



ATTACHMENT D – Division 9 Project Application Submittal Package

(Att3_DG_ProJust_3of8)

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Technical Memorandum

TO: South San Joaquin Irrigation District
FROM: Davids Engineering, Inc.
DATE: September 24, 2010
SUBJECT: South San Joaquin Irrigation District Grower Survey – Summary of Survey Results and Observations

Overview

This technical memorandum provides a summary of responses from growers in SSJID to a survey conducted by the District in August and September 2010. The objectives of the survey are to better understand on-farm water management in the District and to gain insight to support development of an incentive-based on-farm water conservation program.

Responses were received from 234 individuals representing approximately 18,600 acres, or about 35% of the District's cropped area in recent years. For each question, the number of respondents and respondent acres are summarized for each response. The following two attachments are included:

- Attachment 1 – Comments by Survey Respondents
- Attachment 2 – Survey Questionnaire

General Observations

The following primary observations are made regarding the grower survey results and implications for the development of an on-farm conservation program:

- Responses appear to be fairly representative of crops and farm sizes in the District, except that it appears that a relatively large number of respondent acres are represented for almonds with pressurized irrigation systems while a relatively small number of respondent acres are represented for surface irrigated almonds and forage/feed crops.
- Cropping in the District is dominated by almonds, for which pressurized irrigation is generally the preferred irrigation method. Growers converting to pressurized irrigation tend to prefer groundwater over surface water due to increased flexibility in frequency, rate, and duration of use and due to reduced filtering requirements.
- Approximately 76% of the respondent acres are farmed by the landowner, suggesting that participants in the conservation program will be able to make long term decisions to implement physical improvements to the land, if such improvements are included as part of the program.
- The existing rotational delivery system limits the ability of growers to effectively implement desired conservation measures and in many cases presents challenges in optimizing irrigation based on crop water requirements due to limited flexibility in the frequency of irrigation.
- There is substantial interest in increasing flexibility in the frequency, rate, and duration of district water deliveries as well as interest in participating in a program to implement on-farm

conservation measures. In particular, growers are interested in conversion to pressurized irrigation, turnout measurement, soil moisture monitoring, and irrigation scheduling.

- Turnout measurement was ranked third among preferred physical improvements, and could provide benefits to both growers with respect to on-farm water management, and to the District including gaining experience with delivery measurement to aid in complying with the requirements of SBx 7-7.
- There is substantial evidence of an ongoing transition from District surface water to groundwater due to the increased flexibility afforded by groundwater, despite concerns regarding groundwater quality (e.g., salinity) in some areas. Any new incentives created by a conservation program to convert to pressurized irrigation could accelerate transition to groundwater. A condition of conversion to sprinkler or drip, if offered as part of the program, should be that the participant will continue to utilize surface water in the future.
- 34% of respondents representing 7,543 acres indicated that they do not have access to District water for at least some of the lands for which they use groundwater. It is not known whether this is due to unavailability of surface water due to delivery system constraints or due to the growers opting out of District water for flexibility, cost, or other reasons. Followup phone calls to respondents by District staff could help to better understand these responses.

The following specific observations are made based on the survey responses:

Farming Background

1. Most responding growers indicated that farming is not their full time occupation.
2. Respondents who flood/furrow irrigated their crops generally use District water.
3. The majority of responding growers that own land own between 1 and 20 acres.
4. The majority of responding growers that lease land lease between 1 and 20 acres.
5. Of the growers who provided their farming experience, most have more than 20 years of farming experience in SSJID or elsewhere.
6. Most common improvements completed by responding growers over their tenure include re-leveling their farmland and installing sprinklers.

Water Supply

1. Most responding growers who farm acreage using groundwater in part indicate groundwater pumping costs between \$30 and \$400 per acre per year with an average value of \$130/acre.
2. Respondents are generally interested in participating in a District-offered pressurized system.
3. To the extent that responding growers use groundwater, most indicate that the increased flexibility in when and how long they can irrigate is the main factor when deciding to use groundwater instead of surface water. .

Irrigation Practices

1. The majority of responding growers indicate that their farmland did not have access to a drain.
2. The majority of responding growers decide when to irrigate depending on availability of surface water (flood) and visual crop indicators (sprinkler and drip/micro).
3. Most respondents decide which flow rate to irrigate with based on water delivery system constraints (flood) and past experience (sprinkler and drip/micro).

4. Respondents generally decide how long to irrigate based on when the water reaches the end of the field or close to the end (flood) or on past experience/always the same number of hours for a field (drip/micro).

Water Conservation Program

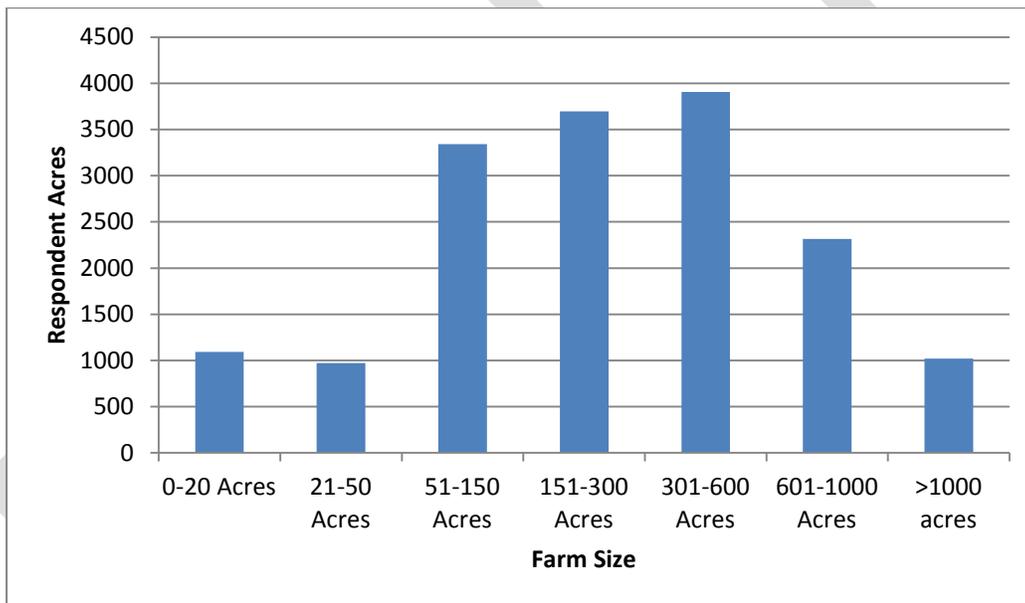
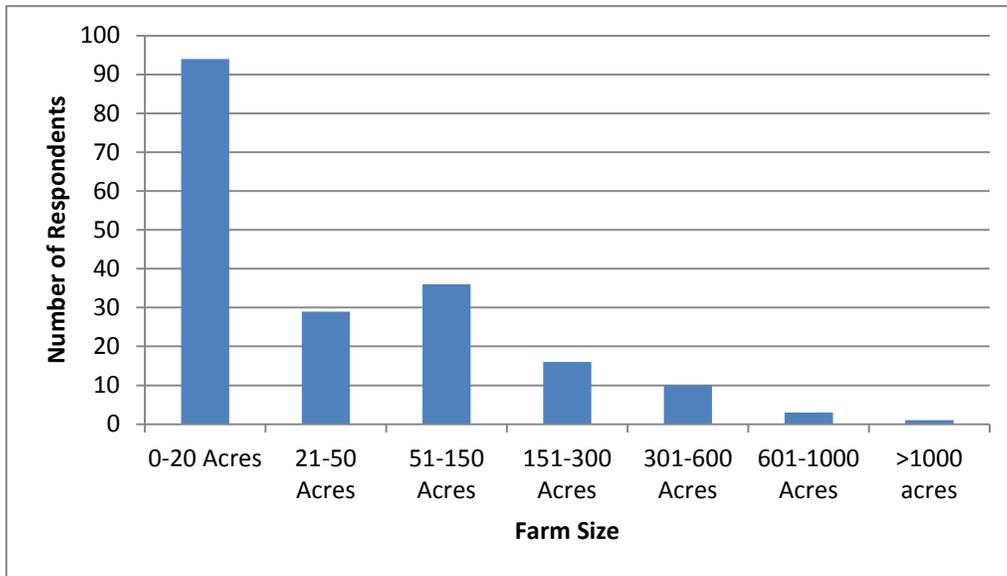
1. Conservation measures most favored by responding growers are conversion to drip irrigation, soil moisture sensors/management aids, and reduced rates for those who make improvements.
2. The majority of responding growers would seriously consider participating in an on-farm conservation program.
3. Responding growers, who estimated potential savings, generally thought they could save less than 1 ac-ft/acre with proposed conservation measures. When expressed as a percent of water usage growers generally thought savings between 20 and 50% were possible.
4. Most responding growers indicate that the existing District delivery practices would limit the adoption of proposed conservation measures to some degree.
5. Forty three responding growers express interest in serving on an irrigation water use committee.

Detailed Summary of Grower Responses

Section 1. Farming Background

Question 1. How many acres do you farm in SSJID using District water exclusively, using a combination of District water and groundwater, or using groundwater exclusively?

- 175 respondents (80% of respondents representing 9,684 respondent acres) farm using District water exclusively.
- 56 respondents (25% of respondents representing 4,252 respondent acres) farm using a combination of District water and groundwater.
- 54 respondents (25% of respondents representing 4,663 respondent acres) farm using exclusively groundwater.
- A total of 18,599 acres are represented by respondents, or approximately 35% of the District's cropped area in recent years.
- The following figures show the distribution of total farm sizes by the number of respondents and by total respondent acres.



Question 2. Is farming your full time occupation?

- 84 respondents (39% of respondents representing 14,441 respondent acres) are full time farmers while 120 (61% of respondents representing 4,075 respondent acres) indicate that farming is not their full time occupation. 5% of respondents did not answer this question.

Question 3. Of the total acreage you farm within SSJID, how many acres fall into the following crops? What water sources do you use?

Table 1. Number and Percentage of Responding Growers and Acres Represented for Primary SSJID Crops and Irrigation Methods.

Crop	Method	Total Respondents	% of Respondents	Respondent Acres	% of Respondent Acres
Almonds	Sprinkler/drip/micro irrigation	88	42%	6362	49%
Almonds	Flood irrigation	79	38%	3145	24%
Forage/feed Crops	Flood irrigation	41	20%	1857	14%
Walnuts	Sprinkler/drip/micro irrigation	16	8%	582	4%
Vineyard	Flood irrigation	6	3%	486	4%
Vineyard	Sprinkler/drip/micro irrigation	1	0.50%	86	1%
Other Tree crops		7	3%	269	2%
Other		18	9%	324	2%

Table 2. Respondent Acres for Primary SSJID Crops and Irrigation Methods by Water Source.

Crop	Method	Estimated District Acres	Total Respondent Acres	% of District Acres	Acres with District Water	% of Total Respondent Acres	Acres with Combination Water	% of Total Respondent Acres	Acres with Well Water	% of Total Respondent Acres
Almonds	Sprinkler/drip/micro irrigation	12,800	6362	50%	1719	27%	3055	48%	1588	25%
Almonds	Flood irrigation	18,800	3145	17%	2562	81%	435	14%	148	5%
Forage/feed Crops	Flood irrigation	13,100	1857	14%	1408	76%	0	0%	449	24%
Walnut	All	1800	582	32%	199	34%	216	37%	167	29%
Vineyard	Flood irrigation	1800	486	27%	186	38%	300	62%	0	0%
Vineyard	Sprinkler/drip/micro irrigation	300	86	29%	0	0%	86	100%	0	0%
Other Tree crops	All	3100	269	9%	17	6%	252	94%	0	0%
Other	All	1300	324	25%	242	75%	72	22%	10	3%
TOTALS		53,000	13,111	25%	6,333	48%	4,416	34%	2,362	18%

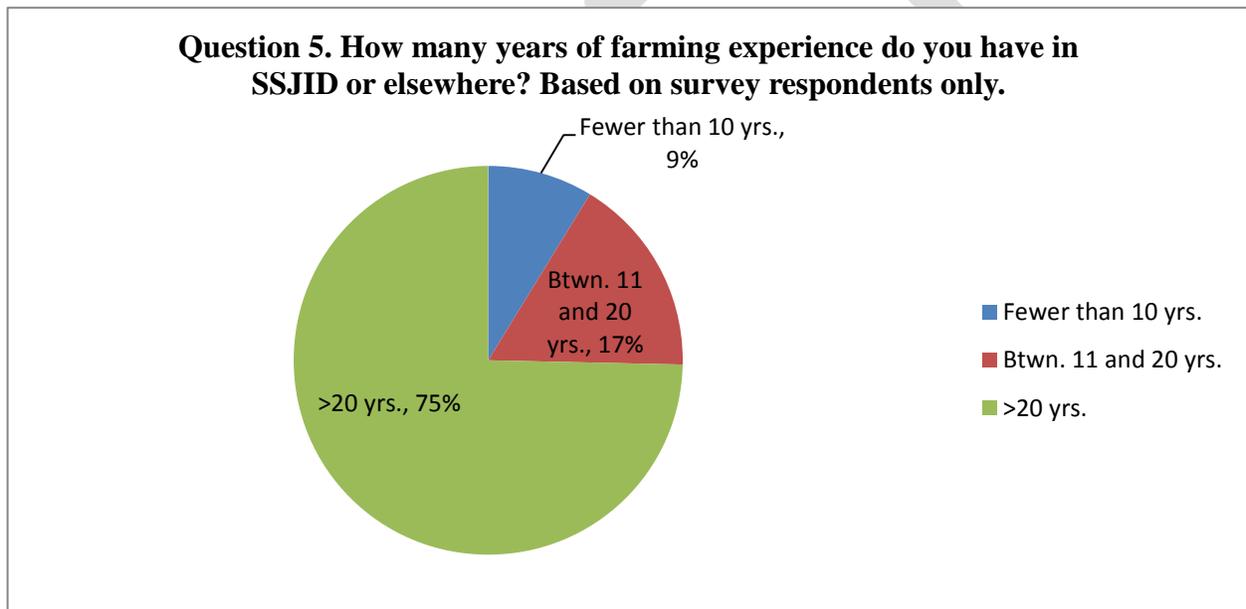
- Note that the acreage totals for Question 3 do not match those for Question 1 because some respondents did not answer Question 3.
- Other crops listed include: pasture grass, blueberries, sweet potatoes, tomatoes, melons, and persimmons.

Question 4. Of the total acres that you farm in SSJID, how many do you own versus lease?

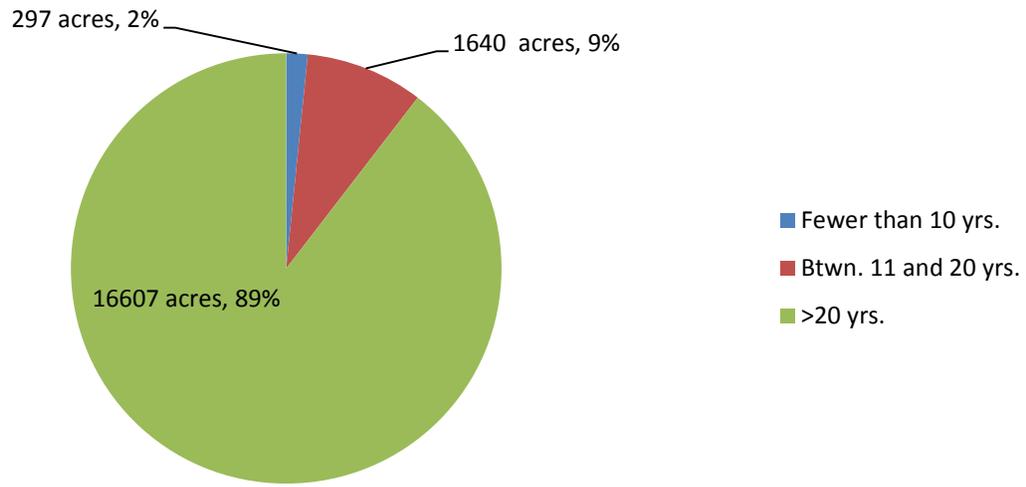
- 200 respondents (96%) own 10,565 acres (74% of total respondent acres)
- 43 respondents (21%) lease 3,720 acres (26% of total respondent acres)

Question 5. How many years of farming experience do you have in SSJID or elsewhere? What changes have you made during that time?

- 162 respondents (75% of respondents representing 16,607 respondent acres) have more than 20 years of farming experience.
- 36 (17% of respondents representing 1,640 respondent acres) have between 11 and 20 years.
- 19 (9% of respondents representing 297 respondent acres) have fewer than 10 years.
- 7% of growers in SSJID did not respond to this question.
- The following figures show the proportion of respondents with varying levels of farming experience, expressed as a percentage of respondents and as a percentage of respondent acres, respectively.



Question 5. Acreage Farmed by Growers with Varying Years of Experience? Based on survey respondents only.

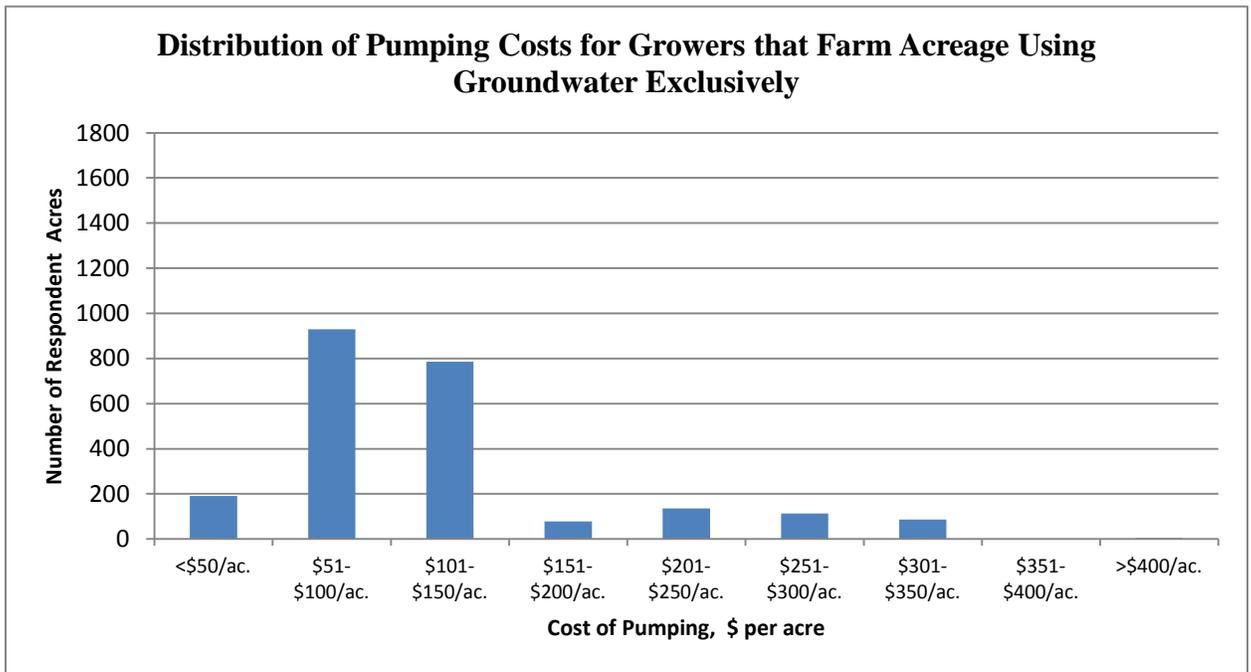


- Respondents have made the following changes to their land:
 - 126 respondents (67% of respondents representing 13,014 respondent acres) have re-leveled their land.
 - 93 (49% of respondents representing 13,530 respondent acres) have installed sprinklers.
 - 70 (37% of respondents representing 10,582 respondent acres) have installed a well.
 - 51 (27% of respondents representing 9,325 respondent acres) have repaired structures.
 - 36 (19% of respondents representing 2,991 respondent acres) have piped ditches
 - 33 (18% of respondents representing 3,481 respondent acres) have completed other improvements
- 188 respondents (representing 80% of total returned surveys and 17,848 acres) have made at least one improvement to their land over their farming experience in SSJID.

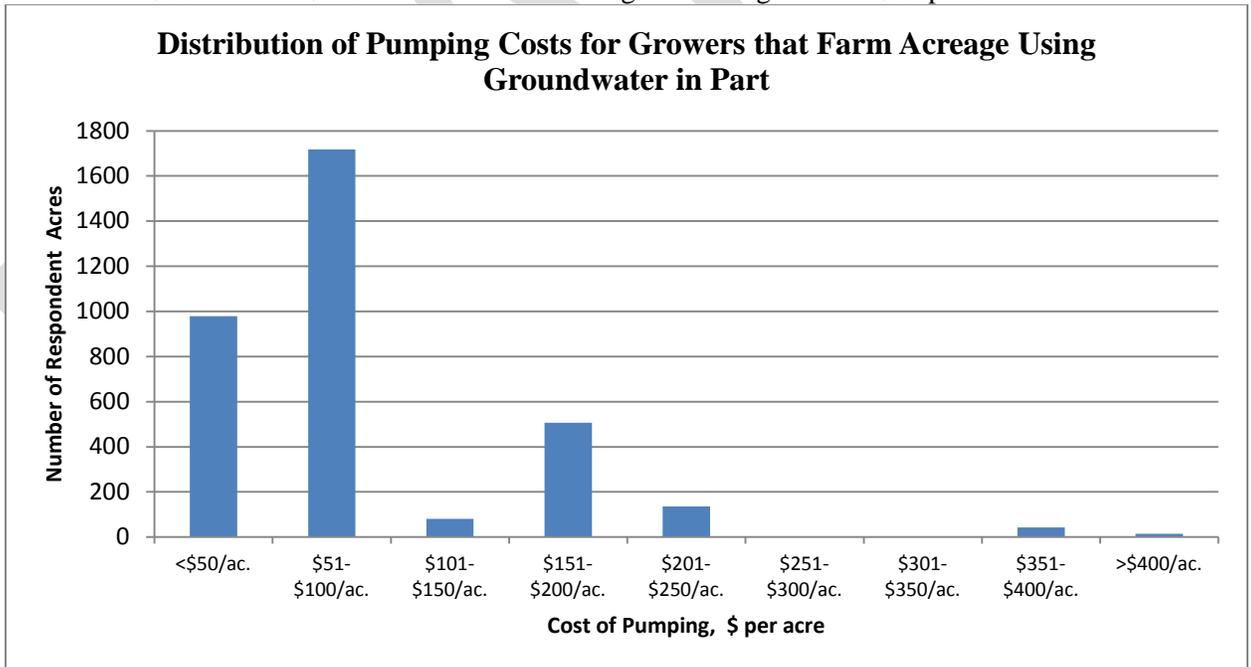
Section 2. Water Supply

Question 6. What are your annual costs associated with pumping groundwater?

- Annual pumping costs for respondents that farm using groundwater exclusively are between \$80/acre and \$310/acre with an area-weighted average cost of \$120 per acre.



- Annual pumping costs for respondents that farm acreage which is served in part by groundwater are between \$30/acre and \$400/acre with an area weighted average cost of \$95 per acre.



Question 7. If District were to offer a pressurized system with the same flexibility at the same cost would you be interested in participating?

- 137 respondents (77% of respondents representing 14,990 respondent acres) are interested in participating in a District provided pressurized system. 42 (23% of respondents representing 1,676 respondent acres) are not interested. 24% of respondents did not answer this question.
- Comments regarding Question 7 are provided as an attachment to this summary. Key themes regarding reasons for not participating include:
 - Incompatibility with cropping (e.g., crops grown are dairy support crops which are flood irrigated)
 - Concerns related to small operations
 - Financial concerns

Question 8. What problems, if any, have you encountered when using groundwater?

- Responses to Question 8 are provided as an attachment to this summary. Key themes regarding problems with groundwater include water quality issues (primarily salinity) and cost.

Question 9. What problems, if any, have you encountered when using surface water?

- Responses to Question 9 are provided as an attachment to this summary. Key themes regarding problems with surface water include water quality issues (primarily moss and debris) and water availability or timing of deliveries (lack of flexibility).

Question 10. To the extent that you use groundwater, what factors influence your decision to use groundwater instead of surface water?

- Factors that influence growers' decision to use groundwater instead of surface water:
 - Increased flexibility in when and how long I irrigate, 58 (53% of respondents representing 8,623 acres)
 - No access to District water, 37 (34% of respondents representing 7,543 acres)
 - It is not known based on the survey whether these areas can not be served by the District or whether the grower has opted out of service.
 - Other, 44 (40% of respondents representing 6,439 acres)
 - Less fluctuation in irrigation flow rate, 22 (20% of respondents representing 4,137 acres)
 - Lower water cost compared to surface water, 9 (8% of respondents representing 534 acres)
- Other factors include frost protection, filtering issues, water quality, etc.

Section 3. Irrigation Practices

Question 11. How much of the acreage that you farm in SSJID is irrigated using the following irrigation methods?

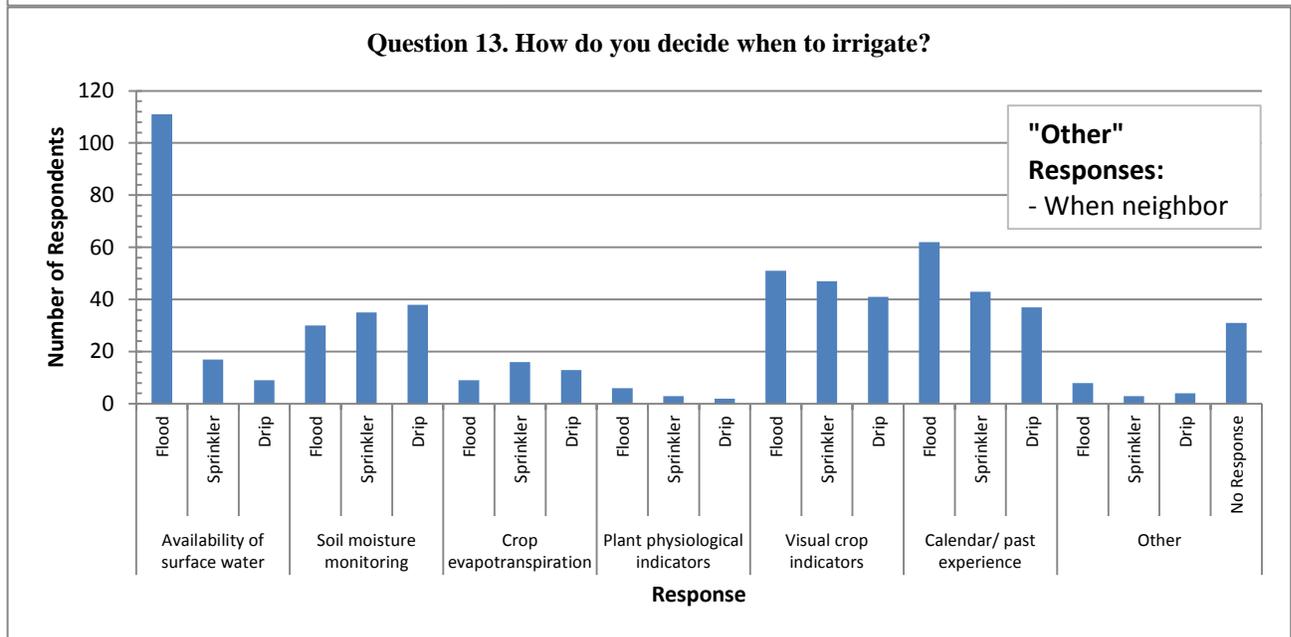
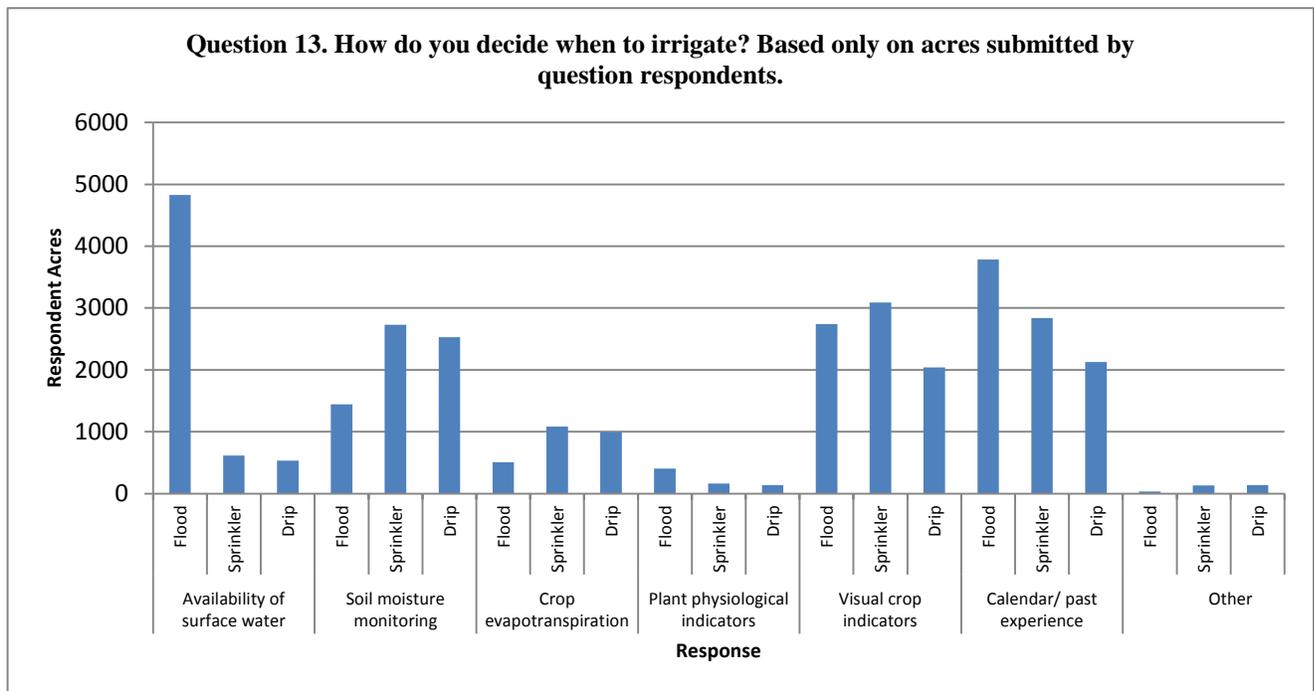
Irrigation Method	Respondents	% of Respondents	Respondent Acres	% of Respondent Acres
Flood/furrow	147	51%	6343	43%
Sprinkler	77	27%	4550	31%
Drip/micro	62	22%	3773	26%

Question 12. Does your farmland have access to a drain?

- 180 (86% of respondents representing 11,685 acres) respondents indicated no access to drain.
- 30 (14% of respondents representing 1,903 acres) did have access.
- It is estimated that 10% of respondents did not answer this question.
- Comments for lands with access to drains regarding method of drainage, reason for drainage, amount of time needed to drain and type of existing tail water recovery system, if any are provided as an attachment to this summary.

Question 13. How do you decide when to irrigate?

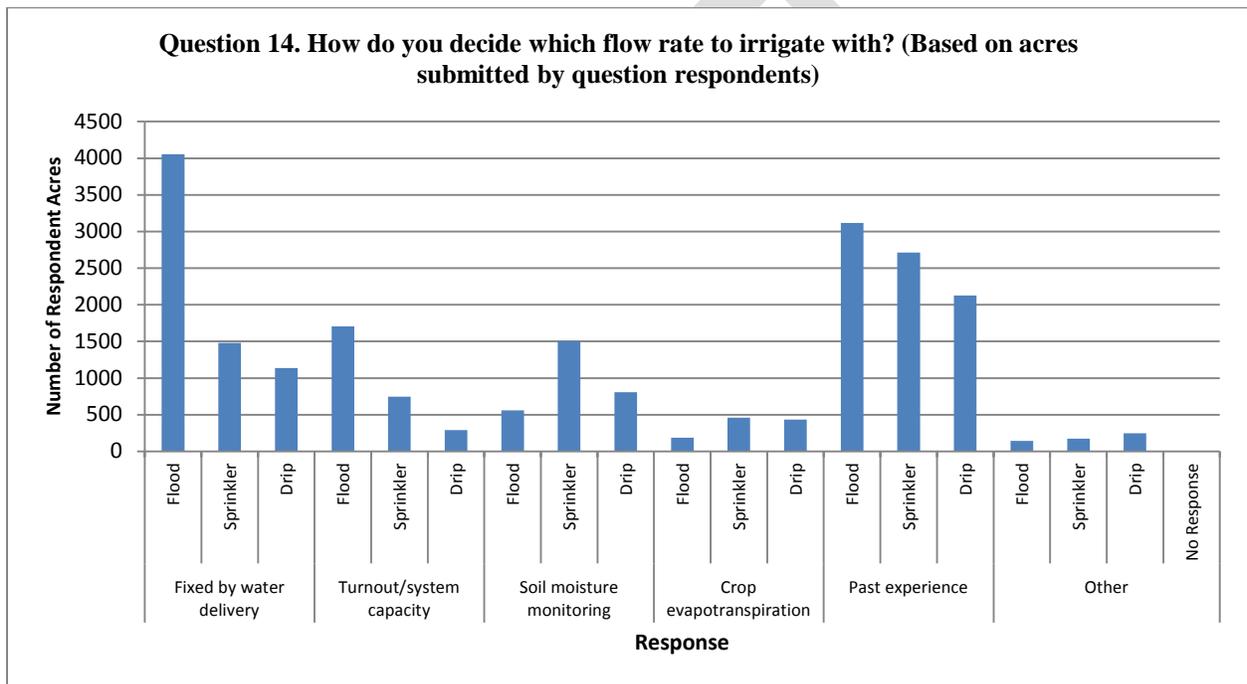
- Flood
 - 111 respondents (55% of respondents representing 4,827 acres) decide when to flood irrigate based on availability of surface water.
 - 62 (31% of respondents representing 3,785 acres) use calendar/past experience.
 - 51 (25% of respondents representing 2,739 acres) use visual crop indicators.
 - 30 (15% of respondents representing 1,445 acres) use soil moisture monitoring.
 - 9 (4% of respondents representing 507 acres) use crop evapotranspiration data.
 - 8 (4% of respondents representing 34 acres) use other methods including temperature, weather, PG&E time of use schedule etc.
 - 6 (3% of respondents representing 403 acres) use plant physiological data.
- Sprinkler
 - 47 respondents (23% of respondents representing 3,091 acres) decide when to sprinkler irrigate based on visual crop indicators.
 - 43 (21% of respondents representing 2,836 acres) use calendar/past experience.
 - 35 (17% of respondents representing 2,731 acres) use soil moisture monitoring.
 - 17 (8% of respondents representing 617 acres) decide to sprinkler irrigate based on availability of surface water.
 - 16 (8% of respondents representing 1,085 acres) use crop evapotranspiration data.
 - 3 (1% of respondents representing 162 acres) use plant physiological indicators.
 - 3 (1% of respondents representing 130 acres) use other methods.
- Drip/Micro
 - 41 respondents (20% of respondents representing 2,040 acres) decide when to drip/micro irrigate based on visual crop indicators.
 - 38 (19% of respondents representing 2,528 acres) use soil moisture monitoring.
 - 37 (18% of respondents representing 2,130 acres) use calendar/past experience.
 - 13 (6% of respondents representing 992 acres) use crop evapotranspiration data.
 - 9 (4% of respondents representing 534 acres) decide when to irrigate based on availability of surface water.

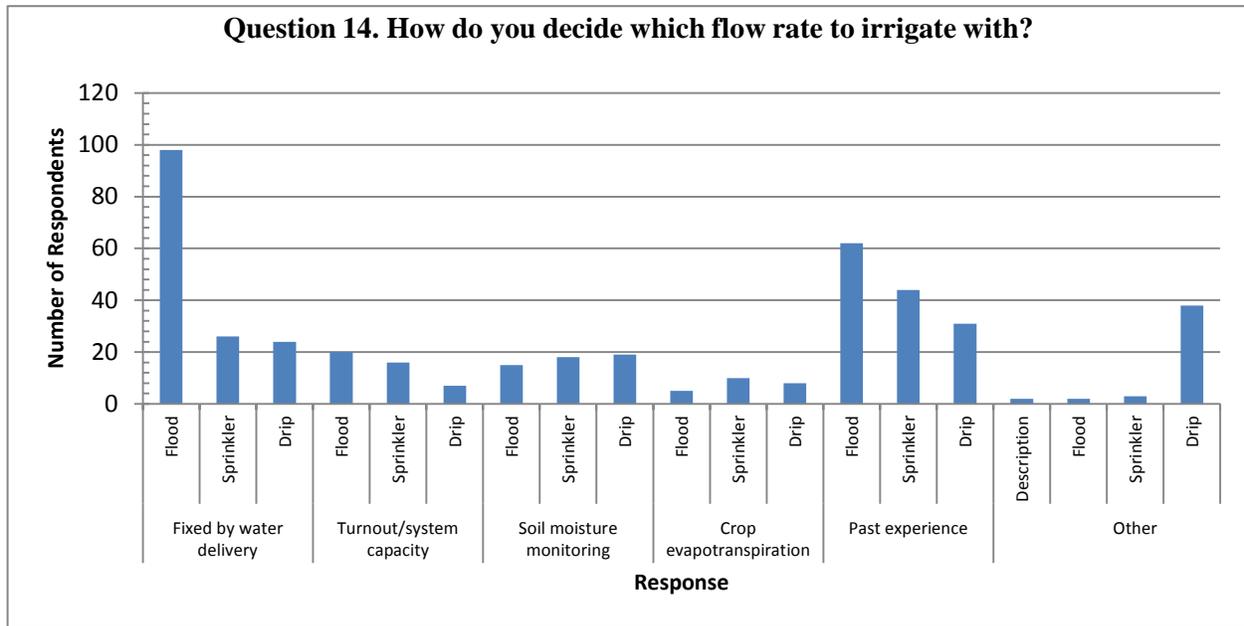


Question 14. How do you decide which flow rate to irrigate with?

- Flood
 - 98 respondents (50% of respondents representing 4,053 acres) decide which flow rate to flood irrigate with based on fixed water delivery system constraints.
 - 62 (32% of respondents representing 3,116 acres) use past experience.
 - 20 (10% of respondents representing 1705 acres) base irrigation flow rate on turnout/ system capacity.
 - 15 (8% of respondents representing 746 acres) use soil moisture monitoring data.
 - 5 (3% of respondents representing 187 acres) use crop evapotranspiration data.

- **Sprinkler**
 - 44 (22% of respondents representing 2,712 acres) use past experience.
 - 26 respondents (13% of respondents representing 1,480 acres) decide which flow rate to sprinkle irrigate with based on fixed water delivery system constraints.
 - 18 (9% of respondents representing 1505 acres) use soil moisture monitoring data.
 - 16 (8% of respondents representing 746 acres) base irrigation flow rate on turnout/system capacity.
- **Drip/Micro**
 - 31 (16% of respondents representing 2,128 acres) use past experience.
 - 24 respondents (12% of respondents representing 1,138 acres) decide which flow rate to drip/micro irrigate with based on fixed water delivery system constraints.
 - 19 (10% of respondents representing 808 acres) use soil moisture monitoring.
 - 8 (4% of respondents representing 434 acres) use crop evapotranspiration data.





Question 15. How do you decide how long to irrigate?

Flood Irrigation

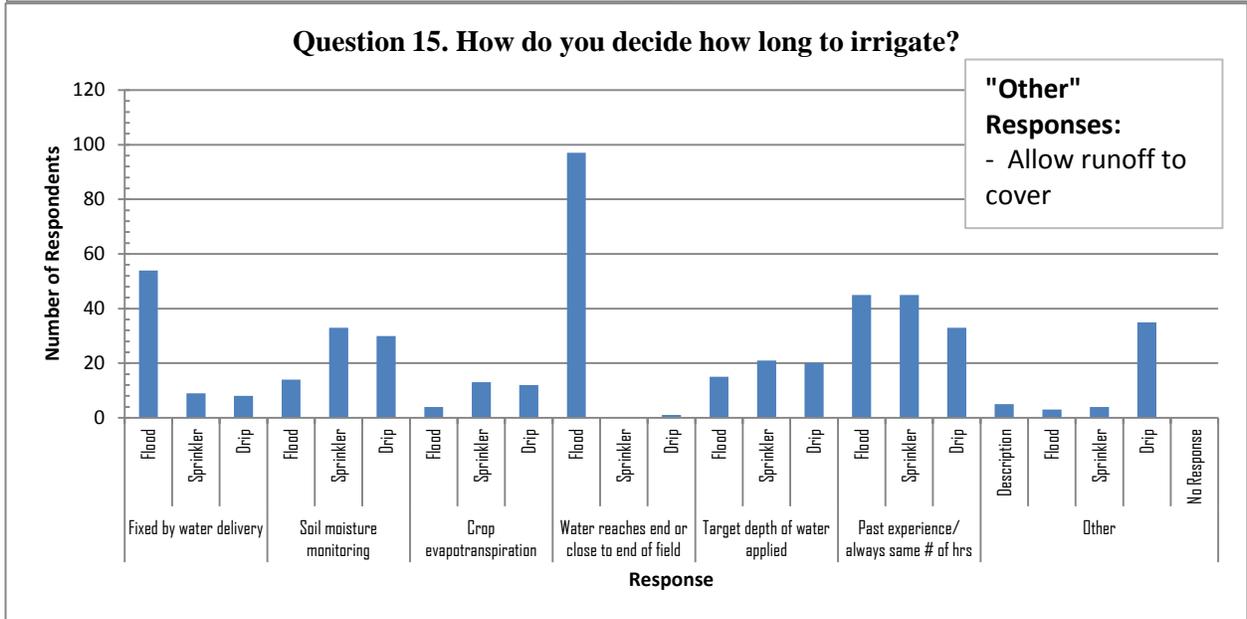
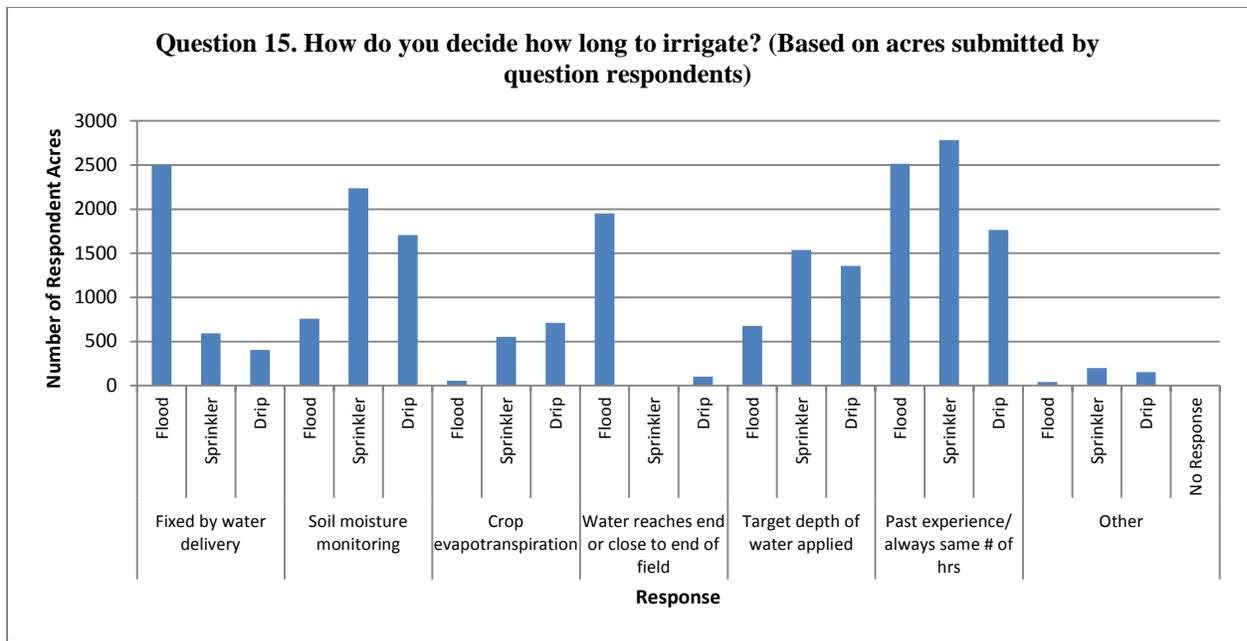
- 97 (49% of respondents representing 1,953 acres) finish irrigating when water reaches end of field or close to end.
- 54 respondents (27% of respondents representing 2,497 acres) decide how long to flood irrigate based on water delivery system constraints.
- 45 (23% of respondent representing 2516 acres) use past experience/always the same # of hours.
- 15 (8% of respondents representing 675 acres) finish irrigating when a target depth of applied water is achieved.

Sprinkler Irrigation

- 45 respondents (23% of respondents representing 2,783 acres) use past experience/always the same number of hours for a field to determine how long to sprinkler irrigate.
- 33 (17% of respondents representing 1,707 acres) use soil moisture monitoring.
- 21 (11% of respondents representing 1537 acres) finish irrigating when a target depth of applied water is achieved.

Drip/micro Irrigation

- 33 respondents (17% of respondents representing 1,765 acres) us past experience/always the same number of hours for a field to determine how long to drip/micro irrigate.
- 30 (15% of respondents representing 1,707 acres) use soil moisture monitoring.
- 20 (10% of respondents representing 1358 acres) finish irrigating when a target depth of applied water is achieved.



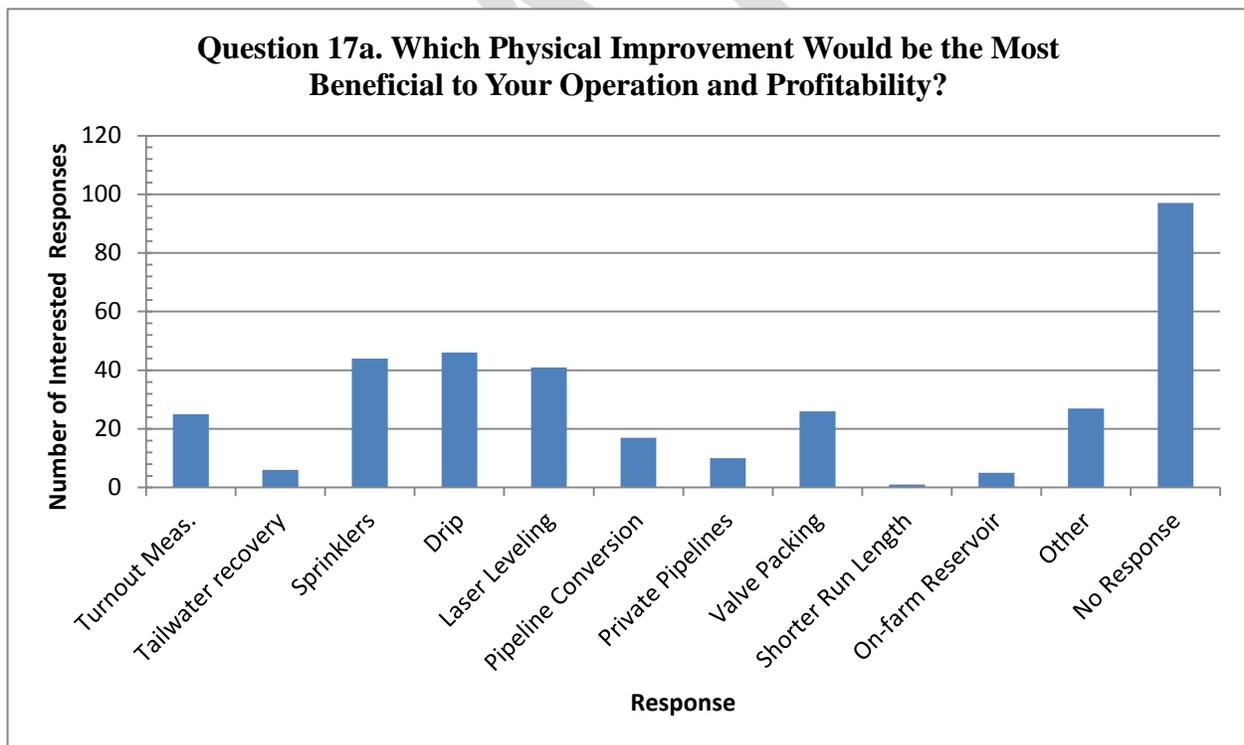
Question 16. In your opinion, what are the benefits of sprinkler or drip irrigation systems vs. flood? If you are a flood irrigator, what are the factors in deciding whether or not to convert your system? Please explain.

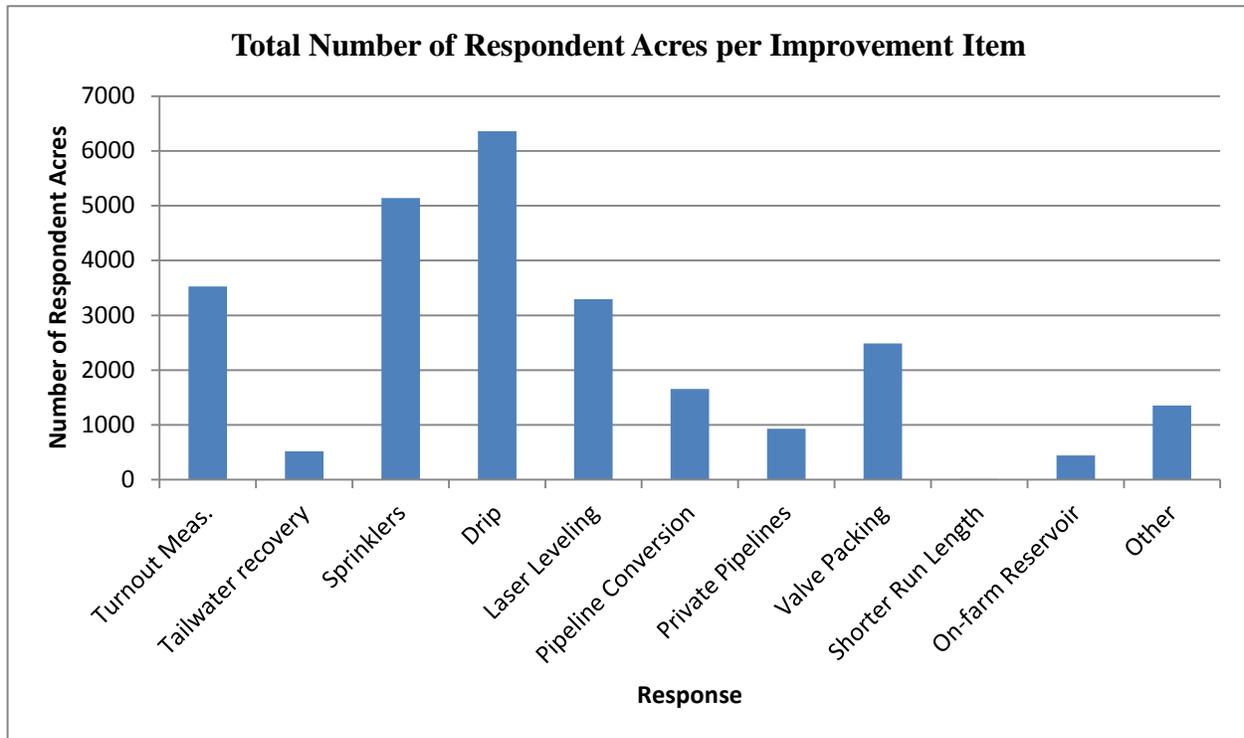
- Responses to Question 16 are provided as an attachment to this summary. Key themes regarding benefits of pressurized irrigation over flood irrigation include increased flexibility and increased uniformity and/or efficiency. The primary reason for not converting to pressurized irrigation is cost.

Section 4. Water Conservation Program

Question 17. Which of the following conservation methods would be most beneficial to your operation and profitability, which measures would you consider implementing?

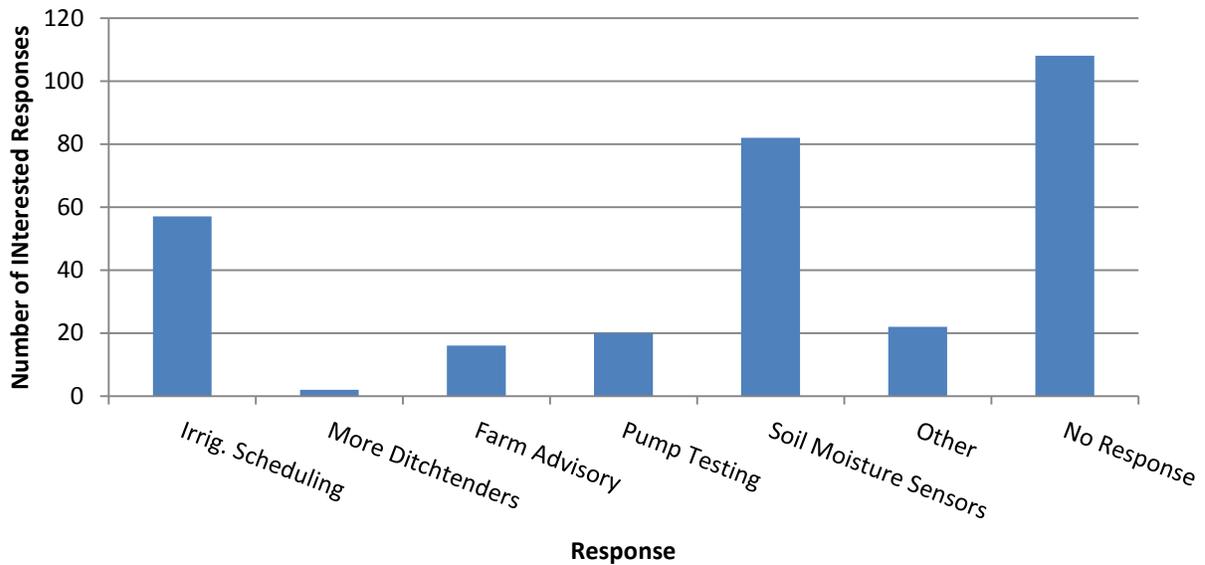
- 17a. Physical improvements
 - 1) Conversion to drip irrigation: 46 respondents, 34% (6,356 respondent acres)
 - 2) Conversion to sprinkler irrigation: 44 respondents, 32% (5,137 respondent acres)
 - 3) Laser land leveling: 41 respondents, 30% (3,294 respondent acres)
 - 4) Improved turnout delivery measurement: 25 respondents, 18% (3,524 respondent acres)
 - 5) Valve packing to repair leaking irrigation valves: 26 respondents, 19% (2,484 respondent acres)
 - 6) Replacement of open ditches with buried pipeline: 17 respondents, 12% (1,656 respondent acres)
 - 7) Construction of private pipelines to eliminate valves on District pipelines: 10 respondents, 7% (933 respondent acres)
 - 8) Tailwater recovery systems: 6 respondents, 4% (520 respondent acres)
 - 9) On-farm regulating reservoirs: 5 respondents, 4% (445 respondent acres)
 - 10) Shorter run length (for example: 1/4-mile vs. 1/2- mile runs): 1 respondents, 1% (16 respondent acres)
 - 11) Other: 27 respondents, 20% (1,355 respondent acres)



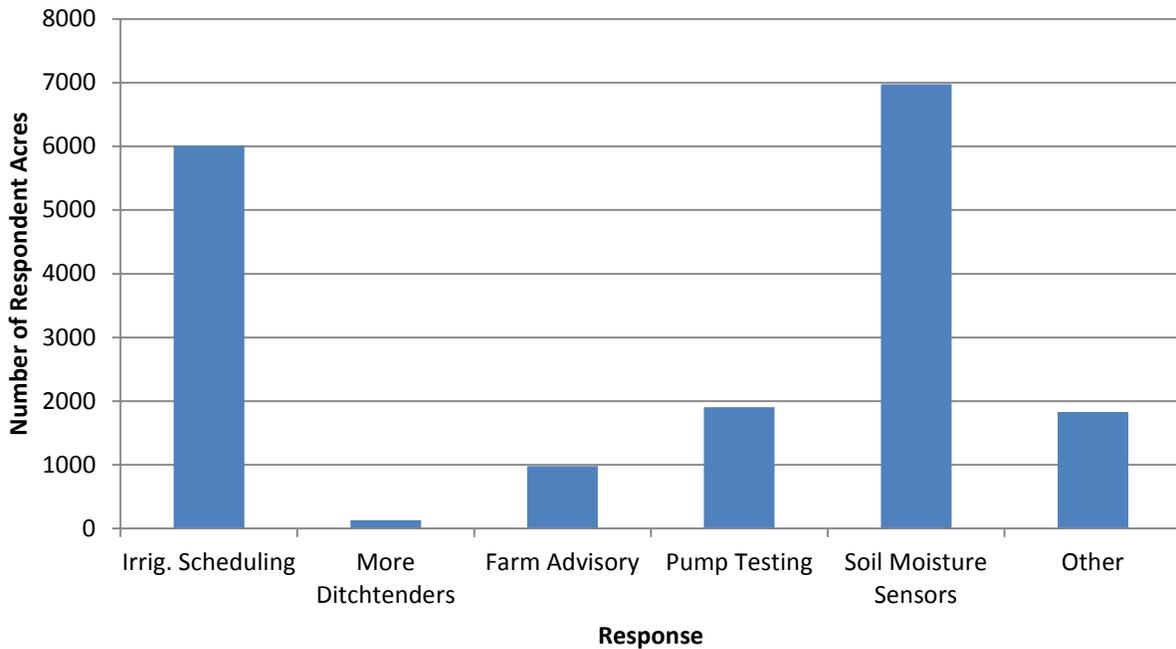


- 17b. Management improvements
 - 1) Soil moisture sensors/management aids: 82 respondents, 65% (6,972 respondent acres)
 - 2) Improved irrigation scheduling: 57 respondents, 45% (6,009 respondent acres)
 - 3) Pump efficiency testing: 20 respondents, 16% (1,906 respondent acres)
 - 4) Farm advisory service: 16 respondents, 13% (979 respondent acres)
 - 5) More ditch tenders: 2 respondents, 2% (133 respondent acres)
 - 6) Other. 22 respondents, 17% (1830 respondent acres)

Question 17b. Which Management Improvement Would be the Most Beneficial to Your Operation and Profitability?

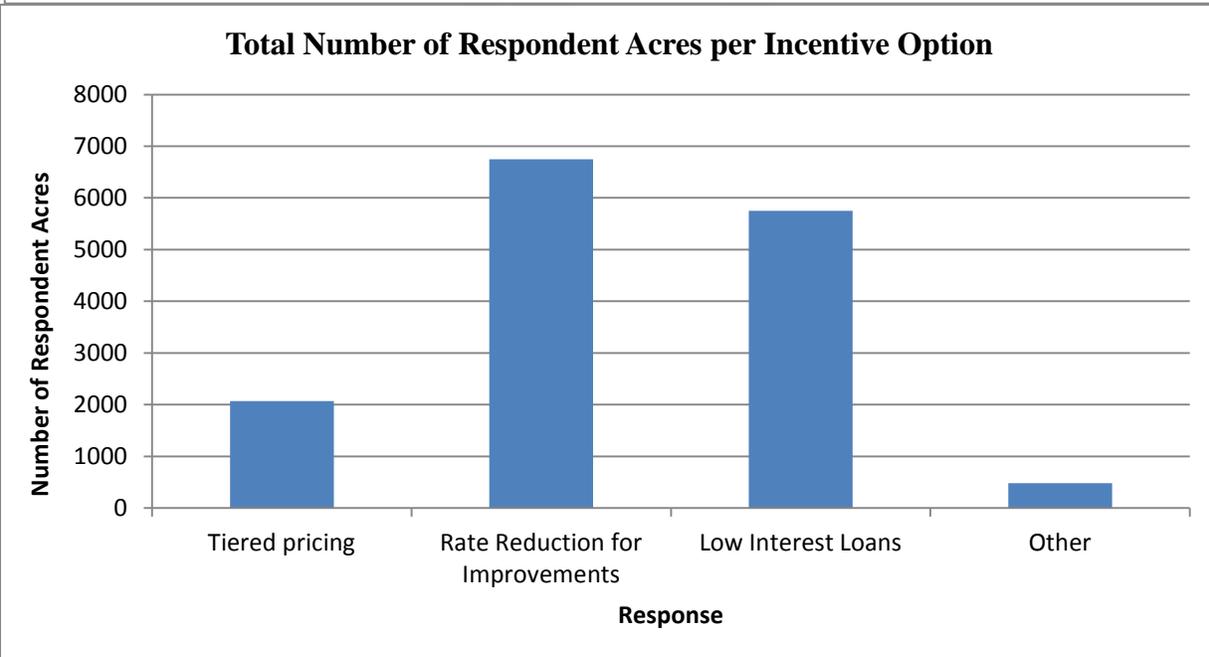
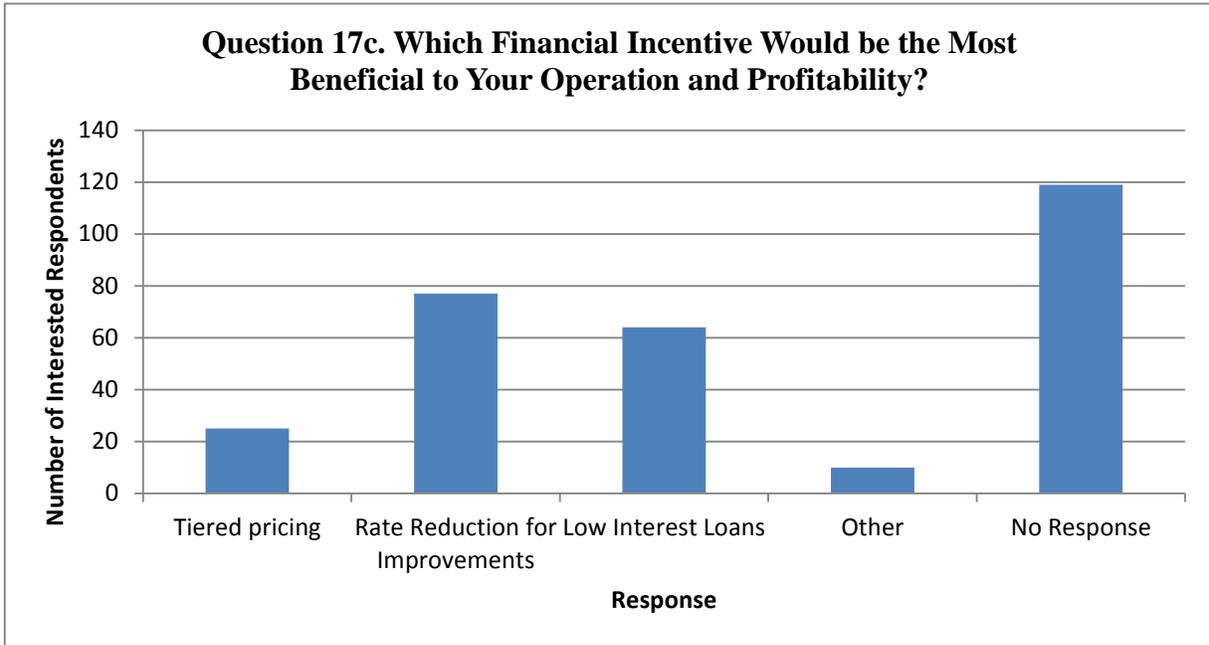


Total Number of Respondent Acres per Improvement Option



- 17c. Financial incentives
 - 1) Reduced rates for those who make improvements: 77 respondents, 67% (6,746 respondent acres)
 - 2) Low interest loans for those who make improvements: 64 respondents, 56% (5,750 respondent acres)

- 3) Tiered pricing: 25 respondents, 22% (2,072 respondent acres)
- 4) Other : 10 respondents,9% (481 respondent acres)



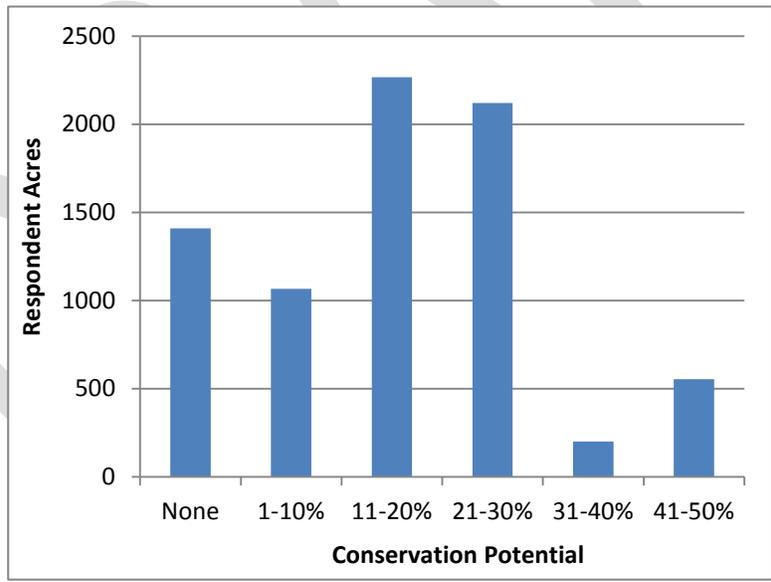
Question 18. Would you seriously consider participating in an on-farm conservation program?

- 90 respondents (56%) indicated that they would seriously consider participating in an on-farm conservation program (8,661 respondent acres).
- 72 (44%) said no (3,714 respondent acres).
- 31% of respondents did not respond to this question.

Question 19. If you chose to participate, based on the above measures, in your opinion, how much water do you think you could conserve in your operation, on average, over the total acreage?

- Conserved quantity specified by survey respondent
 - 5 respondents (56%) indicated that they would conserve 0 ac-ft/ac with conservation methods (1,210 respondent acres).
 - 2 (22%) indicated potential savings of less than 1 ac-ft/ac (70 respondent acres).
 - 1 respondent (11%) indicated potential savings of more than 1 ac-ft/ac (300 respondent acres).
 - Based on respondent acres, area-weighted average estimated conservation per acre would be 0.4 ac-ft/ac with a typical range of 0 ac-ft/ac to 1.5ac-ft/ac.

- Conserved percentage specified by survey respondent
 - 6 respondents (12%) indicated that no reduction in water use would occur with conservation measures (1409 respondent acres).
 - 20 respondents (42%) indicated a reduction in water use of up to 20% with conservation measures (3,332 respondent acres).
 - 22 respondents (46%) indicated a reduction in water use between 25 and 50% (2,876 respondent acres).
 - Based on respondent acres, area-weighted average estimated conservation per acre would be 19% with a typical range of 0% to 30%. The distribution of respondent acres by potential conservation amount is shown in the following table.



Question 20. To what extent would existing District delivery practices limit your adoption of the conservation measures selected above?

- Respondents indicated that existing District delivery practices would limit the adoption of conservation measures:
 - Not at all, 61 respondents (42% of respondents, 4,670 respondent acres)
 - Somewhat, 57 respondents (40% of respondents, 4,974 respondent acres)
 - Substantially, 20 respondents (14% of respondents, 2,042 respondent acres)

- Severely, 5 respondents (3% of respondents, 370 respondent acres)
- As indicated above, a total of 82 respondents representing 7,386 of 12,056 acres (61%) indicated that existing delivery practices would limit the adoption of conservation measures to some degree.
- Comments regarding Question 20 are included as an attachment. Key themes regarding limitations that would hinder conservation measure implementation include concerns with District delivery operations and concerns with the distribution system.

Question 21. Please provide any additional comments that will help SSJID better understand what factors affect your ability to manage irrigation water and what factors are likely to affect your willingness to participate in the on-farm conservation incentive programs and their overall effectiveness.

- Responses were highly varied and are provided in the attachment following this summary.

Question 22. Are you interested in serving on an irrigation water use committee to further our conservation efforts?

- 44 respondents (24% of respondents representing 3973 respondent acres) are interested in serving on an irrigation water use committee.
- 140 (76% of respondents representing 7,464 respondent acres) were not interested.
- 21% of respondents did not answer this question.

Parties Interested in Serving on Irrigation Water Use Committee

Name	Address	Phone #	Name	Address	Phone #	Name	Address	Phone #
Verdagaal	19977 S. Wagner Ave., Ripon	599-4705	Susan Winters	P.O. Box 115, Ripon	599-7438	Chun-Chao Wu	1913 Cheyenne Way, Manteca	324-3657
Frank Bavaro	22280 Sexton Rd., Escalon	573-3178	Philip Sandall	19322 S. Santa Fe Rd., Escalon	838-8724	Eric Hinrichs	19200 S. Jack Tone Rd., Manteca	599-5460
Bob Magee	16450 Lawrence Rd., Escalon	838-3609	Michael Hat	9701 Sedan Ave., Manteca	239-7099	John Boggs	11257 E. Hwy. 120, Manteca	541-7353
Alan Biedermann	1220 Brennan Rd., Escalon	838-8496	Robert Martin	22929 E. River Rd., Escalon		Raymond Quaresma	5300 E. Perrin Rd., Manteca	993- 8070/679- 3386
Donald Schaapman	24345 S. Olive Rd., Ripon	599-3421/479- 3040	Greg Kamper	19511 W. Williams, Ripon	652-9397	Dave Phippen	12700 Graves Rd., Manteca	531- 7380/599- 6111
Bud den Ouden	21166 S. Olive Rd., Ripon	531-3931	Bert Van Ryn	11684 Graves Rd., Manteca	482-1295	David Hendrick	19593 Saint John Rd., Escalon	838-3879
Matt Visser	25200 S. Frederick Ave., Ripon	765-9297	Bill Van Ryn	11684 Graves Rd., Manteca	482-2295	Dan Lagier	22029 S. Brennan, Escalon	652-2640
Richard Nix	11152 S. Airport Way, Manteca	982-4196	Louie Tallerico	P.O. Box 721, Manteca	481-1280	Patrick Hawes	17014 Haskell Lane, Escalon	531-6658
Richard Nix	11152 S. Airport Way, Manteca	982-4196	Jim Bylsma	24065 W. Arthur, Escalon	321-9038	Bob Holmes	16048 Sexton Rd., Escalon	484-7678
Mike Ballatore	20336 S. Carrolton Rd., Ripon	599-3002	Gerrit Dorrepaal	20027 S. Murphy, Ripon	675-6887			
Dave Phippen	13909 Leroy Ave., Ripon	531-7380	Kevin Fondse	21301 Wagner Rd., Ripon	993-1682			
Jeffrey Bear	19947 Ayers Ave., Escalon	606-7020	Paul Reichmuth	17120 S. Haskell, Escalon	838- 2117/573- 0038			
John Van Till	24974 Kincaid Rd., Manteca	573-3888	Manuel A. Medeiros	11776 S. Airport Way, Manteca	858-5565			
William Groen	2333 Brown Rd., Manteca	541-6096	Chuck Rivara	18650 Lone Tree, Escalon	402-7300			
Jim Westmoreland	22922 Arthur Rd., Escalon	815-3125	Hutch Hutchison	3322 French Camp Rd., Manteca	479-0922			
Ronald Barber, Jr.	10411 Small Rd., Manteca	969-2199	Dwain Zack	21332 McHenry Ave., Escalon	996-8613			
Sam Travaille	1035 - 4th St., Ripon	599-2782	Robert Longstreth	25869 E. River Rd., Escalon	838-2892			
			Paul Tremayne, Sr.	P.O. Box 455, Ripon	404-3370			

Attachment 1. Grower Comments

Comments on Question 7 Regarding Participation in a Pressurized System

- Crop related questions/concerns
 - Not with pasture
 - All acres are pasture
 - Small acreage/pasture
 - Grass hay and alfalfa
 - Only corn and oats are raised on this property
 - Does this apply to pasture only?
- Operation size questions/concerns
 - Small acreage/pasture
 - Only have 2.26 acres
 - Operation too small
 - I only have one acre for pasture and horses
 - Just have 2 acres
 - Only use water for one acre
- Financial questions/concerns
 - Depends on cost
 - Same cost as flood, yes, same cost as well and equip.
 - Electricity too high
 - Not necessary, why spend money
 - Expense to purchase equip.
 - Cost far exceeds flood irrigation
- Confusion with question or need for more information
 - Don't know what this is
 - Do not fully understand pressurized system
 - Need more info.
 - Unsure, need details
 - Would have to explain to me
- Preference for flood irrigation
 - Flood irrigation
 - I prefer flood irrigation
 - I have no need for a sprinkler system
 - Flood is adequate for me
- Other
 - Future development
 - Not on main ditch or line
 - Rely on neighbors for irrigating
 - Have Sprinklers
 - History, ease of use
 - Our well is used for home and farming
 - Don't use
 - As long as it is as clean as currently
 - Wouldn't benefit my situation
 - Yes, if same flexibility
 - Can't see why not
 - Maybe, I put in pond to collect SSJID water and pressure sprinkle from it

Comments on Question 8 Regarding Problems Using Groundwater

- Water Quality Issues
 - Salt, PH, cost, PG&E off peak rate
 - Salts, PG&E \$
 - Salt
 - Water quality
 - Calcium in sprinklers, PH is too high
 - Salts
 - Can be salty
 - Some water quality problems and salt
 - High salts
 - High level of bicarbonates
 - Salt
 - Water quality, salt intrusion
 - High salt content
 - Water quality is becoming worse
 - High nitrates
 - Salt
 - High barcarbonates kills trees
 - Salty
 - Plants do better on District water
 - Scheduling, foreign material, dirt
- Well or pump maintenance
 - Maintenance
 - Water hardness, well maintenance, power costs
 - Keeping pump engines in proper repair
- Cost of pumping or installation
 - Expense
 - Too expensive
 - Cost
 - Cost, cannot run pumps during peak hours
 - More cost for electricity
 - Expense to pump, water quality
 - Cost too high
 - Cost of Pumping
 - Cost
 - Expensive
- Other
 - Share crop
 - Well not deep enough, electrical failures
 - Stolen copper wire
 - Used only in 1977 drought, use well to fill spray tanks and a reserve for irrigation
 - Not enough water, high PG&E costs
 - Sprinkler repairs
 - Flooding
 - Water volume, water quality, pumping cost, groundwater level
 - High pressure or volume varies

Comments on Question 9 Regarding Problems Using Surface Water

- Water Quality
 - Moss, trash
 - Trash, scheduling, flooding by neighbors
 - Moss
 - Moss, dirty water
 - Our sump accumulates leaves and trash
 - Spread of phytoplora
 - New weeds
 - Moss and trash
 - Sand and debris in pumps
 - Excess dirt and foreign material
 - Plugged filters, too much sand, weeds, algae
 - Moss
 - Sometimes dirty, filters plug
 - Water being dirty at times
 - Weed seed, algae
 - Phytoplora
 - Filter problems. The district needs to filter the dirty water for all instead of each one of us doing it alone
 - Chlorides, salt
 - Sometimes dirty and sometimes ditch runs low, pump loses prime

- Water Availability or Timing of Deliveries
 - Timing
 - Untimely deliveries/scheduling
 - No sequence of irrigating farmlands
 - Too long water rotation, leaking valves and pipes
 - Difficult to filter, not available early and late
 - Timing
 - Can't control amount of water and timing of application with flood irrigation on 20 day cycle
 - Ten day schedule inconvenient
 - Timing, schedules
 - Not available when needed, plants get stressed sometimes
 - The Districts 10 day rotation schedule does not match the needs of my orchards
 - Not always available at correct times for weather conditions and/or harvest schedules
 - Debris, not available for frost protection/end of season irrigation
 - Availability for sprinklers when needed
 - Available timing, when I was working job, District schedule interfered with work

- Capacity of System
 - Pasture and vineyard cannot take full head of water, split
 - Alfalfa, south neighbor wants full head for no good reason
 - Running out of water in pipelines for sprinklers
 - Pipe overflow
 - Maintaining sprinkler head (water level), moss in filters
 - Sometimes slow due to low head of water

- Physical Condition of District System

- Leaking pipes
- Varying water pressure. Flooding from neighbor, leaky valves.
- On-Farm Issue
 - Hard pan, water not really absorbed in ground
 - Gophers
 - Squirrels eating hose
 - We lose trees when strong wind comes during flood irrigation
 - Variable absorption, water stands too long in some areas
 - Uneven distribution across orchard
 - Uneven distribution
 - Water does not penetrate soil
- Other
 - Draining runoff
 - Share crop
 - None, ditch tenders very good guys
 - Very good
 - Change of flooding roadways
 - Can't get access to it [canal water], I'm land locked
 - It's hard to get cooperation of the irrigation district

Comments on Question 12 Regarding Drainage (Method of Drainage, Reason for Drainage, Amount of Time Needed to Drain and Type of Existing Tailwater Recovery System)

- Methods or Destinations of Drainage
 - Tailwater
 - Oakdale drain after each irrigation
 - Tailwater from field crop pumped to orchard to even out irrigation.
 - Drainage canal exists on North side of property, excess water, if any, drains into canal.
 - I maintain drainage ditch, use only in emergency situation for winter rains to runoff
 - Re-circulate excess water. Our recirculation system is 3" pipeline that returns tailwater with Honda 3" pump to middle of orchard. This is very beneficial; better and deeper water penetration; returns all nutrients to root zone. Time about 2-3 hours pumping. Downside, one of my pumps got stolen.
 - Only 20 acres has access to drain
 - Drain into District pipe, not used at present
 - Heavy rain runoff into District lines during winter
 - Drain back into District pipe, pump some into fish pond
 - On occasion excess tailwater can spill into SSJID drain ditch, this is from non-SSJID irrigation
 - 8" drain line to SSJID drain ditch
 - Drain for pump
 - Draining to District line, depending on head of water we sometimes end up with excess water at end of field, so not to leak onto neighbor's field and keep down mosquito problems we will drain off excess. Takes a couple hours, 8" drain.
 - Gate into drain along my property, virtually never use it.
- Reasons for Drainage or Lack of Drainage, General Observations
 - Do not need drain

- Very sandy ground
 - I don't drain
 - Have drain ditch but don't use it
 - Not needed
 - Don't need any, all sandy soil
 - Never need to use drainage, sandy soil
 - My SSJID land doesn't ever need drain b/c so sandy, water has never run off
 - Mainly winter rains, previously used to drain off flood irrigation water
 - No drainage except winter storm runoff
 - Extra water and rain water
 - Heavy rain runoff into District lines during winter
 - On occasion excess tailwater can spill into SSJID drain ditch, this is from non-SSJID irrigation
 - No need to drain, very sandy soil soaks in rapidly
 - Farming for winter grain and summer corn you need to flood irrigation in this area, a drainage system helps yield b/c amount of water on and off is crucial
- Time Needed to Drain
 - 24 hours (as tailwater)
 - 1 hour (Oakdale drain)
 - Time about 2-3 hours pumping.
 - Takes a couple hours
 - Existing Tailwater Recovery Systems
 - Tailwater from field crop pumped to orchard to even out irrigation.
 - Our recirculation system is 3" pipeline that returns tailwater with Honda 3" pump to middle of orchard.

Comments on Question 16 Regarding Benefits of Pressurized Irrigation over Flood Irrigation

- Flexibility of Irrigation Frequency, Duration or Rate
 - Sprinkle 40' on one side so I won't flood or damage my neighbors, gopher or squirrel holes
 - Sprinkler/drip can give any amount of water when you need it, flood depends on 20day/10day schedule
 - Control over amount of water used
 - Even water application to area, controlled volume of water, no runoff
 - Sprinkler/drip you can apply when and as much needed and adjust throughout the growing season
 - Consume water, irrigate more frequently when temperature and humidity and wind require more frequent irrigation
 - Can irrigate when I want
 - Irrigate when and how long without arguing with the District employees
 - Eight to 12 hours and I'm through, no PG&E bill
 - Much easier to regulate different soil conditions and moisture consumption
 - No dry spots in pasture with sprinklers and no wet spots
 - Water more when needed not by when you get the water
 - More even application of water, fertigation, water conservation and larger crops
 - Best volume control

- Better control as to when to irrigate and how much to irrigation, lose less trees, Sprinkler/drip systems can be used for certain chemicals and fertilizers, application much easier and use less man hours, distribute chemicals more evenly.
 - With micro I can have water more often , this is helpful with my busy schedule and less time consuming
 - Control of Amount of water applied, frequency control,
 - Flooding was insufficient b/c of getting water every 12-15 days
 - Sprinkler and drip offer complete control of application and where to apply
 - Maintaining uniform moisture
 - Drip no leaching of soil, constant moisture, micro feeding
 - Direct water where needed
 - More flexibility in scheduling; use less water in Spring (April, May); less problems with leaky pipelines, valves, gopher holes, less problems with over-irrigation; deteriorating groundwater quality;
 - When to irrigate, how long and how much; converting to sprinkler from flood
 - You can irrigate when the trees need water
 - Cost is factor to convert, drip offers more flexibility over flood and better control over plants
 - Sprinklers, micro, drip give more even irrigation for starting young trees (Orchard), sprinklers give you better control water in windy conditions to cut loss of trees
 - I can control the water better for what the trees really need with sprinkler irrigation and I also have frost protection
 - Sprinkler systems allow me to match my water applications to my infiltration rate, making it possible to apply more water to my orchards than I could with flood; the initial and ongoing cost of converting to sprinklers
 - Can put water on slow and better penetration with microsprinkler, plan to convert to all micros
 - Before installing sprinkler system, our ditchtender gave us a very hard time giving us water even when our neighbor told him to switch our times (We are next to each other), My husband worked outside job 10-12 hours/day and wasn't always available to accept water; also, the times the water was available was either too short or too long between irrigations, we lost lots of trees; after we installed sprinkler system and accessed our own well, the trees began to thrive and our lives were much less stressful
 - 10 days too soon, 21 days too long so use micros in between
 - In my case b/c the land has poor percolation, drip is the only way to grow healthy trees
 - Drip is much more precise
 - Putting water where it's needed when it's needed eliminating excess usage and responding to plants needs on time, due to small acreage cost effectiveness is the factor in my decision
- Uniformity and Efficiency of Sprinkler or Drip
 - Drip uses less water, drip provides more uniformity vs. flood
 - More efficient use of water with sprinklers, proven yield increases with better water control
 - More efficient, can water when I want
 - Better water distribution
 - Can be more exact as to how much to give trees
 - More complete use of water
 - More even application of water, no waste of irrigation water
 - Nice, even irrigation applied, the front of the field and end get the same amount of water

- Drip puts consistent water to target root zone, can also apply fertilizer directly to root zone, no run off issues as with flood
- Sprinkler seems more efficient, I would like to flood occasionally to control gophers, but don't have gate
- Uniform coverage, no standing water, no runoff, controlled application
- Flood irrigation isn't even across field,, some areas get more of less water than others; when deciding to flood you have to decide do I want three inches of water or none?; Sprinklers or drip can put out a controlled (smaller or larger) amount
- More uniformity, slower application, less puddling, less nutrient leaching, less Waste
- Better use of water, more uniform, less waste
- Micro leads to higher uniformity in tree growth due to uniform water delivery; ability to apply water needed by crop, not what is needed to push water to end of sandy check; Better soil conditions for harvest of almonds; retention of organic matter in sandy soil; less fertilizer
- Distribution uniformity and timing frequency, use only micro sprinklers, ranches are setup to flood/furrow in an emergency
- Past experiences and efficiency is why I flood
- Even application and frost protection
- Even water distribution, better trees and production
- Even distribution, fertilization injection, frost protection, cost of converting flood to sprinklers factor
- Application rate and percolation rate closer, applied more evenly, chemigation available, able to apply in lower quantities more often, better disease control
- More frequent, efficient, water saving method, does not rot tree base
- Conservation of Irrigation Water
 - Drip saves water and reduces weeds
 - Less water used, more evenly applied
 - Water conservation, weed control
 - Use less water
 - Less water, better for trees, frost protection
 - Minimize water waste; disadvantage increased rodent population control
 - I feel it a great opportunity to switch to sprinklers, the control of water and not wasting excess water or watering ground that doesn't really need water, the ability to apply materials for orchard without using an excess that is a waste, materials go to tree not just orchard floor
- Fertigation and Chemigation
 - Application of fertilizer more efficient, application of ag chemicals
 - Weed control
 - We also like to use fertigation with our systems
 - Use of drip can micro fertigation, more efficient
 - Fertilizer application not leaching by putting excess water on soil
 - Better water penetration and better monitoring of fertilizer, cost is the factor in converting
 - Less weeds and spraying with drip, will be converting 10 acres of flood to drip
 - My soils are so sandy it is hard to push flood water across acreage and I'm sure I'm leaching a lot through the root zone when I do flood; I seldom flood for those reasons but would love to use your water to irrigate micro if it were available often enough depending on how much it would cost to hook up to your system
- Financial

- Cost, future development
- Out of pocket price
- Cost
- Cost to convert would be a factor
- Cost of converting
- Biggest factor is initial layout for drip/sprinkler system
- We currently flood irrigate, factors determining change would be cost of conversion and cost of pumping
- Cost of electricity, cost of material to get started
- Too expensive to convert, no pump
- Received grant from NRCS of \$27,000 to install sprinkler system, I was unable to use it b/c ditch tender and District office said I could not receive water on a 14 day cycle, only 10 or 20 day cycle, since there are no plans for a pressurized system soon in Div. 5, I had to return the money, I am disappointed that the District still operates with a 100 year old system.
- Cost
- Money, cost, upkeep of system
- Cost would be main factor
- Cost of system on ten acres
- Initial cost and maintenance a drawback to sprinkler or drip irrigation
- I would prefer sprinkler for better control, but cost and labor would be high for my small operation I think
- Cost of installing sprinklers; cost of operating sprinklers, more maintenance for sprinklers
- Pumping Costs
- Initial expense and maintenance are factors in decision
- expense
- Our place is so small that it would come down to cost and availability in order to switch from flood
- Price of new well
- Cost and crop being raised
- No benefits to sprinkler or drip if I have to pump groundwater, cost to install, cost to operate flood is always better for trees, only benefit to micro is ability to put fertilizer in water
- Opposed to sprinkler or drip due to crops grown
 - Flood irrigation is better way to water pasture
 - Flood irrigation is much better system to use on pasture for deep watering and cheaper
 - We don't have crops, only pasture, no need for drip
 - Sprinkler/drip system of no benefit to us, we raise only corn and oats
 - Too small for any commercial use, can only raise steers or make pasture hay
 - I have 9 acres of pasture, therefore flood is best
 - For my needs (raising cows on pasture ground) flood irrigation is best way to irrigate; I would not convert to sprinklers b/c initial costs, maintenance costs, physical damage to entire system by livestock; this is why I choose to buy flood irrigated ground in the first place
 - We have pasture, flood is most cost effective
- System constraints that affect conversion
 - No access to main canal or ditch, six customers on our line
 - Pasture irrigation would need a power source to deliver water to sprinklers
 - We have small acreage with pasture

- I have hillsides, sprinklers are necessary
- Other
 - Less labor required, land need not be level
 - Apply fertilizer through system, weed control, less loss of trees
 - Can apply without grading soil, can put fertilizer through system
 - Drip/sprinkler is easier to regulate and fertilize with, trees will grow faster, flood is less controllable, sometimes there's too much and won't evaporate or go into soil fast enough
 - Neighbors squirrels damage hose
 - Availability, weed control (however irrigation line and maintenance can substantially outweigh cost of weed control)
 - Frost protection with sprinklers
 - Drip better control of water and fertilizer
 - Less disease
 - We flood small piece, it's inconvenient time wise, we get flooded from neighbors, valves leak
 - None, I'd rather flood
 - Less time in orchard, frost protection, money saves
 - I like sprinklers b/c drip is too labor intense and makes for a dirty field
 - One benefit with sprinklers is I can pull groundwater for frost protection, flooding would be more economical, land is not level
 - Better delivery system with sprinkler
 - Eliminate extreme wet/dry associated with flood, soil compaction caused by flooding, ability to inject fertilizer into sprinklers,
 - Better water penetration and better monitoring of fertilizer, cost is the factor in converting
 - I'm unable to give opinion on this matter b/c I'm new to farming irrigation systems; I can say I'm pleased w/ current flood system, however, I never get phone call to advise me when I can irrigate, I always find out by my neighbors or by constantly checking on my own
 - My neighbors
 - Sprinklers provide better moisture control; lower disease and weed problems; easy delivery of nutrients, fertilizer
 - I am planning to supplement my micro system with flood irrigation of my almonds in July and August, currently in planning
 - No levees to put up and take down, better penetration, winds after irrigation cause less damage or tree loss, fertilizer can be applied through system
 - It is not only matter of conversion but a matter of incentive to develop open ground currently being flooded to a permanent crop using more efficient methods, conversion would also become more economical with a district supply
- Response of Crop to Irrigation System
 - Better management of irrigation; trees produce better with micro irrigation; convert to micro when replacement of orchard; cost of irrigation system affects decision when to convert
 - Correct amount of water at right time, better crops
 - Trees do better, irrigation timing, fertilizer injection timing, harvesting timing
 - Trees like it better, use less water
 - Drip gets a young orchard to a more uniform start, better use of fertilizer
 - Better yield

- We mostly use drip as the preferred system due to quicker years till production starts, ability to fertigate with drip, sprinklers are good as well especially in regard to ground preparation, we believe drip enhances production
- Less disease, less tree stress
- Concerns with a reduction in groundwater recharge
 - Cost and to Water Back in Ground
 - Sprinkler or drip would direct water directly where it's needed, not using flood irrigation wouldn't help recharge groundwater and help push back salt water intrusion in the Delta
 - Satisfied to Flood and Preservation of Underground Water Supply
 - Flooding offers groundwater Replenishment
 - Flood Irrigation is Quick, Simple and Helps the Groundwater to Replenish
- Uncertainty of benefits or decision factors
 - Not sure because of small acreage
 - Don't Understand Last Three Pages
- Benefits of flood irrigation over sprinkler or drip
 - Not as much leaching in sandy soils
 - Maintaining deep moisture, recharge of ground water, dust control
 - Flood irrigation gives me deeper penetration of moisture and helps control rodents
 - Sprinklers apply less water more often than flooding, flooding much less expensive, flooding is good if your ground takes water well
 - Flood and Furrow Work Good on My Operation, the End Result is Good Crops
 - Flooding Does Offer Rodent Control
 - Why Change a Good System?
 - Sprinkler is Costly and Age of Orchard

Comments on Question 20 Regarding District Delivery Practices and Conservation Measures

- Concerns with District delivery operation and availability of water
 - Can't run program with a fixed 10 day rotation
 - Water not always in Main line.
 - Less days between water
 - Scheduling availability when needed or wanted
 - Timing
 - If water were available all the time, I would use your water instead of groundwater if financially feasible
 - Need water for sprinklers more often
 - Timing
 - Can't always get water when we need it
 - During summer excessive heat spells we would like to get water as needed
 - In the event that sprinklers were installed water would need to be available in the District lines more often
 - Water available for a limited period of time
- Concerns with District delivery system
 - Difficult to run sprinklers and pumps from existing pipelines
 - Water is not always in the main line

- At present, the District will not accommodate drip for me; I'm not a live line.
 - I have no drain; water goes down dead-end line; it is a challenge to manage micro irrigation
 - The District has not proven to be a reliable partner, my current ditchtender is a good man but he is constrained by physical limitation of the delivery system, I have had ditchtenders in the past that were less helpful. My irrigation timing should not be determined by the whim of my ditchtenders
 - Part of our sprinkler system is off the MBC so scheduling isn't hard but if it were off a lateral as in our other ranches, it's more difficult
- Farmers with limited access to District water
 - Flood irrigated field only has access to water when delivered
 - No idea, need more input and advice. I have contacted District repeatedly of our need to have District water, no contact in last half year.
- Financial Concerns
 - The only way it would hurt is if the cost was absorbent
 - Cost of adapting current systems to connect to new delivery system
 - Cost to use and setup pressurized pipeline system forces me to use groundwater
- No concerns with the current District system and operations
 - I think the ditchtenders have been working very well so far, any improvements I would hope would help. Also depends on how often the water would be available for sprinklers.
 - We are using water efficiently already, the flexibility of the Division 9 project is going to be a great benefit and we are excited about it
 - No problems with the existing system
 - Good service now
 - Myself, I believe delivering should stay the same
 - I'm not flooding very much and using sprinklers and micros most of the time, getting water from ditchtenders when needed, Thank You.
- Other
 - I am concerned that if the District conserves too much water by conservation then other problems will occur. We need to flood irrigate, restore groundwater, keep soil balanced and clean
 - The best way for us to save water would be for the District to filter our water for all of us...very little water will be saved – we are already very efficient
 - Rely 100% on District water for flood
- Interest in specific conservation measures
 - Pressurized systems interest me
 - Using the pressurized system would help in developing an organized and less wasteful way of farming with the option of an occasional flood application for healthy soil.
- Growers who are content with their current system and their water use
 - Already conserve water
 - Our current water usage practices are very conservative
 - I like my system, if we use less water our water table could drop and affect our home wells
 - I have no informed opinion and really could not even guess since we are not dealing with specifics. Additional not: I am a small user of water, I absolutely waste no water and run

a very well managed ranch operation; I doubt very seriously I could save anything more (labor or costs) that I am already. I have no intentions to participate.

- We already conserve 100% of all District water
- Concerns with District regulations and management
 - Not to let farmers use water like hogs, they need to use common sense, look and watch when they water and not go to bed or to the bar while they water.
- Concerns with how crops grown or irrigation systems will limit conservation measures
 - Hard to implement conservation measures when flooding
 - Only means of watering small pasture acreage is current method of flood, if with water sensor a method can be used to get water when ground is sensed dry then ok.
 - On drip or micro timing is everything
 - On 10 acres parcel District delivery not practical for Drip/micro use; on 70 acre parcel dirty water, crop residue add to management time greatly; Availability is also a worry at times (My problem, Not SSJID's)

Additional Comments Provided by Growers (Question 21)

- Availability of water for irrigation use
 - Water must be available post harvest for longer periods in order to utilize drip irrigation
 - On the sandy soils we need more flood water when hot then 20 day runs, 10 days too much, 20 too little, 15 days would be good in hot weather
 - Pressurized line would be good for drip, sump pumps require water in line which isn't always available
 - We are 100% micro irrigated, would like to see better access (Frequency) for micro use along with quality (no drain water); understand District limitation just a goal; I don't want to pay for flood grower's new systems, we paid for ours easily with improved production
- Interest in specific conservation or improvement measure
 - Pressurized pipe delivery would save me roughly \$200/Acres and would allow option to go to microsprinklers
 - Private pipeline to my neighbors would replace open ditch across my property and give back use of my land that it occupies
 - I would like to be on committee to get a better feel for it, also, to know what type changes are planned for future, knowledge as to what system would benefit me the most, for least amount of money, but also for most productivity and better product
 - Would like more information about "On Farm Conservation Incentive Programs"
 - Been pumping over 20 Years, paying irrigation taxes at my cost and not using District water, very interested in pressurized system
 - SSJID needs to provide low interest loans to facilitate use of drip/sprinkler systems
 - Pressurized line would work best for us, we have sprinklers and micros and plan to put 30 acres more in micros
 - If the new pressurized system works it would greatly help our operations in Manteca, Ripon and Escalon
- Respondents who lease land, share crop or lease out land
 - Share crop, Van Ryn Bros. farms ground
 - We own two acres, any land not in our yard is farmed by someone else
 - Leased to Dan Lagier about 10 years ago, he could answer some of these questions better
 - We do not manage our irrigation, our land is taken care of by Stan Vander Veen

- Property leased to farmers, questions answered should be addressed to tenants
- Jim Bylsma rents our land and has included our property on his report to you
- 16 Acres leased to Shirley Dutra, 18404 McKinley Ave., Manteca 95337
- This property is currently leased to Dutch Nuts, Inc., they handle all irrigation labor and management, I assume they will include acreage in their survey if they participate
- I rent to my son Paul Dole
- I don't know the answer to water conservation questions, Roche Bros., Inc. takes care of everything (Office - 838-3033, Joey 601-5300, Mike 968-6901)
- Mike Guins Owner

- Respondents who support conservation
 - We use and waste very little water; conservation of any resource is a good thing, especially in regards to water; let's stop the practice of sending our water down South for urban use
 - All for the project
 - I would be open to advice on areas that could be improved
 - We are planning to replant orchard in 2011, the ability to add conservation of water but still grow a profitable orchard from the start is an exciting opportunity to participate, If costs from SSJID and extra expense of going to this program work and pencil out it is great

- Other
 - I think your computer fouled up picking us for a survey, Thank You!
 - We have one acre with two homes on it, we receive no water from District
 - Always looking for ways to conserve our natural resources, I'm also interested in expanding my existing solar energy system from 11,200W to 20K, should I wait for SSJID to control grid
 - It's only pasture, no farming is done, We only irrigate when the neighbor does it for us
 - Grew up on farm where JCPenney Manteca is now, 40's 50's and 60's farmed 10 to 20 acres in Ripon area, now retired and have 1 acres piece and use well and some district water for home garden
 - We need to do what we have to in order to keep Gov't agencies from stepping in with their often irrational rules
 - We live on a 5 acre ranch on McBride Rd. in Escalon and do not use any SSJID water
 - I won't be able to change my current flood irrigation used at this time, orchard will probably be removed in about three years, at that time I would make land improvements, replant, and tie into pressurized system
 - Flood 9 acres of pasture via 2 separate valves, land was laser leveled in 1986, system works well, takes 2 hours to flood, sort of like filling a bucket, when it's full, turn the water off
 - I have not used water since 1977 but holding it open in case I do want it
 - This survey for property at 11684 Graves Rd., Ripon
 - I would like the opportunity to speak with other farm owners who have changed their irrigation systems to decide
 - Rely on neighbor for irrigation
 - No farming performed; I use a minimal amount of irrigation water to water a few trees & lawn around my house
 - Need to know what you can do and are willing to do before crop is lost

- Respondents with limited access to District water

- The 80 acres South of French Camp Rd. be put in District so we could lay out the \$ after in, not invert \$, then more delays in getting in, with \$ tied up in system can't use yet
- Financial concerns
 - The cost per acre would have to be affordable
 - In favor if cost less
 - For such a small property, any cost of improving the system is not cost effective
 - Basically cost from going from flood irrigating to sprinkler
 - Sometimes I use sprinklers, sometimes I flood to keep cost down
 - Currently using drip from groundwater, would like to convert to pressurized pipe surface water system but cost of system is prohibitive
- Concerns with how crops, acreage, or irrigation system will limit conservation measures
 - We have small acreage and no funds to convert system
 - We only have 4+ acres and use drip for all our trees and plants
 - 20 acres of pasture
 - We are moving soon, only ever had 1 - 3 horses, no farming
 - With only 10 acres, sprinklers and drip would not be cost effective for us
 - I have only two acres which is a ranchette; I'm not going to fill out rest of survey, I'm 81 yrs. old and it's a pain, it's of no importance to me.
- Concerns with District systems, operation, management or regulations
 - Approximately 100' at north end of my property is an open ditch, it continues to be problem with wash outs causing loss of my irrigation water due to erosion, the District is attempting to bait squirrels in attempt to control problem, Dave Kamper has been trying to help us with this issue
 - Dead end lines hard to regulate and maintain consistent water levels for pumps
 - Too much water at one time on trees due to length of time between watering
 - My farm is at end of lateral line, District told me very difficult to provide water for microspinklers; would like to use District water for my existing microsprinklers orchard and any microspinklers installed in future b/c District water higher quality
 - I feel I do a good job now, on ranch the ditchtenders run us out of water often and the pump shuts down
 - When pumps shut down due to clogged filters we re-run the set again the next day, this wastes water b/c we don't know how many hours the pump ran before shutting down
- Respondents input on how to conserve water
 - If District filtered our canal water, much grower filtering could be eliminated, we sometimes run sets over b/c a pump shut down due to clogged filters, we run complete set over b/c we don't know what hour the pump shut down, many of us would quit using wells if canal water was as clean as well water
 - Pressurize entire system, huge savings in electricity and diesel/pumping costs
 - Drip system would be the only way to improve, expensive to implement, or sprinkler system
 - Put trash on good screen before it goes into Main Line at Highlands Ave.
 - Incentives to change
 - I wish you were providing power instead of PG&E
 - A recovery pond would help manage micro irrigation
 - A quick and cheap conservation method the District should implement is putting tree crops on 15 day water cycle
 - If we stayed with standard 10 day cycle we would use approximately 20% more water each year

- I'm afraid the District may be making some false assumptions when it comes to water conservation; this survey seems to imply that switching from flood to sprinklers would lead to water savings; some soil types this may be true but in my area of the District it is not; in my operation I don't think this would be the case; my trees need more water than I can safely give them with flood irrigation; installing a sprinkler system would allow me to apply smaller amounts of water more frequently leading to increase in total water use
- If SSJID water could be provided in a more consistent timing pattern this would offset possible use of pumping groundwater to cover gaps (affects water quality and cost), we put in a pond to accept SSJID water, then micro-sprinkled out of it, we are taking much less water now than when we flood irrigate
- Respondents who are pleased with the current system and operations
 - Everything is fine as is
 - There have been recent improvements to District pipelines that have been very beneficial in that I do not have water leaking on my fields when the neighbors are irrigating; pipeline replacement was long overdue; I will always keep an open mind to sensible improvements.
 - Took care of 180 acres from 10 years old until I got older; I have some of the best men working on and from this and your team from SSJID you could ever hope to have taking care of my District; I'm at end of Seidner Rd. and valve for all this 1/4 mile section of Seidner Rd. is on my property which feeds water to all my neighbors; your guys do the best job possible; if I was in charge of these men you have in your employment, I would give them a raise and not let one of them go; Thanks for Everything You Guys!
 - My family moved to Escalon in 1920; I've been in this location for 23 Years!; cannot commit to committee at this time
 - Pulling water from J Line for sprinkler and micros, dumping excess water in I Line drain working good
- Respondents who do not want to participate in a conservation program
 - It is real simple from my perspective, I manage the water that I purchase from the District per my taxes, very conservatively, and for the past 37 Years; I do not wish to participate in any incentive programs at this time
 - I don't think I would save any water
 - I think I'm about as efficient as I can be
 - My irrigation water never leaves my orchard, the only loss is evaporation
- Growers comments on personally completed on-farm improvements
 - When orchard originally purchased it had a severe topographical slope, used technique of plowing up several berms to hold water back, then leveling berms at harvest time, etc.; We are in last season of harvest for these trees and will re-level field when we replant; We are currently weighing advantages/disadvantages of continuing flood or converting to combo of flood/sprinkler

Attachment 2. South San Joaquin Irrigation District Grower Survey

In the early 1900's, the South San Joaquin Irrigation District's system was built for flood irrigation. Over the years, the practices of the growers have changed as they work to conserve water and improve crop yields with the installation of more efficient irrigation systems and farming practices. In recognition of the farmers' efforts, SSJID would like to further assist by improving our current system and provide incentives for enhancement of farmers' current irrigation practices. For example, the District has for many years contributed to the installation of sprinkler sumps that are installed to the District's standards. Most recently, the District will be installing a pressurized pipeline specifically for sprinkler & drip irrigation systems in a portion of Division 9. This will separate the flood and sprinkler users and enhance irrigation for both.

SSJID's goal is to ensure that District water is being used efficiently and that it is being put to beneficial use. The District hopes that our conservation efforts will evolve into a partnership between growers and the District. The District intends to implement conservation incentive programs in order to work together toward our water management goals. These efforts will also be beneficial in furthering our continued efforts to preserve our current water rights and to comply with current regulations. California Law SBx7-7 took effect January 1, 2010 requiring all irrigation districts to account for water use by volume and to implement conservation plans by 2012. Therefore, it is crucial that we implement conservation practices to ensure the protection of the District's water rights.

As part of a continuing effort to improve service to water customers, and to encourage best water management practices, the SSJID has initiated the development of a cost sharing program to promote water conservation. To help with the development of the program, we have attached a grower survey to get a better idea of the community's farming practices. The results of this survey will be an important part of the foundation of the conservation program.

The District is hoping you can take time out of your busy schedule to fill out the survey and help us with our conservation efforts. After you have completed the survey, please return it in the enclosed self addressed stamped envelope. All surveys that are returned by September 1, 2010 will be entered into a drawing for one parcel to receive a year of free moisture monitoring services under the District's current program.

Information provided to us is for District use only. No information will be shared with any third parties.

South San Joaquin Irrigation District Grower Survey

Instructions

Please take a few minutes to fill out the survey below. The questions are straightforward and should take no more than five minutes to complete. We have also provided open-ended questions at the end of the survey for anyone wishing to provide additional thoughts on this topic. Please use the enclosed postage-paid envelope to return the survey directly to Attention: Julie Vrieling, South San Joaquin Irrigation District, Post Office Box 747, Ripon, CA 95366. **Surveys must be returned by September 1, 2010** to be eligible for the drawing. ALTERNATIVELY, the survey can be completed and submitted on the Internet at www.ssjid.com/growersurvey. Thank you for your participation.

Farming Background

1. _____ How many acres do you farm in SSJID using District water exclusively?
_____ How many acres do you farm using a combination of District water and ground water?
_____ How many acres do you farm using ground water exclusively?
2. Is farming your full time occupation?
 - a) ____ Yes.
 - b) ____ No.
3. Of the total acreage you farm within SSJID, how many acres fall into the following crops? What water sources do you use (please check boxes as appropriate).
 - a) _____ Almonds, flood irrigation District, Well, Combination
 - b) _____ Almonds, sprinkler/drip/micro irrigation District, Well, Combination
 - c) _____ Forage/feed crops (alfalfa, corn, oats, wheat, etc.) District, Well, Combination
 - d) _____ Vineyards, flood irrigation District, Well, Combination
 - e) _____ Vineyards, sprinkler/drip/micro irrigation District, Well, Combination
 - f) _____ Walnuts, sprinkler/drip/micro irrigation District, Well, Combination
 - g) _____ Other Tree Crops (peaches, apples, cherries, etc.) District, Well, Combination
 - h) _____ Other: _____
4. Of the total acreage that you farm in SSJID, how many do you own versus lease?
 - a) _____ owned
 - b) _____ leased
5. How many years of farming experience do you have in SSJID or elsewhere? What changes have you made during that time? (Indicate the range that best indicates your experience.)
 - a) ____ Fewer than 10 years
 - b) ____ Between 11 and 20 years
 - c) ____ More than 20 years

<input type="checkbox"/> Re-leveled land	<input type="checkbox"/> Installed sprinklers	<input type="checkbox"/> Piped a ditch
<input type="checkbox"/> Repaired structures	<input type="checkbox"/> Installed a well	<input type="checkbox"/> Other _____

Water Supply

6. What are your annual costs associated with pumping groundwater? _____

7. If District were to offer a pressurized system with the same flexibility at the same cost would you be interested in participating? Yes No

If no, please explain: _____

8. What problems, if any, have you encountered when using groundwater? _____

9. What problems, if any, have you encountered when using surface water? _____

10. To the extent that you use groundwater, what factors influence your decision to use groundwater instead of surface water? (Please mark as many of the following as apply.)

- a) _____ No access to District water.
- b) _____ Increased flexibility in when and how long I irrigate.
- c) _____ Less fluctuation in irrigation flow rate.
- d) _____ Lower water cost compared to surface water.
- e) _____ Other: _____

Irrigation Practices

(For each of the questions below, please describe your irrigation practices for each irrigation method used on your fields)

11. How much of the acreage that you farm in SSJID is irrigated using the following irrigation methods?

- a) _____ acres - Flood/Furrow Irrigation
- b) _____ acres - Sprinkler Irrigation
- c) _____ acres - Drip/Microspray Irrigation

12. Does your farmland have access to a drain? Yes _____ No _____

If yes, please describe your method of drainage, reason for drainage, amount of time needed to drain and type of existing tail water recovery system, if any.

13. How do you decide when to irrigate? (Mark as many of the following as apply.)

	<u>Flood</u>	<u>Sprinkler</u>	<u>Drip/Micro</u>	
a)	___	___	___	Availability of surface water
b)	___	___	___	Soil moisture monitoring
c)	___	___	___	Crop evapotranspiration (ET) calculation
d)	___	___	___	Plant physiological indicators (pressure bomb, etc.)
e)	___	___	___	Visual crop indicators (stress, wilting, etc.)
f)	___	___	___	Calendar/past experience
g)	___	___	___	Other: _____

14. How do you decide which flow rate to irrigate with? (Mark as many of the following as apply.)

	<u>Flood</u>	<u>Sprinkler</u>	<u>Drip/Micro</u>	
a)	___	___	___	Fixed by water delivery system constraints
b)	___	___	___	Turnout/irrigation system capacity
c)	___	___	___	Soil moisture monitoring
d)	___	___	___	Crop evapotranspiration (ET) calculation
e)	___	___	___	Past experience
f)	___	___	___	Other: _____

15. How do you decide how long to irrigate? (Mark as many of the following as apply.)

	<u>Flood</u>	<u>Sprinkler</u>	<u>Drip/Micro</u>	
a)	___	___	___	Fixed by water delivery system constraints
b)	___	___	___	Soil moisture monitoring
c)	___	___	___	Crop evapotranspiration (ET) calculation
d)	___	___	___	Water reaches end of field or close to end
e)	___	___	___	Target depth of water applied
f)	___	___	___	Past experience/always the same number of hours for a field
g)	___	___	___	Other: _____

16. In your opinion, what are the benefits of sprinkler or drip irrigation systems vs. flood? If you are a flood irrigator, what are the factors in deciding whether or not to convert your system? Please explain.

Water Conservation Program

17. Which of the following conservation measures would be most beneficial to your operation and profitability; which measures would you consider implementing? (Mark as many of the following as apply.)

- a) Physical improvements
- i) Improved turnout delivery measurement
 - ii) Tailwater recovery systems
 - iii) Conversion to sprinkler irrigation
 - iv) Conversion to drip irrigation
 - v) Laser land leveling
 - vi) Replacement of open ditches with buried pipeline
 - vii) Construction of private pipelines to eliminate valves on District pipelines
 - viii) Valve packing to repair leaking irrigation valves
 - ix) Shorter run length (for example: 1/4-mile vs. 1/2- mile runs)
 - x) On-farm regulating reservoirs
 - xi) Other. Please list: _____
- b) Management improvements
- i) Improved irrigation scheduling
 - ii) More ditchtenders
 - iii) Farm advisory service
 - iv) Pump efficiency testing
 - v) Soil moisture sensors/management aids
 - vi) Other. Please list: _____
- c) Financial incentives
- i) Tiered pricing
 - ii) Reduced rates for those who make improvements
 - iii) Low interest loans for those who make improvements
 - iv) Other _____

18. Would you seriously consider participating in an on-farm conservation program?

- a) Yes
- b) No

19. If you chose to participate, based on the above measures, in your opinion, how much water do you think you could conserve in your operation, on average, over the total acreage?

_____ acre-feet per acre, or _____ %

20. To what extent would existing District delivery practices limit your adoption of the conservation measures selected above?

- a) Not at all.
- b) Somewhat.
- c) Substantially.
- d) Severely.

Comments regarding Question 20: _____

21. Please provide any additional comments that will help SSJID better understand what factors affect your ability to manage irrigation water and what factors are likely to affect your willingness to participate in the on-farm conservation incentive programs and their overall effectiveness.

22. Please provide your name and contact information below (Optional):

Name: _____

Address: _____

Daytime phone number: _____

Are you interested in serving on an irrigation water use committee to further our conservation efforts? Yes No

Please be sure to return your survey to Julie Vrieling no later than September 1, 2010. If you have any questions regarding this survey or the overall Conservation Program, please contact Julie Vrieling at (209)249-4675 or jvrieling@ssjid.com. Thank you for your involvement, we appreciate your participation. To thank you, upon receipt of your survey, your name will be entered into our drawing for a chance to win free moisture monitoring services for one parcel for a year under the District's current program. The lucky winner will be notified at the close of this survey.