *Number and Characteristics of Migrants in Mississippi*, prepared for Central Mississippi Legal Services, Jackson, MS, 1992.
- Leland, Alfer, *Bullinger's 1997 Postal and Shippers Guide*, St. Louis, MO, 1997.
- North Carolina Department of Agriculture and Consumer Services, "Crops – Usual Planting and Harvesting Dates," Raleigh, NC, 1996.
- North Carolina Department of Agriculture and Consumer Services, Agricultural Statistics Division, *1997 Annual Crop Summary*, Raleigh, NC, 1998.
- North Carolina Department of Health and Human Services, Division of Women's and Children's Health Nutrition Services Section, "North Carolina WIC," (special data run), Raleigh, NC, 1998.
- North Carolina Department of Labor, Agricultural Safety and Health Division, "1998 Registered Growers – Migrant Camps" (special data run), Raleigh, NC, 1998.
- North Carolina Department of Labor, Agricultural Safety and Health Division, *Migrant Housing Bulletin* (agency publication), Raleigh, NC.

- North Carolina Department of Labor, Agricultural Safety and Health Division, *The Cultivator*, (agency publication), Raleigh, NC.
- North Carolina Department of Public Instruction, Division of Accountability Services, "Migrant Data," (special data run), Raleigh, NC, 1998.
- North Carolina Employment Security Commission, Rural Manpower Services, "1997, 1998 Estimate of Migrant and Seasonal Farmworkers During Peak Harvest by County," Raleigh, NC.
- North Carolina Office of Rural Health and Resource Development, "North Carolina Harvest, Harvest Period by Crop," Raleigh, NC.
- North Carolina State University, College of Agriculture and Life Sciences, "Crop Budgets" Raleigh, NC, years vary..
- Parker, Michael, et. al, *High Density Apple Orchard Management*, North Carolina Cooperative Extension Service, College of Agriculture and Life Sciences, North Carolina State University, Raleigh, NC, 1998.
- Pennsylvania State University, *Pennsylvania Tree Fruit Production*, University Park, PA, 1998.
- Smith, Scott A. and Timothy G. Taylor, *Production Costs for Selected Florida Vegetables, 1996-97*, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL, 1997.
- Student Action with Farmworkers, *From the Ground Up* (organization publication), Durham, NC.
- Telamon Corporation, "Client Statistics," Raleigh, NC, 1998.
- U.S. Department of Agriculture, Agricultural Marketing Service, Tobacco Division, *Tobacco Market Review, Fire-Cured and Dark Air-Cured, 1989 Crop*, Washington, D.C., 1990.
- U.S. Department of Agriculture, Economic Research Service, *Report on the Feasibility of Insuring Christmas Trees*, Washington, D.C., 1995.
- U.S. Department of Agriculture, Forest Service, forest statistics by state and county (as published in various state specific *Forest Statistics* reports), from the internet web site, 1998.
- U.S. Department of Agriculture, Forest Service, *Tree Planting in the United States* (1992-1996 annual reports), Washington, D.C.
- U.S. Department of Agriculture, National Agricultural Statistics Service, *Usual Planting and Harvesting Dates for U.S. Field Crops*, Washington, D.C., 1997.
- U.S. Department of Agriculture, National Agricultural Statistics Service, *Farm Labor Reports: Workers and Wages*, Washington, D.C., various years.
- U.S. Department of Agriculture, National Agricultural Statistics Service, *1997 Census of Agriculture*, Washington, D.C., 1999.
- U.S. Department of Agriculture, Statistical Reporting Service, *Potatoes, Sweet Potatoes: Usual Dates for Planting, Harvesting and Marketing*, Washington, D.C., 1973.
- U.S. Department of Agriculture, Statistical Reporting Service, *Usual Planting and Harvesting Dates for Fresh Market and Processing Vegetables*, Washington, D.C., 1977.

- U.S. Department of Health and Human Services, Bureau of Primary Health Care, Migrant Health Program, "UDS Data," Bethesda, MD.
- U.S. Department of Health and Human Services, Public Health Service, Health Resources and Services Administration, Bureau of Health Care Delivery and Assistance, Migrant Health Program, *An Atlas of State Profiles Which Estimate Number of Migrant and Seasonal Farmworkers and Members of Their Families*, Rockville, MD., 1990.
- U.S. Department of Labor, Bureau of Labor Statistics, "Employment and Wages Monthly Employment", *ES 202* report, Washington, D.C., 1995-1997.
- U.S. Department of Labor, Office of Program Economics, *Findings From the National Agricultural Workers Survey 1990*, Washington, D.C., 1991.
- United States Code*, "Title 42, The Public Health and Welfare, Chapter 6A, Public Health Service, Public Health Service Act, Title III, Part D, Section 330, Migrant Health."
- University of Tennessee, Institute of Agriculture, Agricultural Extension Service, "Crop Budgets," Knoxville, TN.
- University of Tennessee, Institute of Agriculture, Agricultural Extension Service, *Burley Tobacco Budgets for 1997*, Knoxville, TN, 1997.
- Yadkin Valley Economic Development District, "Community Assessment, FY 1998-99," Boonville, NC, 1998.