TABLE 1. EFFECT OF SPEED OF COOLING ON FLESH FIRMNESS AND WATERY BREAKDOWN OF BARTLETT PEARS

Time to cool to 34°F	Firmness into storage		Firmness out of storage		Fruit breakdown after storage: Days of ripening at 68°F						
	(pounds)		(pounds)		(per cent)						
	Avg.	Range	Avg.	Range	0	1	2	3	4	5	6
4 hours	15.7	(14–17.5)	15.1	(12–16.5)	0	0	0	0	0	0	0
3 days	14.7	(12–18)	12.0	(7–16.5)	0	0	0	0	0	0	0
6 days	13.1	(11.5–14.5)	10.5	(7–14)	0	0	0	0	0	0	1
10 days	4.3	(4–5)	3.0	(2.4–3.5)	4	5	7	12	37	75	96

TABLE 2. EFFECT OF DELAYED STORAGE ON FLESH FIRMNESS AND WATERY BREAKDOWN OF BARTLETT PEARS

FRUIT STORED AT 32°F

Time @ 68°F before storage	Firmness into storage		Firmness out of storage		Fruit breakdown after storage: Days of ripening @ 68°F						
days	pounds		pounds		per cent						
	Avg.	Range	Avg.	Range	0	1	2	3	4	5	6
0	15.8	(12–19)	14.4	(11.5–8.5)	0	0	0	0	0	0	0
1	14.3	(12–17.5)	13.1	(10.5–16.5)	0	0	0	0	0	0	0
2	13.4	(4–16.5)	8.0	(4–11)	0	0	0	0	0	4	24
3	10.9	(7–16.5)	5.6	(3–11.5)	0	0	0	0	4	13	51
4	6.7	(4–12)	3.4	(2.5–4.5)	12	15	17	23	39	71	92
5	4.5	(3–12.5)	1.3	(0.5–3.5)	28	36	45	79	95	96	100

FRUIT STORED AT 36°F

Time @ 68°F before storage	Firmness into storage		Firmness out of storage		Fruit breakdown after storage: Days of ripening @ 68°F						
days	pounds		pounds		per cent						
	Avg.	Range	Avg.	Range	0	1	2	3	4	5	6
0	15.8	(12–19)	10.2	(6–14.5)	0	0	0	0	0	8	47
1	14.3	(12–17.5)	11.0	(7–13.5)	0	0	0	0	0	4	23
2	13.4	(5–16.5)	8.8	(5–12)	0	0	0	0	3	8	44
3	10.9	(7–16.5)	4.1	(1.5–7)	5	16	32	49	61	85	100
4	6.7	(4–12)	3.7	(3–5)	5	12	20	53	67	87	100
5	4.5	(3–12.5)	2.0	(0.5–3.5)	40	51	64	81	95	96	100

Test 2: storage

Symptoms of watery breakdown were found in fruit from certain treatments, both at time of removal from storage, and after ripening at 68°F. These symptoms were judged to be like those noted earlier on fruit in processing channels. The incidence of watery breakdown was greater on fruit stored at 36°F than at 32°F, even when ripening differences were considered. Promptly stored fruit was judged canning-ripe in 5 to 6 days following 32°F holding temperature, and in 4 to 5 days following 36°F holding temperature. At either temperature, the development of watery breakdown was directly related to the length of storage delay, as shown in table 2.

The test results substantiate a relationship between temperature management and incidence of watery breakdown of late harvested Bartlett pears. Tests 1 and 2 demonstrated that symptoms of watery breakdown could be induced by slow cooling, or delays before cooling (either of which resulted in flesh softening). Test 2 also demonstrated a relationship between storage temperature and incidence of watery breakdown, with fruit stored at 36°F developing some breakdown during subsequent ripening even after prompt, thorough cooling.

These tests were intended as preliminary evaluations of procedures to induce the incidence of watery breakdown. They show an apparent benefit from prompt, thorough cooling and low storage temperatures. They do not show the effect of any factors other than cooling and storage on this deterioration problem. The possible relationship of fruit maturity, firmness at harvest, fruit injuries, seasonal or climatic variations, cultural or handling practices have not been determined. Further work is needed to more precisely define the relationship of handling and temperature management to this disorder. The methods and results reported here are intended as guides to further studies of the relationship of management techniques to this disorder.

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Economic

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Input-output analysis, long used by national planners, is being used by economists in California Cooperative Extension to help local governments develop economic information to aid in making resource planning decisions. As the name suggests, input-output analysis involves tracing the purchases (input) and production (output) of different sectors in an economy. Data are gathered on actual production and consumption relationships among the sectors. With this knowledge, an economic model of a selected area is created so that the effect of changes in any sector's production on all the other sectors can be measured. These models can and have been created on a national, state, regional, county and city basis.

THIS PROJECT began in 1965 in response to questions about agriculture's worth to a county's economy and the relationship of various forms of land use to a local economy. From the initial inquiries, other issues related to resource use, taxation, and employment evolved.

To date, the work has been concentrated in a five county area immediately north of the San Francisco Bay, and is now being extended to other counties. Analyses have been used in a variety of ways, primarily to estimate the economic impact of results of past, or anticipated, changes in resource use within a county.

The basic tool of analysis has been an input-output model utilizing a computerized combination of economic data from local sources and information synthesized from other studies. New economic

analysis for

SOURCE PLANNING POLICY

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information can be introduced as it becomes available. The ultimate educational aim of the project is to train local government staff to use this model on their own, calling on economists in Cooperative Extension for help in making refinements and adaptations. From these consultations will come ideas for specific related studies. In all instances the purpose is to prepare information and analysis pertinent to the issues and decisions faced by county officials and planners.

As a decision-making tool input-output offers information to decision makers who are interested in estimating the economic consequences of proposed resource-use changes before their decision is made. For example, they can look at the probable economic consequences of alternative land uses such as: including a specific parcel of land in an agricultural preserve; using the same land as a mobile home park; or using it for an industrial park. To be even more specific, the model indicates the changes that each sector of the economy will experience as a result of shifts in land use.

There are limitations to use of the model. Although it gives fairly reliable estimates of economic relationships and multiplier effects, it does not give answers to questions about what should be done or what ought to be done. It cannot answer the question "What is balanced growth?" nor can it, by itself, suggest least-cost ways for county government to provide services. Public officials and interested citizens must still make their own value judgements.

Other studies can be used as part of the economic analysis. These include: benefit-cost studies; studies describing selected economic characteristics of the population, such as distribution of income and spending habits; and studies incorporating analytical techniques, such as simulation and linear programming.

County extension staff have worked closely with University-based extension economists in developing the necessary information. Many county officials have also contributed much time and information. Involving local leaders early in the study serves to build a broad understanding of inter-relationships of their local economy. In this process, participants learn to use the model and analysis in evaluating local resource-use alternatives.

The study has provided useful information for decision makers. For example, after a severe spring frost in the Napa Valley a year ago, estimates of the initial economic loss to the county from the freeze and the reduction in grape crush were given to county officials within a few minutes after the first estimates of the physical damage were received. This information was used in making a more accurate application for disaster-area relief.

In another instance, people were able to make comparisons of the economic effects resulting from having an industrial park as contrasted to a junior college. This example illustrates one trade-off between the private and public-sector investment. For instance, for similar sums of money, schools with 80 to 90% of their budget going for salaries and wages generate more economic activity within the commercial part of the economy than does an industrial plant with only 25 to 35% of its total expenditures accounted for by salaries and wages. On the other hand, a school does not add to the tax base of the community, while an industrial plant does.

Another study yielded estimates of the economic loss to the county from zoning which allowed several mobile home parks to be built on the county border. As a result, shopping facilities in another county were more accessible to park residents than similar amenities in their own county. Thus, while the county was paying for the cost of schools, fire and public protection for park residents, much of the economic activity generated by the park residents' purchases was lost to the adjoining county.

When economic growth was regarded as a desirable goal, resource planning decisions were less difficult. However, with an increasing number of questions being asked about economic growth and the financing of local government, there is an increasing demand for economic information concerning the effects of different growth and nongrowth strategies. Input-output analysis assists in meeting this demand. In the future, increased population, increased pressure on land, and increased concern for the quality of life will generate even greater demands for more objective means of comparing resource policy alternatives. Therefore, it is expected that planners, county and city officials will increasingly use more sophisticated quantitative tools of analysis as aids in their decision-making process.

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