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Contrasts and Commonalities: Hispanic and Anglo Farming in Conejos County, Colorado

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ABSTRACT The San Luis Valley farming systems' project sought to identify improved technologies and better decision-making capabilities for modest-sized and limited-resource farms. Characteristics of limited-resource farms operated by Hispanic and Anglo families, which may or may not be associated with differential rates of social participation and/or institutional discrimination, were examined. To determine characteristics of client farms, data were collected and stratified on farm resources, farm operations, goal hierarchies, and operational management strategies. Hispanic and Anglo farmers differed significantly in several respects. Key among these differences were crop and livestock enterprise mixes and the importance of off-farm income to households. For many farming parameters, farm size, age of farmer, and full-time/part-time characteristics overshadowed ethnicity as a determinant of decision-making. However, an important subset of the farm population is composed of Hispanic farmers who operate below median farm acreage on a part-time basis and for whom few technological developments or assistance programs are specifically designed or delivered.

Introduction

Hispanics are the fastest growing and largest ethnic minority group in the United States. The proportion of Hispanics residing in non-metropolitan locations in the five southwestern states (Texas, California, New Mexico, Arizona, and Colorado) decreased markedly between 1950 and 1960 (Grebler et al. 1970), but in 1980 more than 19 percent of Hispanics lived in nonmetropolitan settings (Bean and Tienda 1987).

Historically, Hispanic economic progress has been impeded by low income, which is at least partially attributable to very low levels of formal education. In both of these respects, rural Hispanics have been historically worse off than their urban counterparts (Jensen and Tienda 1989; Miller 1974; Stoddard 1973).

During the mid-1960s and through the 1970s an extensive body of research knowledge and literature was accumulated by rural sociologists about southwestern United States Hispanic populations (Eastman 1972; Knowlton 1965; Kuvlesky 1979a, 1979b; Miller 1978). Recent changes in the economic structure of rural America (Henry et al. 1986) have served to refocus attention on rural poverty and economic distress (Bean and Tienda 1987; Bedies 1987; Deavers et al. 1986; Farmer et al. 1989; Lichter 1989; Tienda and Jensen 1988).

The proportional rate of poverty among rural Hispanic-Americans

in 1970 and 1986 (approximately 32% of rural farm households) was roughly twice the rate of poverty experienced by rural people in general and over three times the rate of the U.S. urban population (Durant and Knowlton 1978; Jensen and Tienda 1989). Rural Hispanics are a diverse people (Miller 1974), and at least a subset of rural Hispanics appear to be entrenched in poverty.

In contrast, agricultural research and extension education in the United States has concentrated on the rural "middle-class" society characterized by a high degree of specialization; single-crop technologies applicable primarily to larger, capital-intensive farms with an extensive division of labor and social and economic interdependence among nonrelated members. As a result, farms with more limited resources (land, management, and capital) have been partly bypassed by these state and federal expenditures. Warner and Christenson's (1984) work indicated that extension services reach a lower proportion of Hispanics than the proportion it reaches in the total population. Yet these farms form an important subset of rural America, a stratum of the farm population whose welfare is now receiving increasing policy attention. Farm resource limitations contribute to poverty and diminished roles in the farm community. Research on limited-resource farmers has an important social dimension since ethnic minorities are often predominant among limited-resource farm owners (Rauch 1979).

With these observations in mind, Colorado State University together with the Cooperative Extension Service conducted a farming systems research project in northeast Conejos County, Colorado from 1984 through 1989. The research area in the San Luis Valley (SLV) was selected to emphasize limited-resource farms operated by a mixture of Hispanic and Anglo families. The chronic poverty of Conejos County, among the ten poorest in the United States, served as an additional selection factor. Identifying improved technologies through on-farm testing and developing improved decision-making tools for limited-resource clients were the primary goals.

Agriculture today in Conejos County differs significantly from that elsewhere in the SLV. Approximately 50 percent of farmers in the research area are Hispanic. Farms are generally small and only modestly capitalized. Advanced technologies in agriculture are less common. Irrigation is largely from surface-flow systems rather than wells. Water rights can be meager and uncertain, depending on snowpack, runoff, and ditch priority. It is important to note that historically the majority of Hispanic landowners were of Spanish decent, while many of the laborers, on both Spanish and Anglo farms, were Mexicans. Most farms are mixed enterprise units and include livestock. Services of private and government institutions are comparatively less available to the smaller farms in the area.

Methods

Farming systems research methods were chosen because they emphasize 1) resource limitations, 2) multiple enterprises and their interactions, 3) the household as the decision unit, and 4) the systems perspective in farm/household decision-making.

Farming systems research identifies "recommendation domains" as part of its method (Tripp 1986). These are defined as "a homogeneous group of farmers who share the same problems and possess similar resources for solving these problems. This group of farmers is expected to adopt (or not adopt) the same recommendation, given equal access to information about it" (Low 1986:82). Recommendation domains are used to identify groups of farms for which specially designed interventions might be developed. Recommendations that are found acceptable on a few farms should be widely adoptable across the domain.

Despite early efforts by the SLV project to choose an area with a homogeneous population, farmer contacts indicated that important stratifications still existed. The present study began with the expectation that 2-4 farm groups could be clearly delineated based on resources available, ethnicity of the farmer, and farming objectives. Technologies could then be hand fitted to their specific needs.

Previous researchers have differentiated SLV farmers into subgroups for analysis (Salazar 1970; Snyder 1948). Rauch (1979) looked at small farms defined by having gross sales of less than \$25,000 in 1977. He identified three subgroups by the intensity of their involvement in farming: full-time, part-time, and retired. In Conejos County these groups constituted 38 percent, 54 percent, and 8 percent, respectively.

Of interest to the present study, Rauch found that although Hispanics constituted only 15 percent of all Conejos County farmers, they accounted for 63.5 percent of the *small* farms as he had defined them. Thus, Hispanics represent a disproportionately large number among limited-resource farms in the county.

A farmer survey was conducted in January 1987 to obtain data for defining recommendation domains. A complete census was attempted of the 65-70 farm families in the research area. Several families were unavailable during the short survey opportunity between semesters in the winter. Project budget constraints and numerous scheduling conflicts with student interviewers prohibited additional attempts to survey remaining families at a later date. Fifty families were personally interviewed, yielding 44 useable questionnaires (65% of farm families in the research area). Discussions were open and candid—a legacy of three previous summers of research contact. Earlier structured interviews with these same clients (Hatami et al. 1984) served as pretests

for the survey instrument. Statistical outlier techniques eliminated three nontypical farms. The remaining forty-one can be said to represent "typical" farmers in the research area.

Analysis focused around three stratifications. Previous work in the SLV had suggested that farms operated by Hispanics differed in important respects from those operated by Anglos. Thus, the first disaggregation was ethnic. The final sample contained 21 Hispanics (identified by Spanish surname) and 20 Anglos. Ethnic categories are significant bases for stratification because people believe them to be the natural divisions of mankind (Centers 1949).

Both economic theory and on-site observations suggest that full-time and part-time farmers may follow different management criteria. For this analysis, full-time was defined as receiving more than 90 percent of household income from farming. Forty-five percent of the sampled Hispanics considered themselves part-time farmers compared to only 15 percent of the Anglo farmers ($p < .001$). The Anglo part-time subsample is too small ($N = 3$) for meaningful statistical analysis in most cases. Thus, ethnic differences were explored using comparisons between full-time farmers only.

The distribution of ethnic groups within a community is related to the prevailing system of land use, the manner in which natural resources are allocated (Shibutani and Kwan 1965). Thus, the third stratifier was farm size, measured as irrigated crop acreage. Sample farms varied from 15 to 800 irrigated acres. Three hundred forty irrigated acres proved a convenient, though arbitrary, boundary between small and large farms. In this area, farms below this threshold are more likely to be part-time farmers, while larger farms are predominantly full-time operators.

Farm characteristics

Irrigated acreage

Table 1 presents selected statistics on sample farm size and farming activities. The difference between full-time and part-time farms (449 and 236 irrigated acres, respectively) was highly significant ($p < .01$). This distinction was not significant ($p < .01$) within each ethnic group.

Ethnic comparisons for irrigated acreage and total acreage failed to yield significant differences. Indeed, the similarity in size between part-time farmers from each group is notable. These data suggest that households in Conejos County farming less than 300 irrigated acres normally require supplemental income from off-farm employment and that this affects both ethnic groups alike.

Cropping patterns

Irrigated alfalfa forms the common denominator among respondents; all but one produce the crop. While Hispanic farmers used an average

Table 1. Selected farm characteristics and farming activities among sample farms

Item	Hispanic			Anglo		
	Full time	Part time	All farms	Full time	Part time	All farms
Sample size	11	10	21	17	3	20
Irrigated acres	421	234	332	468	244	434
Number growing:						
Alfalfa	11	10	21	16	3	19
Barley	4	2	6	16	1	17
Number of crops:						
1	3	5	8	0	0	0
2	5	4	9	3	2	5
3	2	1	3	13	1	14
4	1	0	1	1	0	1
Alfalfa as percent of cropped acres	71	82	76	51	47	50
Cattle:						
Percent with herds	82	40		77	67	
Herd size	91	52		160	17	
Sheep:						
Percent with flocks	55	60		5	0	
Flock size	488	294		0	0	

* Data from single respondent not disclosed.

of 76 percent of their 1986 crop area for growing alfalfa, giving alfalfa a dominant role on Hispanic farms, Anglo farmers averaged only 50 percent. Most Hispanic farms produce either alfalfa alone or alfalfa plus one other crop. Anglo farmers, by contrast, commonly grow alfalfa plus two other irrigated crops, usually cereal grains. There were no Anglo farmers in the sample producing only alfalfa. The ethnic distinction in crop mix is highly significant ($p < .001$).

Barley (malting and feed) was second only to potatoes as the SLV's biggest cash crop. It is grown by 85 percent of the Anglo farmers but only 29 percent of Hispanics. Most barley is produced by full-time farmers, thus eliminating half of the Hispanic farm operators. The only wheat and potato acreage in the sample was grown by full-time Anglo farmers.

These cropping data define important ethnic differences in the number and species of crops grown. The implicit conclusion is that Hispanic farm incomes are much more narrowly dependent on the productivity and price of a single crop, alfalfa. This is especially true for the smaller, part-time farmers. Agricultural programs designed to enhance the welfare of these farmers must give priority to alfalfa and to efforts to encourage them to grow alternative crops. At this time, research and extension on potatoes or wheat will have little impact on Hispanic farmers.

Livestock holdings

Cattle and sheep dominate the livestock enterprises of farmers in the SLV. Only scattered individuals raised poultry, turkeys, horses, and hogs. Table 1 provides data on commercial holdings of cattle and sheep. Considerable variation was found in herd and flock sizes with the result that most of the comparisons that might be made between these data are statistically insignificant.

The most important distinction in the livestock data is the observation that, with one exception, Anglo farmers in the project area do not raise sheep. In contrast, sheep are found on 57 percent of Hispanic farms as a commercial enterprise and on others for home consumption only.

Livestock enterprises were combined using "animal unit" conversion ratios that reflect approximate nutrition and grazing requirements (Gutierrez et al. 1990), and total animal units were estimated for each farm that owned livestock. This total was then divided by the irrigated acres farmed, giving an overall "livestock intensity coefficient." With the exception of part-time Anglo farmers, mixed crop and livestock farms in the project area tend to strike a common average of one animal unit for every three irrigated acres. A second "livestock roughage intensity coefficient" was computed by dividing total animal units by the irrigated acres farmed for alfalfa production. Full-time Hispanic and Anglo farms averaged one animal unit for every 1.49 irrigated alfalfa acres, while part-time Hispanics averaged one animal unit for every 1.73 irrigated alfalfa acres. The livestock roughage intensity coefficient for the part-time Anglo farm indicates that livestock production systems were not a primary enterprise.

These "livestock intensity coefficients" are consistent with the characterization of livestock and alfalfa hay production marketing systems in the SLV (Gutierrez et al. 1990). Thus, while the species composition of herds changes between ethnic groups, the grazing and roughage intensity implicit in their choice of stock mix remains constant. This systematic crop-livestock linkage can be attributed to the livestock production system practiced in the research area, which is to produce the on-farm supplemental roughage necessary to carry livestock through the winter.

Use of credit

Information was asked on the use of credit during the five years prior to the survey. Among the options were borrowing for 1) operating capital, 2) replacing existing equipment, 3) purchasing new types of equipment (implying a technology change), 4) land purchase, 5) building or repairing farm buildings, 6) home improvements, 7) land improvements, and 8) livestock purchase. Statistically significant conclusions include age of farmer as the dominant influence; younger

farmers, whether Anglo or Hispanic, tended to borrow more often and for more reasons than older farmers. Among Hispanic farmers, those operating larger acreages (the younger farmers) are considerably more active in the capital market than their smaller, older neighbors. This distinction overshadows the full-time/part-time comparison in the cases of both ethnic groups. Although not significant ($p < 0.1$), Anglos were more active than Hispanics in borrowing for operating capital and equipment replacement.

Management objectives

Information was sought on farmers' management objectives in two different contexts, overall farming goals and objectives that underlie daily or seasonal operating decisions. Respondents were asked to indicate the importance they assigned to each of several possible goal statements.

Overall farming goals

Overall goals included 1) keeping the farm in the family; 2) keeping the farm as a source of retirement income or residence; 3) maximizing present income; 4) supplementing other present income; 5) the farm permits me to live in the area, income is a secondary consideration; and 6) employment opportunities in other occupations are not good. The intent was to assess why individuals farmed and how this related to broad family goals. Respondents ranked each of these statements on a scale of 1-5, five indicating "most important" and one, "unimportant."

Across the whole sample, keeping the farm in the family ranked highest with an average score of 4.05. In second place (score, 3.78) was the lifestyle consideration implied in goal 5 above: "The farm allows me to live in this area, income is a secondary consideration." Essentially tied for third were maximizing current income (3.62) and keeping the farm for retirement income or residence (3.54). In last place, below "I have no other employment opportunities" (2.13), was supplementing current income with a rank score of 1.90.

Thus, this sample broadly confirmed Harper and Eastman's findings (1980) that farmers who operate small farms rank quality-of-life factors and remaining in agriculture higher than income, profit, or net worth considerations. Beyond these general findings, we sought the influence of selected farm characteristics on goal hierarchies.

Full-time vs. part-time. As noted earlier, full-time/part-time comparisons were not possible among Anglos. As shown in Table 2, the full-time/part-time distinction caused several significantly different goal rankings to surface among Hispanics.

Differences in perspective and values are clearly evident in these data. Both groups equally value retaining the farm in the family. In

Table 2. Goal rankings by full- and part-time Hispanic farmers

	Hispanic farmers		<i>p</i> <
	Full-time	Part-time	
Keep farm in family	4.18	4.20	NS
Retirement income	2.64	4.70	.01
Maximize present income	4.00	2.90	.10
Supplement present income	1.55	2.90	.05
Permits living in area	3.27	4.40	.10
No other jobs available	2.55	1.10	.10

addition, full-time farmers seek maximum incomes from farming and rank the opportunity to live in the area and be part of the community third. Part-time farmers place their highest value on the farm as a retirement resource. These farmers value their farms presently for supplemental income and because their farm lets them live in the area as part of the local community.

Hispanic vs. Anglo. The responses of full-time Hispanic farmers were compared with those of full-time Anglo farmers. No significant differences were found with respect to any of the overall farming objectives. Neither were there any significant differences when all Hispanics were combined and compared with all Anglos. The strong conclusion is that overall farming goals reflect not ethnicity, but whether a farmer is in production agriculture as a full-time career or not. However, further stratification by farm size and age of farmer adds additional insights.

Size and age stratifications. Larger Hispanic farms tend to be operated by younger farmers. Among Hispanics, the goal of maximizing present income was scored higher by large farmers than by small farmers (4.63 vs. 2.77) ($p < .001$). Similarly, younger Hispanic farmers gave this goal a score of 4.18 compared to only 2.70 for Hispanic farmers who were 60 years old or older ($p < .02$).

Although less significant, diametrically opposite results were obtained for the goal of continuing to live in the area. With this objective, usually older, part-time farmers who operated small farms scored 4.31 against 3.00 for operators of larger farms ($p < .10$). Older Hispanics (>59 years) scored this goal 4.40 vs. 3.27 for younger farmers ($p < .10$). This goal ranked highest among all choices for both the older farmers and the smaller farms.

Similar distinctions were not clearly observable among Anglo farmers. Anglo farmers gave relatively uniform scores to all overall farm objectives, suggesting a significant degree of managerial homogeneity within this ethnic group.

The stratification by farm size and age of farmer among the Hispanic farms suggests the possibility of a "life" cycle such as that

described by Park (1950) in his "race relations cycle." Park's cycle suggests that as members of minority groups are absorbed into the functioning of the dominant group, they acquire the culture of the dominant group (i.e., assimilation stage of younger full-time Hispanic farmers), hence, the similarity of overall farming goals between Hispanic and Anglo farmers.

Two additional observations are worth noting. First, the importance accorded family concerns (e.g., keeping the farm in the family and retaining residence in the area) among overall farm objectives was striking. Conventional farm management and agricultural economic theory concentrates heavily on profit maximization and resource allocation under the assumption that maximizing incomes is the primary, if not the only, goal. In this sample, such an emphasis is only characteristic of the responses of farmers who operate large farms. Both groups of such farmers ranked income maximization first among overall farm goals. For smaller Hispanic and Anglo farms, this goal ranked fourth and third, respectively, after combinations of keeping the farm in the family, living in the area, and retirement income. Identical patterns emerge if farms are classified as full- or part-time (i.e., no ethnic differences, but full-time farmers rank income maximization first, while part-time farmers rank it fourth).

The second observation is a cultural one. Hispanic scores tended to be either higher or lower than the scores given by Anglo respondents. Furthermore, variability was higher within the individual responses given by Hispanics. This suggests that this group tends to be somewhat more intense in their feelings (either positively or negatively) and more committed to values they associate with farming.

Short-term objectives

Respondents were asked to score a second set of objectives reflecting daily or seasonal decision-making. Among the choices of operational criteria were those designed to identify 1) risk aversion (avoid being in debt, avoid mortgaging my land, stabilizing income); 2) commercial orientation (maximizing income, maximizing yield, minimizing costs); and 3) social considerations (being able to trade with people I trust).

Farm size emerged as the most important influence on short-term management objectives. Farmers who operate larger farms tend to be more commercially oriented, while operators of smaller farms, which include several part-time operators, tend to be more security oriented or risk averse. This was evidenced by the particularly high ranking given by Hispanic farmers who operate smaller farms to the two criteria for avoiding the credit market and "being able to trade with people I trust." Again, this suggests that this subset of the farm population (small farms, operated by older Hispanics as a partial source of income) formulates different short-term management strategies than do other groups.

Economic consequences

In the holistic context of farming systems, the differentials in available resource, crop and livestock mix, and farming objectives identified above should lead to different economic results. To test this hypothesis, annual gross returns were simulated for each respondent farm for ten years, 1979 through 1988. Each farmer's 1986 crop and livestock mix were held constant through the period. Crop acres were multiplied by average regional yields and farm gate prices recorded in each year (Colorado Department of Agriculture 1980–1989). Similarly, using the number of cows or ewes as a base, the value of calves, lambs, cull animals, and wool output was estimated. The result was a simulated ten-year pattern of gross receipts for each farmer in the sample. This method is coarse but indicative. (Comprehensive financial analysis of individual farms was beyond the original scope of this system's project, and therefore, meaningful and accurate costs of production data and resulting net return estimates are not available.)

Table 3 presents selected data. For this simulation, Anglo farmers grossed \$90 more per irrigated acre than did Hispanic farmers. This conclusion is robust, appearing in comparisons between all members of each group or in comparisons limited to full-time farmers. This observation results from the significantly different cropping patterns identified earlier. The data show that Anglo farmers use higher input levels than Hispanic farmers. Thus, it is possible that net returns, if we had been able to measure them, would have been more alike than gross returns.

The composition of gross returns reflects greater Hispanic involvement in sheep rearing. Hispanic gross farm returns include 15–20 percent from sheep enterprises, averaged across the sample, while Anglo farms essentially avoid rearing sheep. Consequently, Hispanics depend proportionately less on cattle (by some 5%) and on crops (10–15% less) than do Anglos.

Risk management is an important determinant of farm decision-making. Smaller farms are believed to be more risk averse than larger farms, adopting practices that insulate them from market and climatic vagaries. The data above on credit use suggest that Hispanics in general and part-time Hispanic operators of small farms, in particular, may be more risk averse than other subgroups in the sample.

The simulated decade of gross returns provides estimated coefficients of variation (CV) for returns from sheep, cattle, all crops together, and total gross returns. Given the method of estimation, the CV for cattle and sheep enterprise returns were constant at .105 and .200, respectively, for the ten-year period. From this comparison alone, one might question the advisability of sheep husbandry among risk-averse farmers. CVs for crop returns were nearly identical between Hispanics and Anglos with the latter insignificantly lower (.193

Table 3. Simulated gross returns for different farm groups

Farm class	Gross Returns ^a	Composition of returns (% of total)		
		Cattle	Sheep	Crops
Full-time Hispanic	\$137	25.8	15.2	58.9
Full-time Anglo	\$226	29.4	0.3	70.3
t	2.46	0.40	3.01	1.09
All Hispanic	\$123	22.3	20.9	56.8
All Anglo	\$214	28.4	0.3	71.3
t	3.01	0.80	4.11	1.81
All full-time	\$191	28.0	6.2	65.8
All part-time	\$118	19.4	20.8	59.8
t	2.62	1.01	1.86	0.66

^a Gross returns per irrigated acre, 1979–1988 average.

vs. .200). However, when all enterprises are combined, Hispanic farmer total gross returns had a CV of .158, slightly lower than the .163 of Anglo farmers.

Apparently, during the 1979–1988 decade, variations in returns to the several components of the Hispanic enterprise mix offset each other sufficiently to lower total risk to equal (or fall below) that of Anglo farms. Sheep prices apparently moved countercyclically with cattle prices, providing an empirical example of the theoretical case for diversification as a risk-reduction strategy.

Part-time farms experienced more variable patterns in their gross returns than did full-time farms. This difference was highly significant (99%) for both crop and livestock returns when examined separately. Table 1 explains that part-time farms are less diversified in both their crop and livestock enterprise mixes than their full-time neighbors. The level of diversification on part-time farms is usually a function of resource availability and the level of nonfarm opportunities.

Summary of generalized patterns

As noted at the outset, this research sought to isolate a few unique farm types that could then become target groups for specially designed technology transfer systems or policies that would match the characteristics of the individual groupings. The analysis, however, revealed a complex pattern of associations. No one or even two stratifications proved to be best for defining clearly distinct farm groups. Instead, several different stratification criteria proved useful for explaining farm parameters:

1. Hispanic and Anglo farms do not differ significantly in total farm size or number of irrigated acres. Highly significant farm-size differentials do exist, however, between full-time and part-time farmers.

2. The composition of each ethnic group varies significantly with respect to the full-time/part-time criterion. Forty-eight percent of Hispanics were part-time farmers compared to only 15 percent of the Anglo subgroup. The proportion of limited-resource farms among Hispanic farms in the study area was roughly two and a half times the rate for U.S. rural people in general.
3. Nearly everyone in the research area grows irrigated alfalfa. Hispanic farmers devote 70–80 percent of their irrigated land to alfalfa, significantly more than Anglo farmers. Their farm incomes are thus particularly dependent on this one crop.
4. Hispanic farms grow fewer crop species than do Anglo farms. As a generalization, Anglo farmers normally cultivate alfalfa plus two other crops, while Hispanic farmers grow alfalfa alone or alfalfa plus one other crop.
5. Eighty-three percent of all farms in the research area raise livestock commercially. Anglo farmers concentrate almost exclusively on cattle. Hispanic farms fall into four categories: cattle only (24%), sheep only (24%), cattle and sheep (33%), and neither sheep nor cattle (19%). All groups average between 30–35 animal units per hundred irrigated acres.
6. The propensity to borrow money is related to two factors: age and full-time/part-time status. Younger farmers borrow more often and for more reasons than do older farmers. Part-time farmers borrow much less often than full-time operators.
7. Among overall farming goals, family and lifestyle considerations ranked highest when all responses were pooled. The two relevant objectives were "keeping the farm in the family" and "being able to live in the area, income being a secondary consideration."
8. Stratification of full-time/part-time status and the age distribution of farmers (within ethnic groups) were the dominant factors affecting longterm farming goals. Full-time farmers ranked income maximization significantly higher than did part-time farmers. Part-time farmers listed retirement income and being able to live in the area as dominant farm goals. Full-time Hispanic farmers tended to be younger, while part-time Hispanic operators of small farms tended to be older (>59 years).
9. Farm size emerged as the most important influence on short-term management objectives. Larger farms tended to be managed with commercial orientations (maximize income or yield, minimize cost), while small farms adhered to risk-averse criteria (avoiding land mortgage or debt in general) and a social criterion ("being able to deal with people I trust").
10. Anglo farmers gross \$90 per irrigated acre more than Hispanic farmers. By adding sheep to their enterprise mix, Hispanics

are able to reduce their income variability to levels comparable or below those of Anglo farmers.

Implications for agricultural programs

The original purpose of this paper was to identify characteristics that would support designing and implementing specialized agricultural research and extension programs for a limited-resource farm clientele. Ethnicity did not prove to be as strong an indicator as was originally believed. With most of the survey responses, there were only modest differences between Hispanic and Anglo farmers if any at all. The primary differences that did arise occurred in cropping patterns and livestock holdings.

From a policy perspective, these differences result in the following considerations. First, if improved farm income among Hispanic farmers is an accepted goal, production and marketing programs focused on alfalfa can potentially affect every Hispanic household. Anglo farmers will also benefit, but to a lesser extent due to their lower dependence on this crop.

Second, Hispanic farmers have the potential, at least at first glance, of expanding their income sources by adding additional high-value crops such as potatoes and barley. Perhaps the reason they do not grow such crops lies in their hesitation to borrow funds for the purchase of the new technology needed to add a new crop.

In the area of livestock, cattle management programs will benefit both ethnic groups, although the primary beneficiaries will be Anglo farmers. If research or extension benefits are distributed according to the distribution of animals, Anglos who own 65 percent of the cattle identified in the survey would receive a greater share of the benefits. For similar reasons, an improved sheep management program would benefit primarily Hispanic farms on which 99 percent of all sheep are found.

Beyond these few ethnic differences, the main distinctions were found between farm size groups or between full-time and part-time farmers. These two stratification variables are used in Table 4 to explore the resulting farm groups as potential targets for agricultural policy, research, and extension.

Large, full-time farms dominate agricultural production in the sample area. Although they constitute only one-half of the number of farms, they cultivate approximately 70 percent of the irrigated land, 70 percent of the alfalfa and barley, and raise more than 85 percent of the cattle. If society's objective for this region is only to maximize agricultural output, this is the group toward which technology development should be targeted.

Questions about the distribution of benefits and the breadth, diversity and vitality of the agricultural community are also valid policy concerns for society. Given this, Table 4 can be interpreted as follows:

Table 4. Farm groupings in the SLV project area classified by size^a and full- or part-time status

Item	(Unit)	Full-time		Part-time	
		Large	Small	Large	Small
Farms sampled	(#)	21	7	3	10
	(%) ^b	51.2	17.1	7.3	24.4
Hispanic/Anglo	(#)	7/14	4/3	2/1	8/2
Area farmed	(ac)	19,311	2,751	1,991	1,705
	(%) ^b	75.0	10.7	7.7	6.6
Irrigated area	(ac)	11,020	1,557	1,615	1,454
	(avg)	525	222	583	145
	(%) ^b	70.4	10.0	10.3	9.3
Irrigated percent	(%) ^c	57.1	56.6	81.1	85.3
Alfalfa	(ac)	5,478	769	961	696
	(%) ^b	69.3	9.7	12.2	8.8
Barley	(ac)	1,920	503	286	110
	(%) ^b	68.1	17.8	10.1	3.9
Crop species	(#)	2.7	2.1	2.0	1.7
Cattle	(herds)	17	5	1	5
	(#)	2,628	155	105	137
	(%) ^b	86.9	5.1	3.5	4.5
Sheep	(flocks)	3	4	2	4
	(#)	1,950	810	1,530	236
	(%) ^b	43.1	17.9	33.8	5.2
Percent of group borrowing for:					
Operating capital	(%) ^d	85.7	57.1	66.7	50.0
Equipment replacement	(%) ^d	71.4	85.7	100.0	30.0
New technology	(%) ^d	75.0	14.3	100.0	10.0
Land purchase	(%) ^d	28.6	14.3	22.2	0.0

^a Large farms > 340 irrigated acres.^b Percentage of total in sample.^c Percentages for this item are irrigated acres farmed expressed as percent of total area farmed.^d Percentages for these items are percent of farmers within each group.

1. Half of the farms in the area are NOT large, full-time farms. Yet these families are, at least partly, dependent on agriculture for income, food, and their community roles.
2. Two-thirds of the beneficiaries of programs targeted solely at large, full-time farms will be Anglo farmers.
3. Two-thirds of the Hispanic farm population is NOT in the large, full-time category.

Certainly these observations suggest that agricultural improvement on smaller and/or part-time farms should receive significant attention. As emphasized above, the one enterprise that impacts all farmers in the area is irrigated alfalfa. Given the cropping patterns shown in Table 1, improvement in the efficiency or profitability of alfalfa production will be especially beneficial for Hispanic and part-time farmers.

The number of crop species grown, a measure of the diversity and perhaps profitability and stability of farm incomes, shows a distinct pattern across the farm types in Table 4. This suggests that additional enterprises can offer new opportunities to the resource-restricted farm if problems of attitude, risk, expense, and lack of experience can be effectively addressed in agricultural research and extension programs.

Conclusions

In conclusion, a pragmatic framework for the broader application and delivery of research-based information and improved technology to limited-resource farms in rural America must be developed. Among the keys to this framework is Cernea's (1984) perspective on Third-World development that he calls "Putting People First." The basic idea is to use human needs and human capacities as the basic building blocks of a planned rural development program. Programs for limited resource farms should emphasize the process of building self-help capacity among people. Putting people first in this context would mean helping limited-resource farms develop the knowledge and skills to identify alternative production, marketing, and financial systems and to provide assistance with farm-level impacts and processes in mind.

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