

**APPENDIX V**  
**INTERVIEW SCHEDULE**

**Topic:**        **Ergonomic assessment and modifications of technologies used by women in organic farming.**

**General Information**

Village \_\_\_\_\_

Block \_\_\_\_\_

District \_\_\_\_\_

1.    Name of the respondent \_\_\_\_\_

2.    Age of the respondent 1  
  

3.    Educational Qualification 2  
  

- i.    Illiterate
- ii.   Primary School
- iii.   High School
- iv.   Intermediate
- v.   Graduate

4.    Occupation of Women 3  
  

- i.    Full Time
- ii.   Part Time

Please indicate the following information regarding your family:

5.    Is the woman head of the family? Yes/No 4  
  

6.    Type of family 5  
  

- i.    Joint
- ii.   Nuclear
- iii.   Extended

7.    Size of the family: 6  
  

| Sr. No. | Members of Family         | Male | Female |
|---------|---------------------------|------|--------|
| 1.      | Adult                     |      |        |
| 2.      | Children (below 18 years) |      |        |

9. Occupation of family member: <sup>7</sup>

| Occupation              | Family Members Male | Female |
|-------------------------|---------------------|--------|
| (i) Agriculture         |                     |        |
| (ii) Agriculture labour |                     |        |
| (iii) Business          |                     |        |
| (iv) Service            |                     |        |
| (v) Any other           |                     |        |

10. Land holding of the family <sup>8</sup>

- i. Small < 1 ha
- ii. Semi-medium 2-4 ha
- iii. Medium 4-10ha
- iv. Large >10 ha

11. Total monthly Income of the family from all the sources <sup>9</sup>

- i. upto Rs. 2500
- ii. 2501 to 4200
- iii. 4201 and above

13. Blood Pressure <sup>10</sup>

- i. High
- ii. Low

14. Body Temperature (°C) <sup>11</sup>

### Some Information on respondent medical background

15. Have you ever been told by the physician that you had any of the following.

- i. Diabetes
- ii. Hypertension
- iii. Joint pain
- iv. Back pain
- v. Respiratory problem.

### Deficiency Disorder

- i. Iron deficiency
- ii. Calcium deficiency
- iii. Any other

16. Have you ever been told by the physician that you had any other type of arthritis, tendinitis, or any other joint problem.

- i. Yes
- ii. No

17. Do you feel any type of pain, numbness or any other type of symptoms while using implements.

- (i) Neck
- (ii) Shoulder
- (iii) Elbow/Forearm
- (iv) Hand/Wrist
- (v) Back
- (vi) Hip/Thigh
- (vii) Knee
- (viii) Ankle

18. Would you call this discomfort?

| Sr. No. | Body Part     | Mild Discomfort | Moderate Discomfort | Severe Discomfort |
|---------|---------------|-----------------|---------------------|-------------------|
| 1.      | Neck          |                 |                     |                   |
| 2.      | Shoulder      |                 |                     |                   |
| 3.      | Elbow/Forearm |                 |                     |                   |
| 4.      | Hand/Wrist    |                 |                     |                   |
| 5.      | Back          |                 |                     |                   |
| 6.      | Hip/Thigh     |                 |                     |                   |
| 7.      | Knee          |                 |                     |                   |
| 8.      | Ankle         |                 |                     |                   |

19. Whether you are performing following activities. What type of tool do you for following activities.

| Sr. No. | Type of Activities                 | Performance |    | Type of Tool Use |
|---------|------------------------------------|-------------|----|------------------|
|         |                                    | Yes         | No |                  |
| 1.      | Digging of land                    |             |    |                  |
| 2.      | Leveling of land                   |             |    |                  |
| 3.      | Sowing/transplantation             |             |    |                  |
| 4.      | Application of fertilizer/manuring |             |    |                  |
| 5.      | Intercultural                      |             |    |                  |
| 6.      | Hoeing                             |             |    |                  |
| 7.      | Weeding                            |             |    |                  |
| 8.      | Harvesting                         |             |    |                  |
| 9.      | Threshing                          |             |    |                  |
| 10.     | Winnowing                          |             |    |                  |

20. Give detail information regarding time spent and distance traveled in different activities.

| Sr. No. | Activity                           | Average Time spent in hrs/min. | Distance Traveled (in mtr.) |
|---------|------------------------------------|--------------------------------|-----------------------------|
| 1.      | Digging of land                    |                                |                             |
| 2.      | Leveling of land                   |                                |                             |
| 3.      | Sowing/transplantation             |                                |                             |
| 4.      | Application of fertilizer/manuring |                                |                             |
| 5.      | Intercultural                      |                                |                             |
| 6.      | Hoeing                             |                                |                             |
| 7.      | Weeding                            |                                |                             |
| 8.      | Harvesting                         |                                |                             |
| 9.      | Threshing                          |                                |                             |
| 10.     | Winnowing                          |                                |                             |

21. Type of activities and posture involved.

| Sr. No. | Activities                         | Posture  |                      |         |           |
|---------|------------------------------------|----------|----------------------|---------|-----------|
|         |                                    | Standing | Standing-cum-bending | Bending | Squatting |
| 1.      | Digging of land                    |          |                      |         |           |
| 2.      | Leveling of land                   |          |                      |         |           |
| 3.      | Sowing/transplantation             |          |                      |         |           |
| 4.      | Application of fertilizer/manuring |          |                      |         |           |
| 5.      | Intercultural                      |          |                      |         |           |
| 6.      | Hoeing                             |          |                      |         |           |
| 7.      | Weeding                            |          |                      |         |           |
| 8.      | Harvesting                         |          |                      |         |           |
| 9.      | Threshing                          |          |                      |         |           |
| 10.     | Winnowing                          |          |                      |         |           |

**Checklist to assess ergonomically the implements and equipment.**

**A.**

1. Name of the tool/equipment
2. Operation for which used
3. General information concerning the tool
4. Details of handle
  - (i) Length -
  - (ii) Width -
  - (iii) Height -
  - (iv) Material -
  - (v) Details of adjustment -
  - (vi) Diameter -
5. Details of Blade
  - (i) Size and Shape -
  - (ii) Material -
  - (iii) Maintenance -
  - (iv) Protection and safety -
6. Details of wheel -
7. Tools as a whole
  - (i) Dimensions -
  - (ii) Shape and Construction -
  - (iii) Material -
  - (iv) Maintenance -
  - (v) Protection and Safety -

**B. Subject feedback: Data sheet to collect subjects about the tool/equipment.**

1. Dates of test
2. Whether the equipment is suitable to the body dimensions of the operator?
3. Does the required operations of the equipment is within the acceptable limits of the operator?
4. Does the operator face any problems during operations?
5. Is there any breakdown, repair and maintenance problem during work?
6. Overall comments of the subject about equipment and/or operation.

**C. Overall comments on Ergonomical/aspects of the tool/equipment.**

**Body dimensions useful in agricultural equipment design.**

| Sr. No. | Dimension                          | In Cm |
|---------|------------------------------------|-------|
| 1       | Weight (kg)                        |       |
| 2       | Stature (Height)                   |       |
| 3       | Acromial height (sitting)          |       |
| 4       | Elbow height                       |       |
| 5       | Sitting height                     |       |
| 6       | Vertical grip reach sitting height |       |
| 7       | Thumb hip reach                    |       |
| 8       | Shoulder grip length               |       |
| 9       | Elbow grip length                  |       |
| 10      | Forearm hand length                |       |
| 11      | Palm length                        |       |
| 12      | Maximum grip length                |       |
| 13      | Index finger diameter              |       |
| 14      | Forearm – Forearm breadth          |       |
| 15      | Hand breadth                       |       |
| 16      | Hand circumference                 |       |
| 17      | Thumb tip reach                    |       |
| 18      | Hand Grip length                   |       |
| 19      | Grip inside diameter               |       |
| 20      | Wrist centre of grip               |       |

## OBSERVATION SHEET – I

**Physical cost in terms of postural stress while performing activities with traditional implements.**

| Sr. No. | Activities                                    | Angle of Normal Curve | Angle of Bending | Angle of Deviation |
|---------|---|-----------------------|------------------|--------------------|
| (i)     | <b>Digging of Land</b>                        |                       |                  |                    |
|         | (a) Standing                                  |                       |                  |                    |
|         | (b) Standing-cum-Bending                      |                       |                  |                    |
|         | (c) Bending                                   |                       |                  |                    |
|         | (d) Squatting                                 |                       |                  |                    |
| (ii)    | <b>Leveling of Land</b>                       |                       |                  |                    |
|         | (a) Standing                                  |                       |                  |                    |
|         | (b) Standing-cum-Bending                      |                       |                  |                    |
|         | (c) Bending                                   |                       |                  |                    |
|         | (d) Squatting                                 |                       |                  |                    |
| (iii)   | <b>Sowing/Transportation</b>                  |                       |                  |                    |
|         | (a) Standing                                  |                       |                  |                    |
|         | (b) Standing-cum-Bending                      |                       |                  |                    |
|         | (c) Bending                                   |                       |                  |                    |
|         | (d) Squatting                                 |                       |                  |                    |
| (iv)    | <b>Application of Fertilizer<br/>Manuring</b> |                       |                  |                    |
|         | (a) Standing                                  |                       |                  |                    |
|         | (b) Standing-cum-Bending                      |                       |                  |                    |
|         | (c) Bending                                   |                       |                  |                    |
|         | (d) Squatting                                 |                       |                  |                    |
| (v)     | <b>Interculture</b>                           |                       |                  |                    |
|         | (a) Standing                                  |                       |                  |                    |
|         | (b) Standing-cum-Bending                      |                       |                  |                    |
|         | (c) Bending                                   |                       |                  |                    |
|         | (d) Squatting                                 |                       |                  |                    |



|               |                          |  |  |  |
|---------------|--------------------------|--|--|--|
| <b>(vi)</b>   | <b>Hoeing</b>            |  |  |  |
|               | (a) Standing             |  |  |  |
|               | (b) Standing-cum-Bending |  |  |  |
|               | (c) Bending              |  |  |  |
|               | (d) Squatting            |  |  |  |
| <b>(vii)</b>  | <b>Weeding</b>           |  |  |  |
|               | (a) Standing             |  |  |  |
|               | (b) Standing-cum-Bending |  |  |  |
|               | (c) Bending              |  |  |  |
|               | (d) Squatting            |  |  |  |
| <b>(viii)</b> | <b>Harvesting</b>        |  |  |  |
|               | (a) Standing             |  |  |  |
|               | (b) Standing-cum-Bending |  |  |  |
|               | (c) Bending              |  |  |  |
|               | (d) Squatting            |  |  |  |
| <b>(ix)</b>   | <b>Threshing</b>         |  |  |  |
|               | (a) Standing             |  |  |  |
|               | (b) Standing-cum-Bending |  |  |  |
|               | (c) Bending              |  |  |  |
|               | (d) Squatting            |  |  |  |
| <b>(x)</b>    | <b>Winnowing</b>         |  |  |  |
|               | (a) Standing             |  |  |  |
|               | (b) Standing-cum-Bending |  |  |  |
|               | (c) Bending              |  |  |  |
|               | (d) Squatting            |  |  |  |

**OBSERVATION SHEET – II**

**Physiological cost in terms of muscular stress (Grip Strength) among different type of activities experienced by the women respondents.**

| Sr. No. | Type of Activity                   | Right Hand                |                          |                               | Left Hand                 |                          |                              |
|---------|------------------------------------|---------------------------|--------------------------|-------------------------------|---------------------------|--------------------------|------------------------------|
|         |                                    | M.S. (kg) Before activity | M.S. (kg) After activity | Mean difference in M.S. (kg.) | M.S. (kg) Before activity | M.S. (kg) After activity | Mean difference in M.S. (kg) |
| 1.      | Digging of Land                    |                           |                          |                               |                           |                          |                              |
| 2.      | Leveling of land                   |                           |                          |                               |                           |                          |                              |
| 3.      | Sowing/transplantation             |                           |                          |                               |                           |                          |                              |
| 4.      | Application of fertilizer/manuring |                           |                          |                               |                           |                          |                              |
| 5.      | Intercultural                      |                           |                          |                               |                           |                          |                              |
| 6.      | Hoeing                             |                           |                          |                               |                           |                          |                              |
| 7.      | Weeding                            |                           |                          |                               |                           |                          |                              |
| 8.      | Harvesting                         |                           |                          |                               |                           |                          |                              |
| 9.      | Threshing                          |                           |                          |                               |                           |                          |                              |
| 10.     | Winnowing                          |                           |                          |                               |                           |                          |                              |

M.S. = Muscular stress

## Record Sheet – I

Physiological cost in terms of heart rate (beats/min) among different activities experienced by the women respondents.

| Sl. No. | Type of Activities                         | Before Activity<br>H.R.<br>(Beats/min) | During Activity<br>H.R.<br>(Beats/min) | After Activity<br>H.R.<br>(Beats/min) | $\Delta$ H.R.<br>(min) |
|---------|--|--|--|---------------------------------------|------------------------|
| 1       | Digging of land                            |  |  |                                       |                        |
| 2       | Leveling of land                           |  |  |                                       |                        |
| 3       | Sowing /<br>transplantation                |  |  |                                       |                        |
| 4       | Application of<br>fertilizer /<br>manuring |  |  |                                       |                        |
| 5       | Interculture                               |  |  |                                       |                        |
| 6       | Hoeing                                     |  |  |                                       |                        |
| 7       | Weeding                                    |  |  |                                       |                        |
| 8       | Harvesting                                 |  |  |                                       |                        |
| 9       | Threshing                                  |  |  |                                       |                        |
| 10      | Winnowing                                  |  |  |                                       |                        |

## Record Sheet – II

Physiological cost in terms Energy Expenditure (kJ) among different activities experienced by the women respondents.

| Sl. No. | Type of Activities                         | Before Activity<br>E.E. (kJ) | During Activity<br>E.E. (kJ) | After Activity<br>E.E. (kJ) | $\Delta$ E.E.<br>(kJ) |
|---------|--|------------------------------|------------------------------|-----------------------------|-----------------------|
| 1       | Digging of land                            |                              |                              |                             |                       |
| 2       | Leveling of land                           |                              |                              |                             |                       |
| 3       | Sowing /<br>transplantation                |                              |                              |                             |                       |
| 4       | Application of<br>fertilizer /<br>manuring |                              |                              |                             |                       |
| 5       | Interculture                               |                              |                              |                             |                       |
| 6       | Hoeing                                     |                              |                              |                             |                       |
| 7       | Weeding                                    |                              |                              |                             |                       |
| 8       | Harvesting                                 |                              |                              |                             |                       |
| 9       | Threshing                                  |                              |                              |                             |                       |
| 10      | Winnowing                                  |                              |                              |                             |                       |

### Record Sheet – III

Physiological cost in terms Total cardiac cost of work (beats) among different activities experienced by the women respondents.

| Sl. No. | Type of Activities                   | Before Activity<br>T.C.C.W.<br>(beats) | During Activity<br>T.C.C.W.<br>(beats) | After Activity<br>T.C.C.W.<br>(beats) |
|---------|--------------------------------------|--|--|---------------------------------------|
| 1       | Digging of land                      |  |  |                                       |
| 2       | Leveling of land                     |  |  |                                       |
| 3       | Sowing / transplantation             |  |  |                                       |
| 4       | Application of fertilizer / manuring |  |  |                                       |
| 5       | Interculture                         |  |  |                                       |
| 6       | Hoeing                               |  |  |                                       |
| 7       | Weeding                              |  |  |                                       |
| 8       | Harvesting                           |  |  |                                       |
| 9       | Threshing                            |  |  |                                       |
| 10      | Winnowing                            |  |  |                                       |