TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE Portland, Oregon SOIL CONSERVATION SERVICE

AGRONOMY TECHNICAL NOTE NO. 55 **October 1986**

COVER CROPS FOR VINEYARDS

The following studies were made on nonirrigated vineyards in Oregon:

"Vineyard Cover Crop Evaluations - Willamette Valley, Oregon," summarizes a study of cover crop varieties on three nonirrigated vineyards.

"The Effect of Cover Crops on Availability of Water to Grape Vines in the Willamette Valley in 1985," by James Vomocil of Oregon State University, is a coordinated study of water use.

VINEYARD COVER CROP EVALUATIONS - WILLAMETTE VALLEY, OREGON

Cover crop trials were evaluated on three nonirrigated vineyards in Yamhill County; Hyland, Sokol Blosser, and Knudsen-Erath. Most of the grapes were planted in rows in a north-south direction to utilize sunlight. Precipitation is 40"+, with dry summers. Soils are Jory and Laurelwood.

The cover crop plots were seeded in 1982 and 1983. Cover crops were planted between the grapes and extended the full length of the rows.

Before these plots were planted to cover crops, they were rototilled and existing vegetation was flailed. Soil erosion varied from 20 to 40 ton per acre. Cover crops have reduced erosion to acceptable levels.

CRITERIA

Grape grower criteria used for evaluating cover crops are:

Water Competition
Soils were generally 70 to 80 percent of water holding capacity under the cover crop. Soil surface in the bare grape rows was dry. Moisture below 1-2" was the same as in the cover crops. Our findings support those of Oregon State University, as published in The Effects of Cover Crops on Availability of Water to Grape Vines in the Willamette Valley in 1985 (attached). Poorly responding cover crop varieties may perform better if summer irrigation is applied.

Maintenance
June height of plants were evaluated to determine the need to flail or mow.

Winter damage occurred when frost heave lifted ryegrass plants, breaking roots at the soil surface. Vegetative damage to leaves, observed in January, lowered some ratings.

Need for frequent reestablishment resulted in lower ratings.

Fertilizer
In 1983 and 1984 cover crops were only fertilized after establishment with 20 lbs of 16-20-0.

Competition
Cover crop varieties that competed well with weeds during establishment, and prevented weed growth, received high ratings.

Data on rodents is not conclusive. We noted the presence or absence of burrows at the times of evaluation. Above ground damage to plants was not observed.

Trafficability
Growers praised "the ease of walking on grass during wet weather", since many culturing jobs are done during the wet season. Highest ratings were given to 'Covar' sheep fescue, Tournament hard fescue, and shadow fine fescue. They also had less soil compaction in areas between wheel rows.

Equipment platform was rated for the ability of the soil to bearup equipment when wet. Traffic damage was observed in the wheel row. Grass varieties were rated as follows:

plants resilient to equipment traffic - high
plants crushed by equipment - lower
plants killed by equipment - lowest.

Water Erosion Control
Water erosion normally occurs from November through March. Measurements were taken during November and it was found that maintaining green winter vegetation and/or cover was the best erosion control practice.

Erosion occurred in two situations:
-cover crop variety trials with weak stands
-perennial ryegrass seeded in 10" rows up-and-down hill with bare space between the plant rows.

Temperature
Methods for measuring reflected light and effect of heat on the grapes were not available and needs further research. Soil temperatures at 20" indicate perennial ryegrasses were 3 to 5 degrees warmer than fescues.

Fescues may reflect more heat during the summer.

Longevity of Cover Crops
Four years of data are not sufficient to determine the longevity of each variety. Those rated "poor", are already failing and those rated "fair" have shown a decrease in plants.

Appearance of Cover Crops
Plots were reviewed for uniform distribution of plants, evenness of stand, and overall appearance.

Condition of Cover Crops
Percent stand, and vigor were rated in order to understand a cover crop trend. Changes in percent stand rating, made June 12, 1985 were compared to the same plots, January 22, 1986. Perennial ryegrasses were very hardy for the first year. Fescues established slower than ryegrasses.

COMMENTS

A mixture of perennial ryegrass and fescue will give vigorous first-year growth with ryegrass. When the ryegrass begins to diminish from lack of summer water and fertilization, or winter kill, the fescues will take over.

Trials seeded by broadcast, Brillion seeder or Tye No-Till Drill, all produced acceptable stands. The No-Till 10" spacing is too far apart for our objectives of creating a solid cover in one to two years. The Brillion seeder used on a prepared seedbed produced the best results, especially at seeding rates 2 to 3 times the normal seeding rate of 8-10 lbs/acre.

Ryegrasses have not performed as well as the fescues under field conditions in vineyards. While ryegrasses produced the quickest cover, they are shortlived, require more nutrients, have weaker root systems, are not as competitive with weeds and rodents, and do not fill in as well as fescues. Some ryegrass stands are already deteriorating. They are doing better on deeper soils at Knudsen-Erath, than on the moderately deep soils at Sokol Blosser.

Tall fescues are suitable for those areas with excess moisture, but require more management (flailing and nitrogen), than do fine fescues. Turf-type tall fescues look better than fawn fescue at this time.

The fine fescues appear to best fit grape grower criteria, and of these Covar sheep fescue is the overwhelming choice of local growers.

None of the various grasses tried heldup under normal vineyard travel in the access roads. Those roads should probably be graveled.

Water erosion on seeded areas was reduced by 35 to 40 ton/acre/year to acceptable levels of <"T". Water control structures will probably be necessary to complete a management system.

Flailing was reduced from 6 times on native weeds and grasses, to 1 or 2 times on the trial areas. Covar sheep fescue needs flailing only to remove seed heads.

Normal vineyard operations were to disc once or twice and rototill twice during the summer.

VINEYARD COVER CROP EVALUATIONS - WILLAMETTE VALLEY, OREGON
1985-86

COVER CROP		1/86 EROSION EVALUATION			TEMPERATURE	LONGEVITY	APPEARANCE			CONDITION		
Species	Variety	Green cover %	Residue cover %	Erosion controlled *1	June soil temp at 20"	Cover crop	Fall & Winter *1	Spring *1	Uniformity *1	% Stand June 1985	% Stand Jan 1986	June Vigor *1
PERENNIALS												
Creeping-Red Fescue	Fortress	75	14	10	61 F	good	8	9	7	95	80	9
	Pennlawn	22	78	10	60 F	good	6	10	9	95	95	10
Chewings-Fescue	Agrams	78	22	10	60 F	good	7	9	7	85	90	9
	Jamestown	68	32	10	60 F	good	9	8	9	90	95	10
Fine - Fescue	Champion	80	0	4	59 F	poor stand	2	4	2	40	>50	5
	Shadow	78	29	10	61 F	good	9	10	9	70	95	9
Hard - Fescue	Durar	49	58	10	61 F	good	7	10	6	60	70	8
	Ecota	34	66	10	60 F	good	5	10	8	95	90	9
	Reliant	66	13	8 *2	59 F	poor	4	8	4	40	35	8
	Tournament	65	35	10	60 F	good	9	10	9	90	95	10
	Waldina	23	54	9	62 F	fair	4	9	4	60	45	8
Tall Fescue Turf type Bunch	Rebel	46	53	10	60 F	good	8	9	7	85	90	7
	Falcon	37	63	10	57 F	good	8	9	7	85	90	8
	Fawn	67	37	9	58 F	good	5	7	5	80	90	8
Sheep Fescue	**Covar**	**56**	**43**	**10**	**60 F**	**good**	**8**	**9**	**8**	**90**	**95**	**10**
Perennial Ryegrass	Barry	18	74	8 *2	61 F	fair	5	6	5	60	50	4
	CBS	failure 1/27/86								70	failure	
	Derby	19	76	8 *2	63 F	fair	5	8	4	50	50	4
	Elka	54	46	9	63 F	fair	4	9	7	80	50	7
	Palmer	54	46	8 *2	65 F	fair	5	8	7	60	45	5
	Prelude	22	78	8 *2	64 F	fair	5	8	5	80	40	6
	Yorktown	48	39	5	65 F	poor	4	4	4	20	30	4
Small Burnet	Delar	25	-	4	60 F	good	4	4	4	80	75	8
ANNUALS												
Brome	Blando	9	-	4 *2	60 F							8
Ryegrass	Wemmer	9	-	4 *2	60 F							2
Volunteers at SK-BL		19	0	3	60 F	poor	3	3	3		varied	2

Annual Bluegrass failed first year.
Zorro Fescue failed the second year.

*1 Ratings were assigned based on 0-10. 0 is a failure and 10 is the best rating.
*2 These plots were seeded up and down hill in rows. There is a bare space between the seeded rows.

VINEYARD COVER CROP EVALUATIONS - WILLAMETTE VALLEY, OREGON Cont.
1985-86

COVER CROP		MOISTURE USE		MAINTENANCE			WEEDS	RODENTS	TRAFFICABILITY		
Species	Variety	Root depth (inches)	June Moist % WHC	June Height (inches)	Winter damage *1	Maintenance needed *1	Weed control *1	Burrowing Rodents present	Soil compac-tion *3	Equipment platform *1	Traffic damage *1
PERENNIALS											
Creeping-Red Fescue	Fortress	22	70-80	10	6	5	8	no	0-6"	10	7
	Pennlawn	16	70-80	8	9	5	9	no	0-6"	10	9
Chewings-Fescue	Agrams	16	70-80	8	9	5	8	no	0-6"	9	9
	Jamestown	16	70-80	8	8	4	9	no	4-5"	9	5
Fine - Fescue	Champion	12 *2	70-80	7	6	6	3	yes	0-3"	3	8
	Shadow	18 *2	70-80	6	6	5	7	no	-	9	9
Hard - Fescue	Durar	18	70-80	4	6	7	7	no	0-3"	10	2
	Ecota	18	70-80	6	9	5	9	yes	0-6"	9	9
	Reliant	20	60-70	6	9	5	3	yes	0-7"	10	9
	Tournament	19 *2	70-80	6	6	5	9	yes	-	10	9
	Waldina	20	70-80	6	9	5	4	yes	0-6"	9	7
Tall Fescue											
Turf type Bunch	Rebel	8	70-80	3	9	6	9	no	0-5"	9	8
	Falcon	8-10	70-80	6	9	3	9	yes	0-5"	9	9
	Fawn	42 *2	70-80	10	9	3	8	no	12"	10	8
Sheep Fescue	**Covar**	**20**	**70-80**	**4**	**9**	**10**	**9**	**no**	**5"**	**10**	**9**
Perennial Ryegrass	Barry	14	70-80	5	3	6	5	yes	0-6"	7	8
	CBS	20	70-80	7	-	2	2	yes	0-6"	7	8
	Derby	14	70-80	4	3	4	6	no	0-6"	7	8
	Elka	16	70-80	5	7	6	6	yes	0-5"	8	8
	Palmer	14	70-80	6	7	6	5	no	0-6"	7	8
	Prelude	20	70-80	8	3	5	6	yes	0-6"	8	8
	Yorktown	14	60-70	4	2	4	2	yes	0-6"	6	7
Small Burnet	Delar	16 *2	70-80	12	9	4	6	yes	0-5"	2	8
ANNUALS											
Brome	Blando	-	60-70	5		3	6	no	0-7"	3	1
Ryegrass	Wemmer	-	60-70	12		3	3	no	0-6"	1	1
Volunteers at SK-BL		-	70-80	12		1	1	some	0-6"	2	3

*1 Ratings were assigned based on 0-10. 0 is a failure and 10 is the best rating.
*2 Grape roots are generally below the cover crop roots or may only be located in the lower root zone.
*3 Soil compaction in the wheel row.

The Effect of Cover Crops on Availability of Water to Grape Vines in the Willamette Valley in 1985

by James A. Vomocil
Department of Soil Science
Oregon State University

Introduction

This study was initiated in its original form in 1982 with the Yamhill Soil and Water Conservation District and the McMinnville Field Office of the USDA-Soil Conservation Service. The Soils Department, Oregon State University, was one of several cooperators, in part funded by The Wine Advisory Board.

In 1984 and again in 1985, water use by grapevines and by a few associated cover crops in each of three vineyards was measured using the neutron probe method. Access tubes are permanently installed at monitoring sites and the neutron probe is lowered into the tubes for measurements at various depths at weekly to ten-day intervals.

Water use is calculated by the difference between the final and the initial soil profile water contents plus rainfall occurring during the measurement season.

Cover crops are recommended for vineyards because they provide certain advantages, but there are also disadvantages, or possible hazards.

Advantages:

1. Control of soil erosion.
2. Support of vehicular traffic, therefore reduction of soil compaction.
3. A cleaner, less muddy winter working surface.
4. Possible quick extraction of excess late season moisture (August, September rains).
5. A cooler, more humid atmosphere.

Disadvantages:

1. Competition against the grape for moisture; this may be good or bad.
2. Harboring of pests: rodents, diseases, weeds, insects.
3. Competition for plant nutrients.
4. Possible increased frost hazard.
5. Reduced heat units during a "cool" year.

Results

Water use rates were studied in the coast range foothills along the west side of the Willamette Valley. The vineyards were in Yamhill County in the vicinity of McMinnville/Newberg. They were located on deep Jory profiles which have the capacity to store 7 to 10 inches of available water in the top 5 feet of the profile.

At two of the three vineyards, arrangements were made to provide a clean cultivated strip where water use by grapes where they were not competing against a cover crop for moisture could be evaluated.

Hyland Vineyards — Vineyard #1: At vineyard #1, there was no area with clean cultivated middles. All areas where measurements were made were cover cropped by one of three stands: (1) volunteer weeds, (2) "Blando" var brome grass, and (3) "Wemmers 62" var annual ryegrass. Total amount of water used during the growing season (1985) is shown in Table 1. Measurements are reported for soil "in" the grape row (close to crowns) and between grape rows.

Table 1. Effect of interrow vegetation on seasonal water use by grape vines and associated ground cover, vineyard #1.

Cover Type	Inches Water Use (7/11 — 10/14) in row	between rows
volunteer weeds (natural grasses)	14.9	14.7
brome grass	14.9	14.4
ann. ryegrass	14.7	14.7

Two conclusions are obvious: (1) There was no significant season long difference in water use rates between the three covers, and (2) there was no difference between in row versus between row water use rates. All of these water use rates included seven inches of growing season rainfall, and thus account for only about **eight** inches of soil moisture use. Since the available water storage in the upper 5 feet of this soil was about 10 inches, the stored water was only 75-80% depleted.

At this level of depletion there was adequate soil moisture movement in the profile to even out moisture distributions and to meet the needs of the vines with minimum plant stress. This may be at least part of the explanation of the unusually strong uniformity of soil moisture contents. As water was used from the root zone, water moved into the root zone horizontally and upward from greater depths in the soil profile.

It is interesting that no difference was noted in comparing moisture contents in the row with those between the row where the cover crop was using water. Even in the surface foot, where grass roots were very abundant, not much difference in drydown rate was detected after the measurements started, July 11. Several moisture movement factors probably contributed to this evening out of wetness: (1) Evaporative moisture loss was suppressed by vegetative cover and the bare strips (under the vines) lost more by soil surface evaporation than the grass covered interrow zones did. The latter lost more by water use by grass or weeds. (2) The water use by grass and weeds was

dramatically reduced from average values by shading by the grape vines. (3) The Jory silty clay loam at this site has a very high moisture holding capacity and a relative low resistance to flow of water into the surface layers or into the root zone of either cover crop or grapes.

The overall effect of this was that the impact of the cover crop on water supply for the grapes at this vineyard in 1985 was small or negligible as it had been also in 1984.

Sokol Blosser Vineyard — Vineyard #2. There was appreciably more stress on the vines for water by the end of the season at this vineyard than in vineyard #1. This was predictable from the difference in the two soils. The soil at this vineyard had an estimated storage capacity 7.5 inches of water in the top 5 feet of soil as contrasted to more than 10 inches in the same depth in vineyard #1. The total water use in vineyard #2. until Oct. 14 is shown in the Table 2.

Vineyard #2 contained a clean cultivated strip where vegetation was suppressed to prevent it from using water from between vine rows. The cover crop choices compared in this vineyard included Covar variety sheep fescue, Elka variety of ryegrass, and volunteer mixed weeds, broadleafs and wild grasses.

Table 2. Effect of interrow vegetation on seasonal water use by grape vines and associated ground cover, vineyard 2.

over Type	Inches Water Use (7/11 — 10/14)	
	in row	between rows
ean cultivate	13.6	13.1
lunteer weeds	12.2	12.2
rennial ryegrass	13.7	13.0
eep fescue	14.0	15.2

All water use amounts were the same. All water use nounts except one (between rows, sheep fescue) were naller, but only slightly smaller, than those measured in eyard #1. The water holding capacity was smaller, the nt water stress was slightly greater, and the water use e was slightly less. Even so, any difference between the an cultivated plots and cover cropped plots was too all to appear as a water use effect in these measurents. The conclusion is drawn, then, that in 1985 at this eyard, using cover crops did not deleteriously effect ier yield or quality of grapes. This same conclusion was wn in 1984. However, this does not mean that it will be every year, or even in the majority of years.

Even though the soil in vineyard #2 is coarser textured, is less available water, and resists water movement redistribution in the root zone to a greater degree, e evidently was some redistribution. The amount of er used suggests water moved up into the root from below the 5 foot depth. There may or may not have been roots below the depth of 5 feet. There is no way to tell from the data. The total water used (sum of weekly incremental amounts) from the soil in this vineyard was 105 to 115% of the available water holding capacity. It is not certain whether the excess over 100% represents measurement error or water movement upward from below the 5 foot depth.

Knudsen Erath Vineyard — Vineyard #3. In this case, water use levels were very similar to those reported for vineyard 1 even though the available water holding capacity of the upper 5 feet of soil was somewhat less than in vineyard #1. Water use in vineyard #3 is shown in Table 3.

The cover crops compared in this case included clean cultivated strip kept bare of weeds or grass, Elka variety of ryegrass as in vineyard #2, Pennlawn variety of creeping red fescue, and a strip of volunteer grassy and broadleaf mixed weeds.

Table 3. Effect of interrow vegetation on seasonal water use by grape vines and associated ground cover, vineyard #3.

Cover Type	Inches Water Use (7/11 — 10/14)	
	in row	between rows
clean cultivate	14.7	14.5
volunteer weeds	15.0	14.5
perennial ryegrass	14.1	13.3
creeping fescue	14.2	14.8

Depletion of available moisture in the root zone was complete. By Oct. 14, the available moisture in the upper 5 feet at this vineyard, about 8 inches of stored water, was totally utilized and virtually none remained. There was no evidence of differences between cover conditions, and again as in vineyards 1 and 2, there was no evidence of an early exhaustion of moisture which could have a deleterious effect on grape yields or quality.

Summary and Conclusions

Assuming that a water stress would have to be severe enough to reduce water use rate before it would impact grape yields or quality, no evidence of such a stress was identified with or without cover crops in the three vineyards studied in 1985. This conclusion is the same as the 1984 conclusion. This does not mean it will be true every year, or even most years.

By comparing water use rates in the rows versus middles, some evidence is gained suggesting that the water used by cover crops was made up by decreased surface evaporation late in the season and water redistribution in the root zone, expecially water movement into the root zone from deeper soil. Obviously, this could not happen in shallow soils.

Editor's Note: The vineyardists involved with Dr. Vomocil's research were contacted for their comments on the cover crop experiement. Victor Kreimeyer and Jack Trenhaile wrote comments for Hyland Vineyards. Susan Sokol Blosser, Allen Holstein, and Dick Erath were interviewed, and summaries of those conversations are recorded below.

VINEYARD 1: HYLAND VINEYARDS

by Victor Kreimeyer and Jack Trenhaile

Overview: The cover crop experiment at Hyland was with annual grasses. The original experiment used four annuals. By 1984, two already showed signs of disappearing from the stand. The plot which gradually became most interesting to us was the plot called "volunteer weeds." As we brought the weeds under control, native annual and perennial grasses flourished: bent grass, various blue, fescue, rye and others as yet unidentified. Two other plots were also monitored over the length of the project, one planted in brome and the other in annual ryegrass. Currently, native annual and perennial grasses are taking over these plots as well.

The Yamhill County Soil Conservation Service considers the annual grasses in these additional two plots a failure from the standpoint that they no longer represent a majority of the grasses present. One is Blando, a brome, and the other is Wemmers 62, a ryegrass.

Since the study shows little difference between the moisture demands of the natives versus the tested annuals, there is little advantage, from a moisture standpoint, in replanting. Plant vigor during the very dry 1985 season throughout the vineyard gave credence to this finding. We would not go through the expense of establishing a cover crop that was lost to native grasses in a short time.

Effects of Erosion: We have noticed little difference in the amount of erosion between the native cover and the other test plots. This might not be the case if weeds were permitted to dominate the native cover. There could be a significant percentage of bare ground if the native cover was not managed effectively with weed control. With control of weeds, however, the native cover provides almost 100% coverage, and permits very little soil erosion.

Wearability: Our native cover seems to wear better than the test plots of annuals. The wet year, 1984, gave us a good chance to test the ability of the test area to stand up under tractor travel during harvest. The test annuals cut through after a few trips over them; the natives were more resistant.

Heat Units: We are unable to arrive at any conclusions on this factor. There is no doubt that we need all the heat units we can get; bare soil might give us more, but we could not operate in the average year on bare soils. Both people and machines would simply slide out of the vineyard during harvest. This is not to mention the soil that would also elect to leave. However, there may be some advantage to having an annual cover versus some perennial covers. The annuals at Hyland set their seed and die in late spring or early summer. In the process, most turn a "golden-shiny" color. This may cause some light to be reflected back onto the grapes. This is a vineyard observation only. (*ED. NOTE: See Susan Blosser's similar observation, #3.*)

Conclusion: We have decided to stay with our native grasses. We will do what we can to eliminate weed competition, in order to get purer stands of the annual and low-growing perennials. Our establishment costs are minimal. Our maintenance costs (herbicides and fertilizers) are acceptable, and we expect them to decrease over time. We flail to keep the cover in control, and to discourage taller growing perennials, but with grass stands, we do not have to flail as many times nor as close to the ground as we did when more weeds were in the cover. This allows for faster travel and is easier on equipment. Gophers find that their favorite food supply (some of the weeds) is gone, and are moving out. At least they are no longer moving in.

The conversion at Hyland to native annuals and perennials took a surprisingly short time. Bare areas began filling in the first year, and most areas had 100% cover by the middle of the second year. Since the native grasses have been growing and surviving under adverse conditions for many years, and are now thriving with minimal management, we expect they will be with us for a long time.

VINEYARD 2: SOKOL BLOSSER VINEYARD

Interview with Susan Sokol Blosser

Overview: Cover crop experiments were initiated at Sokol Blosser based on the need for erosion control. Secondary reasons included prevension of false dandelion, which in turn brings gophers into the vineyard. We also wanted easy access particularly during fall harvest. Finally, soil compaction is minimized by a permanent cover, and once established, the cover crop provides a savings in both labor and equipment cost.

Initial experiments established by the Yamhill Soil and Water Conservation Service included 20 different perennial grasses. The final data were taken on two, sheep fescue and perennial ryegrasses, as well as two controls: clean cultivation and volunteer grasses. Based on our evaluation, the sheep fescue, Covar, is preferred.

Evaluation of Covar as a perennial grass cover:

1. The grass grows low. It is our assessment that unless the vineyardist wanted to prevent seed formation, it would not have to be mowed at all in its season of growth. It does not produce much seed, and spread is minimal.

2. Covar is long-lived. We are anticipating a life of at least 15 years, although this will have to be monitored.

3. The grass has a silver-grey cast, which seems to reflect light. The data do not show significant differences in increased sugars or yields, but we will continue to monitor the numbers for long-term effects. At this point, it is an unconfirmed vineyard observation.

4. Covar is a good choice for dry areas. The grass goes dormant with water stress, but does not die out. This is important in our vineyard, based by OSU confirmation of limited water retension in our soils.

5. When seeded thickly, the grass crowds out competing weeds. At Sokol Blosser Vineyard, we seeded up to 30

lbs./acre. We did not spray out the block with a contact herbicide first, but relied on the fall rains and intense seeding to establish a thick stand. This seemed to work well. We used a Brillion Seeder, which seeds and rolls in rows, rather than broadcasting. Our weed control program consists of applying Round-up with a wick applicator primarily to eradicate thistle in spring and early summer.

SUMMARY: Covar sheep fescue is the favored experimental treatment at Sokol Blosser Vineyard. It is a low maintenance, thick standing grass, with an annual growth cycle which coincides nicely with the needs of the vineyard. While the long-terms effects on vine vigor are not in, preliminary assessments are that the grass does not impair root development of developing vines nor does the grass adversely compete for water. The cost of initial planting is high, and supply is extremely limited. However, if this cost can be absorbed, the long life of the grass, and reduced labor and maintenance costs may weigh in favor of the grass.

VINEYARD 3: KNUDSEN ERATH VINEYARD

Interviews with Dick Erath and vineyard manager, Allen Holstein.

Dick Erath:

At this time I can draw no conclusions. The vine response seems similar for all trials. This diffuse response may be the result of the area in the vineyard where the experiments are planted. The soils in this section are deep, in excess of 7 feet in some areas, and vine vigor is generally high. Moisture seems adequate regardless of the particular year. Riesling is the varietal planted in the experimental plots, and it is quite hardy. This might also mask differences.

It is possible that a cover crop could be used to enhance quality under vigorous conditions by creating moisture stress. I cannot draw conclusions from the experiment at this time, however.

In 1985, a dry year, we did an experiment on Willakenzie soil in a different section of the vineyard, under shallow soil conditions with low water retention. Our usual cultural practice is to clean cultivate every other row. In 1985, a dry year, we clean cultivated every row in this low-vigor section, and realized a higher yield as a result.

Allen Holstein:

The cover crop practice at Knudsen Erath Vineyard is a compromise; in 50% of the vineyard we increase heat and water retention; in 50% of the vineyard we have erosion control and good trafficability. As Dick mentioned above, every other row is clean cultivated, and we naturally concentrate traffic in the alternate rows with a cover crop. My own bias is that cover crops are directly beneficial in erosion control and trafficability. We will not impact vigor of older vines in Jory soil by use of a cover crop in most years.

Regarding the various cover trials at Knudsen Erath Vineyard, I would agree with Dick that differences were insignificant. I can make some observations based on vineyard management. Creeping fescue: This would not be my choice. It créeps a little too much, edging into the vine row.

Perennial ryegrass would be a choice. Positive features include wearability and low maintenance. Elka ryegrass was also planted in one trial, and it would also be an excellent choice — low growing and not that vigorous. One of the hard fescues, Durar, also seems promising. It is slow-growing and also easy to manage.

OSU Publication Available to Winegrowers

A new publication, *"Production Maturity, and Wine Composition of Winegrape Varieties in Western Oregon, "* is available from the OSU Department of Printing, Mailing Services, OSU, Corvallis, OR. 97331. Write for one free copy. The publication summarizes data taken from varietal plots in vineyards monitored by OSU from 1976 — 1982.