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APPENDIX 1: QUESTIONNAIRE ON IRRIGATION SCHEDULING AMONGST FARMERS

A. Information regarding respondent

Name of respondent: ……...

Consultant	Departmental officer	Cooperative official	Irrigation Board	Other

Name of Company/Department/Institution/Cooperative::……

Phone number: ……Fax number: ……

E-mail address:……

B. Information regarding the irrigation scheme:

1.

Production area (Irrigation scheme)	Area under irrigation (ha)	Number of farmers that irrigate	% Farmers that schedule irrigation	Which irrigation system are used the most (order of appearance)	Tariff of water for the farmer (R/ha/pa or R/cub m/pa)

2. Please specify the main crop(s) that are cultivated as for each specific irrigation scheme as well as the occurrence (%) of the type of farming concern on the specific irrigation scheme:

Company concern: 1

One man concern: 2

Irrigation Scheme	Main crop (s)	1	2
		%	%
		%	%
		%	%

B. Implementation of Irrigation scheduling methods

Please specify the irrigation scheduling method that is used as for each specific irrigation scheme, *as well as the percentage of farmers that use the specific irrigation scheduling method*

Name of irrigation scheme	Shovel method	Measuring of soil moisture content (name specific soil measurement method)	Use of computer irrigation models (name specific model)	Gut feeling or intuition	Who helps the farmer with irrigation scheduling (consultant/fellow farmer/self/agric. cooperation)?
	% Farmers	% Farmers Method:	% Farmers Model:	% Farmers	
	% Farmers	% Farmers Method:	% Farmers Model:	% Farmers	
	% Farmers	% Farmers Method:	% Farmers Model:	% Farmers	

C. Please specify the names as well as contact numbers of irrigation services in your area

Name of Institution	Contact person	Tel no/ Fax no/Cell no

APPENDIX 2: QUESTIONNAIRE TO COMMERCIAL IRRIGATORS – TESTING INTERVENING VARIABLES RESPONSIBLE FOR THE IMPLEMENTATION OF IRRIGATION SCHEDULING PRACTICES

Note: Original questionnaire was designed for computer analysis

Enumerator:…….. Date of interview:…….

A. Independent variables

1. Name of farmer (Person interviewed).
2. Respondent number (Code).
3. Name of farm.
4. Province and /or district.
5. Farm size (ha):
   a. Total farm size (ha).
   b. Area under irrigation (ha).
6. Age.
7. Education level of respondent.
8. Attitude towards training:
   Have you attended any training in irrigation? (Yes/No)
9. Farming experience: No of years.
10. Non-farming experience: No of years.
11. Crop production:
    a. Crops cultivate by area (ha) and yield (t/ha).
12. Do you apply crop rotation? (Yes/No).
13. Indicate the crop rotation applied on the farm.
14. Indicate the most important crop(s) in terms of **INCOME**?
15. Indicate the most important crop in terms of **AREA UNDER IRRIGATION**?
16. Indicate the source for irrigation water used on the farm?
17. Indicate the irrigation method (s) used as per specific crop planted under irrigation?
18. Indicate the allocation of irrigation water registered for the farm (m^3 or ha listed)?
19. What is the current tariff (R/ha) that is charged for irrigation water rights?

B. Intervening variables regarding irrigation scheduling

20 Do you regard the current irrigation tariffs to be expensive in relation to the other operational input costs (Yes/No)?

21 Indicate the operational cost of irrigation (percentage) in comparison to the other input cost items like seed, fertilizer, pest control, weed control, labour, marketing, fuel/electricity and mechanization.

22 When and where did you for the first time hear about irrigation scheduling?

23 Describe in your own words what do you think is meant with the concept “irrigation scheduling”?

24 Adoption:

24.1 Do you apply irrigation scheduling on the farm (Yes/No)?

24.2 When did you start with the practicing of irrigation scheduling on the farm?

24.3 Provide possible reasons why you have started with the implementation of irrigation scheduling practices on-farm?

24.4 Using a ten-point scale, rate *how important* do you regard the implementation of irrigation scheduling on the farm?

1	2	3	4	5	6	7	8	9	10

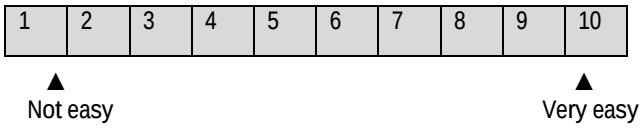
▲ Not important ▲ Very important

24.5 Indicate the current irrigation scheduling method implemented on the farm (Soil auger/Measurement of soil water content/Computer simulation models/Irrigation calendar /Intuition).

24.6 List the possible reasons in order of priority for using the specific irrigation scheduling method on-farm as indicated in 24.5.

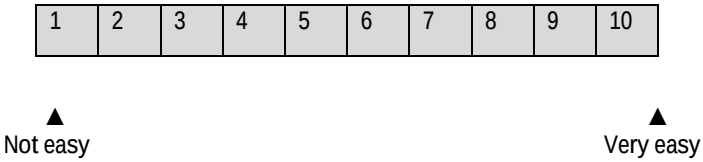
24.7 When did you start to use this specific scheduling method on-farm as indicated in 24.5?

24.8 *How easy* do you find the implementation of irrigation scheduling on-farm (rate on a ten-point scale)?



24.9 Indicate the percentage increase in production efficiency since the introduction of irrigation scheduling on the farm

24.10 How *satisfied* are you with the implementation of irrigation scheduling on-farm (rate on a ten-point scale)?



24.11 List in order of priority the problems that you encounter with the implementation of the specific irrigation scheduling method mentioned in 24.5.

24.12 If you have made use of alternative irrigation scheduling method(s) in the past than mentioned in 24.5, please indicate the specific method (s) used.

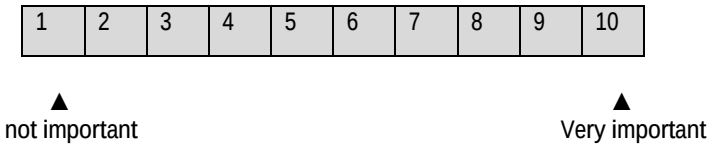
24.13 Please list the possible reasons in order of priority that influenced you to change from irrigation scheduling method, if applicable.

24.14 If you **have never before** implemented irrigation scheduling on the farm, list the possible constraints in order of priority that prevent you from implementing irrigation scheduling practices on-farm?

24.15 If you **had implemented irrigation scheduling on the farm**, but discontinued the practice. Please list in order of priority the possible reasons for discontinuing this practice.

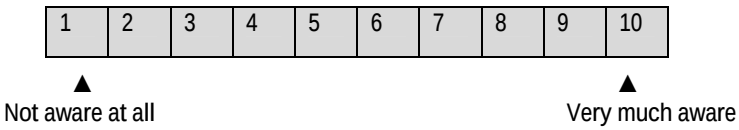
24.16 Indicate the basic knowledge requirements needed for the efficient implementation of irrigation scheduling on a farm in priority order.

24.17 How important (using a ten-point scale) is it for you personally that your *fellow irrigators* of the district also implement irrigation scheduling on-farm?

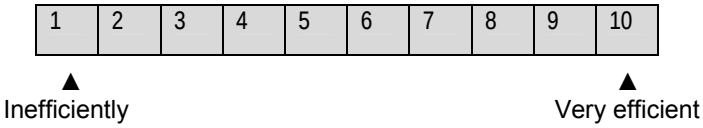


24.18 Motivate your rating provided in 24.17.

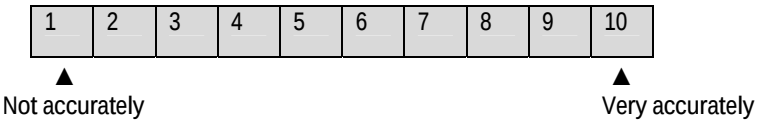
24.19 Rate on a ten-point scale the general awareness of fellow irrigators regarding the implementation of irrigation scheduling?



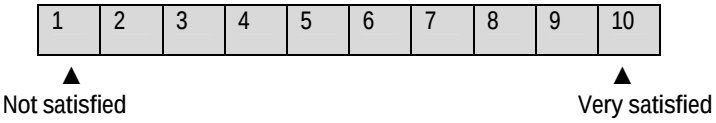
24.20 How efficient do you rate the use of irrigation water in your district? (Use the ten-point scale)



24.21 Please indicate the level of accuracy (on a ten-point scale) with which irrigation scheduling is implemented on the farm?



24.22 Rate your personal satisfaction (on a ten- point scale) with the current level of accuracy of irrigation scheduling practised on the farm?



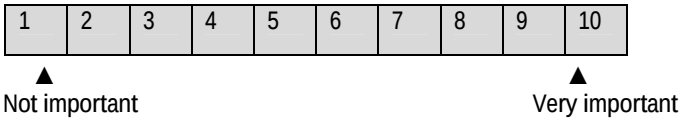
24.23 List possible constraints in order of priority that prevent you from practising more accurate irrigation scheduling on-farm.

25. Perceptions regarding the use of computer models for irrigation scheduling:

25.1 In the case where an irrigator is not using computer models for irrigation scheduling on-farm. Are you aware of any computer irrigation model that is used for irrigation scheduling in your district? (Yes/No)

25.2 If so, mention any specific model you are aware of.

25.3 Using the following ten-point scale, indicate to what extent you regard the use of computer irrigation scheduling models as important for efficient and accurate irrigation scheduling decisions on the farm?

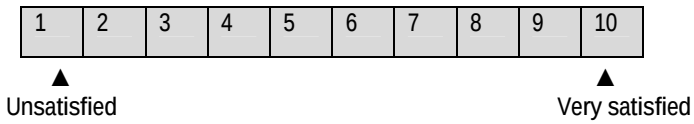


25.4 If you lack aspiration for the implementation of computer irrigation scheduling models on-farm. Mention the main reasons for that in order of priority.

26 Perceptions regarding the use of soil water measurement on the farm:

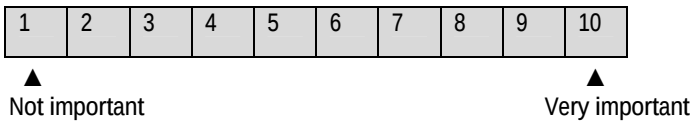
26.1 How frequently do you measure soil water content on the farm? (Weekly/Every fortnight/Monthly/Sporadic/Any other frequency)

26.2 How would you rate your satisfaction with the current frequency of soil water monitoring on-farm, using the following ten-point scale?



26.3 List in order of priority the most important characteristics taken into account with the selection of an irrigation scheduling device to be used on the farm.

26.4 Rate the how important the visibility of the wetting front after an application of irrigation for irrigation management decisions, using the following ten point scale?

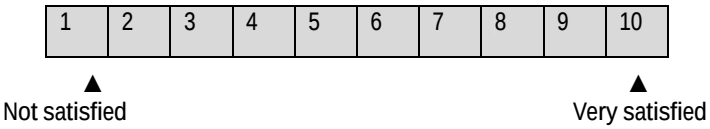


27. Perceptions regarding the monitoring and evaluation of irrigation *distribution uniformity* and *application rate* on pressurized irrigation systems

27.1 Indicate the frequency of testing the distribution uniformity of the irrigation system (More frequently than once per season/Once per season/Once per annum/Once in a five year cycle/Not at all).

27.2 Indicate the frequency of testing the application rate of the irrigation system (Once per season /Sporadic as needed/Not at all).

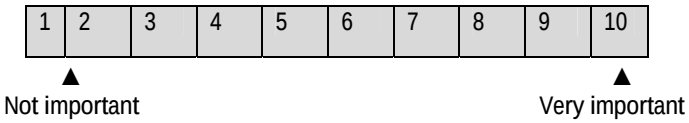
27.3 To what extent are you satisfied with the current maintenance program of the irrigation systems on the farm?



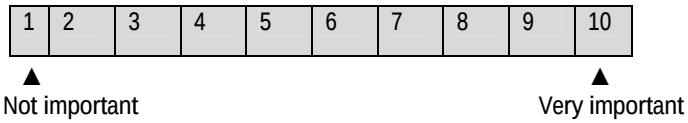
28 Knowledge support for the implementation of irrigation scheduling

28.1 Please list the institutions or persons in order of priority that support you with the implementation and decisions on irrigation scheduling on-farm.

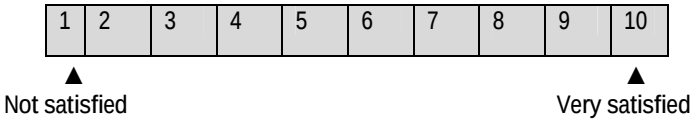
28.2 How important would you rate the support of an irrigation consultant or professional expert for the implementation of irrigation scheduling on farm, using the following ten point scale?



28.3 How important would you rate the support of your fellow farmer for the implementation of irrigation scheduling on farm, using the following ten point scale?

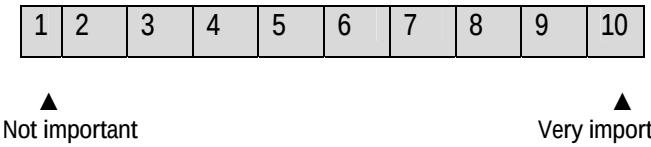


28.4 If you currently make use of the service of an irrigation consultant, please indicate on the following ten-point scale your satisfaction with the service delivered.

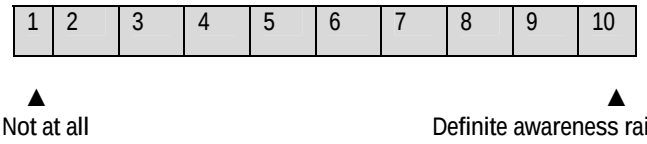


28.5 List the attributes of consultants or advisors as perceived important for the deliverance of an efficient irrigation scheduling service.

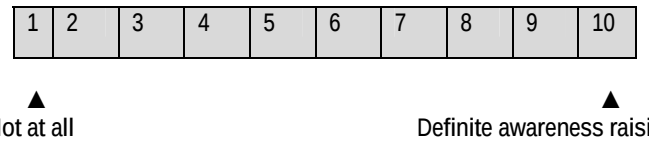
28.6 How important would you rate the supportive role of the newly established WUA to help make farmers aware of the use of irrigation scheduling on farm, using the following ten point scale?



28.7 To what extent will a possible increase of irrigation water tariffs contribute to make farmers more aware of the use of irrigation scheduling on farm, using the following ten point scale?



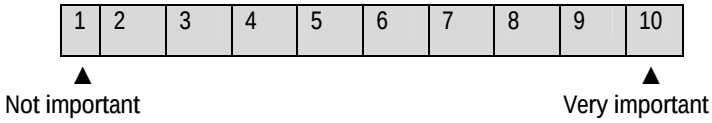
28.8 To what extent will the implementation of volumetric water tariffs help to increase the awareness of farmers to use irrigation scheduling on farm, using the following ten point scale?



C. DEPENDANT VARIABLES

Perception of irrigation scheduling technology

29. Relative advantages perceived using the following Likert ten-point scale subsequent to the implementation of irrigation scheduling on the farm



29.1 Saving of water

29.2 Increase of production or yield

29.3 Improving of quality of crops

29.4 Saving of electricity or energy operational costs

29.5 Efficient use of nitrogen

29.6 Increase of profit

30 If you are making use of the services of an irrigation consultant,

APPENDIX 3: SEMI - STRUCTURED INTERVIEWS

1. Name .

2. Geographical area.

3. Education level.

4. Experience as irrigation consultant.

5. What irrigation scheduling model or program are used for the service rendered? Why the specific program or method?

6. Profile of irrigation consultancy service:

   a. Number of clients that form your clientele to be serviced.
   b. Total area scheduled (ha).
   c. Crops scheduled.
   d. Ideal size of clientele group.
   e. Frequency of measurement of soil water content.
   f. Frequency of consultation with client to discuss recommendations.
   g. Consultation tariff (charge pr ha, point of measurement, etc).

7. Profile of the potential client that regularly make use of the service.

8. Key attributes and competencies needed for effective irrigation consultancy service to be rendered (service and irrigation consultant)?

9. What are the perceived reasons why you think farmers are not interested in irrigation scheduling services and /or objective irrigation scheduling practices?

10. What advantages of objective irrigation scheduling are you highlighting during your communication with farmers or potential clients?
11. Do you think the average irrigation farmers has the necessary capacity to implement objective irrigation scheduling without the support of the irrigation consultant?

12. Are irrigation farmers in general guilty of practices where they are over-irrigating their crops?

13. To what extent will an increase in irrigation water tariffs serve as an incentive to persuade farmers to use objective irrigation scheduling methods?

14. To what extent will the implementation of volumetric water tariffs help to increase the awareness of farmers to use irrigation scheduling on farm, using the following ten point scale?

15. Mention some incentives that you can think of that will motivate an irrigation farmer to implement objective irrigation scheduling.

16. Have we used in the past the correct strategies and action plans to try and “sell” the concept of irrigation scheduling to farmers? What are the general mistakes that were made?

17. The role of the farmer group in the communication network? Identify other role players in the farmer communication network.

18. How important are the following aspects to you?
    a. Regular maintenance of irrigation systems.
    b. Regular measurement of distribution uniformity and application rate?

19. To what extent have you witnessed that farmers will use your service for a couple of seasons and then rely on their own experience and intuition?

20. Farmers who are not making use of your irrigation scheduling services, what are the most common methods that they rely on?

21. General feeling about the registration with an accredited institution e.g.instance SABI.