

TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE
PORTLAND, OREGON

NATURAL RESOURCES CONSERVATION SERVICE
MARCH 1999

AGRONOMY TECHNICAL NOTE NO. 20

CROPLAND INVENTORY WORKSHEETS FOR RESOURCE MANAGEMENT SYSTEM PLANNING

A complete inventory and analysis of soil, water, air, plant, animal, social, and economic conditions is the vehicle that moves the client and conservation planner to a position where feasible management alternatives can be developed and sound resource management decisions made. To evaluate existing or benchmark conditions, sufficient information must be gathered during the inventory phase on all land uses to assist in determining the status of the resources.

On lands used primarily for field and forage crop production, orchards, and ornamental crops, the client's inputs and management practices may have a significant impact on the current and future conditions of SWAPA + H. As well as soils, rainfall and other natural resource information, cropland inventory needs to include a description of current crops, crop rotations, tillage operations, nutrient and pest management inputs, livestock numbers and class, available equipment, and the timing and management of other important activities. The best source for this information is the client and is best collected when the client and the planner work together on-site in the planning area (field, tract or farm). A successful inventory process will "set the stage" for planning steps 4. Analyze Resource Data, 5. Formulate Alternatives, 6. Evaluate Alternatives, and 7. Make Decisions.

Planning Resource Management Systems (RMS) on land producing crops and forages has become more sophisticated and involved. Detailed client inputs and management activities must be known to analyze resource conditions with various models, indexes and worksheets. Some of these may include the Revised Universal Soil Loss Equation (RUSLE), Wind Erosion Equation (WEQ), Soil Pesticide Interaction Screening Procedure (SPISP or NPURG), Oregon Water Quality Decision Aid (OWQDA), Phosphorus Index, and Soil Conditioning Index.

This technical note provides conservationists with a series of worksheets to assist with the inventory process when providing planning assistance on cropland. They are designed to record and organize information from the client in a manner that documents current crop management and provide for the inventory necessary to analyze benchmark conditions and develop feasible alternatives.

The worksheets are intended for use as a set. The worksheets include:

1. Crop Rotation and Crop Management
2. Tillage Equipment and Tillage Sequences
3. Crop Nutrient Inputs
4. Pest Management Inputs
5. Irrigation Management and System Description
6. RUSLE (Revised Universal Soil Loss Equation) Field Data
7. Animal Feeding Operation Inventory

Worksheets may also be utilized in progressive planning when assistance is provided to the client in phases.

Conservationists are encouraged to “interview” clients during the inventory process and document the information provided on the appropriate worksheets. Worksheets 1, 2, 3 and 4 are formatted to record this “interview” inventory data. While these worksheets can be given to the client to be filled out and returned to the planner, the opportunity to ask questions and interact is lost and additional time may be needed to clarify the information provided. Worksheets 5 and 6 are used to record inventory from client interviews, field observations, FOTG resource information and field measurements. Worksheet 7 is designed to use with animal feeding operations where manure is used to provide all or a portion of the nutrients for the crops grown. Completed worksheets should be filed as documentation in the inventory section of the client case file.

The technical note includes blank worksheets that can be reproduced and used at the field level. An example set is also included to provide guidance on the type and detail of inventory to gather and record. These worksheets may be modified at the basin level if needed to better reflect inventory needed for more localized crop production systems and management. An electronic file copy of the worksheets can be requested from the Oregon NRCS Technology Team.

Additional inventory worksheets may be developed based on suggestions and input from the basin teams. For assistance or questions contact the state conservation agronomist.

CROPLAND INVENTORY WORKSHEET #1
CROP ROTATION AND CROP MANAGEMENT

Client Name _____ Assisted by _____ Date _____
Business Name _____ Address _____
Farm (Place) Name _____ Rainfall Zone _____ Other _____

Rotation Information

| Tracts(s) | Field(s) | Field Name | Soil Test ^{1/} | Typical Rotation Sequences |
|-----------|----------|------------|-------------------------|----------------------------|
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^{1/} Yes/No. If yes, attach soil test. If irrigated, has water been tested for nutrients? Yes/No. If yes, attach test results
Additional Comments/Observations:

CROPLAND INVENTORY WORKSHEET #1
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Crop and Residue Management Information:

| Crop | Planting Date | Harvest Date | Avg. Yield | Residue Removed Y or N | Amount Removed | Removal Method |
|------|---------------|--------------|------------|---------------------------|----------------|----------------|
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Additional Comments/Observations:

CROPLAND INVENTORY WORKSHEET #3
CROP NUTRIENT INPUTS

| Crop | Nutrient <u>1/</u> Source (kind) | Application <u>2/</u> Rate | Application Method/Date | Application Depth |
|------|-------------------------------------|-------------------------------|----------------------------|----------------------|
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If irrigated, has water been tested for nutrients? Yes/No If yes, attach results.

1/ e.g., 16-20-0, urea, liquid dairy manure, etc.

2/ Units (lbs/ac., gals/ac., inches/ac.)

Additional Nutrient Management Information (Attach copies of soil tests, manure test, etc., if applicable):

CROPLAND INVENTORY WORKSHEET #5
IRRIGATION MANAGEMENT AND SYSTEM DESCRIPTION

| Tract Number | Field Number | Type of Irr. System | Crop (s) | Irrigation System Description (from List 1 or 2) | Total Water Applied to Crop | Number Irr. & Amount Water per Irr. |
|--------------|--------------|---------------------|----------|--|-----------------------------|-------------------------------------|
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1. Sprinkler System Description:

- Mainline Size
- Lateral Spacing
- Sprinkler Head Spacing
- Nozzle Size
- Revolution/ Set Time / Speed of Gun
- Operating Pressure of Line
- Pressure Regulator Rating
- Flow GPM to System

2. Surface System:

- Length of field(s)
- Furrow/Border Spacing
- Grade at end of field Flat Moderate Steep
- Furrow Method – Siphon tubes, gated pipe, ditch w/ feeders
- % water that runs off

Other:

- Soil Moisture Monitoring Devices Used: _____
- ET (Evapotranspiration Predictions Used: _____
- Frequency of surface runoff: _____
- Frequency of irr. water discharge from tile drains: _____

ANIMAL FEEDING OPERATION INVENTORY WORKSHEET

Name of Landowner/Operator _____

Address _____

City _____, OR Zip Code _____

Phone Number _____ FAX _____

Assisted By _____ Date _____

Livestock Data

Type of Operation- _____ (Dairy, Beef, Swine, Poultry, ETC.)

CURRENT OPERATION

| Description of Livestock | NUMBER | Average Weight, Lbs. | Dates Confined | | Dates Grazed | |
|--------------------------|--------|----------------------|----------------|-----|--------------|-----|
| | | | Begin | End | Begin | End |
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PLANNED OPERATION

| Description of Livestock | NUMBER | Average Weight, Lbs. | Dates Confined | | Dates Grazed | |
|--------------------------|--------|----------------------|----------------|-----|--------------|-----|
| | | | Begin | End | Begin | End |
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WASTE SOLIDS TO STORE

Type of Bedding _____ Volume _____/Day

Type of Separator- _____ Percent Solids Separated _____ %

Existing Solids Storage-Dimensions _____ Volume _____ CF

Dimensions _____ Volume _____ CF

Existing Solids Storage Roofed (Yes/No) _____ Unroofed Surface Area _____ Sq Ft

Desired Solids Storage Time- _____ Days

ANIMAL FEEDING OPERATION INVENTORY WORKSHEET

WASTE WATER TO STORE

Cow Prep (Auto Single Cow: 5-15 gal/milker/day)
(Auto Multiple Cow: 25-40 gal/milker/day)
(Manual: 3-7 gal/milker/day) _____ gals/milker/day

Bulk Tank- (Manual: 30-50 gal/wash)
(Auto: 60-110 gal/wash) _____ gal/wash _____ No. of Washes

Miscellaneous Equipment – (25-35 gal/wash) _____ gal/wash _____ No. of Washes

Pipelines- (75-150 gal/wash) _____ gal/wash _____ No. of Washes

Milkhouse and Parlor- (300-700 gal/wash) _____ gal/wash _____ No. of Washes

Holding Area- (500-1200 gal/wash) _____ gal/wash _____ No. of Washes

Unpaved Lot Area Contributing to Liquid Storage Facility- _____ Sq Ft

Paved Lot Area Contributing to Liquid Storage Facility- _____ Sq Ft

Is Paved Area Scraped Daily- _____ (Yes/No)

Roof Area Contributing to Liquid Storage Facility- _____ Sq Ft

Does Silage Seepage Enter Liquid Storage Facility- _____ (Yes/No)

Existing Liquids Storage- Description _____ Volume _____ CF

Existing Liquids Storage Roofed (Yes/No) _____ Unroofed Surface Area _____ Sq Ft

Desired Liquids Storage Period- _____ Days

APPLICATION EQUIPMENT

Big Gun Sprinkler- Description: _____ (Traveler or Stationary)

Flowrate: _____ gpm Wetted Diameter: _____ Ft.

Tractor Spreader- Description: _____

Volume: _____ CF Spread Width: _____ Ft.

Tank Wagon- Description: _____

Volume: _____ gallons Spread Width: _____ Ft.

ANIMAL FEEDING OPERATION INVENTORY WORKSHEET

UTILIZATION AREA

| Field Number | Crop | Acres | Yield Units / Acre | | (Good, Fair, Poor) Crop Management Condition Level | |
|--------------|------|-------|-----------------------|--------|--|--|
| | | | Present | Target | | |
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EXISTING AND PLANNED WASTE MANAGEMENT SYSTEM COMPONENTS

| Practice Standard | Description | Existing | Planned |
|-------------------|---|----------|---------|
| 312 | Waste Management System | | |
| 313 | Waste Storage Structure | | |
| | Tank | | |
| | Waste Storage Pond- Solid Waste Stacking Facility- | | |
| 317 | Composting Facility | | |
| 328 | Conservation Cropping System | | |
| 342 | Critical Area Planting | | |
| 356 | Dike (Berms) | | |

**ANIMAL FEEDING OPERATION
INVENTORY WORKSHEET**

| Practice Standard | Description | Existing | Planned |
|--------------------------|--------------------------------------|-----------------|----------------|
| | | | |
| 359 | Waste Treatment Lagoon | | |
| 362 | Diversion | | |
| 382 | Fencing | | |
| 393A | Filter Strip | | |
| 412 | Grassed Waterway | | |
| 430 | Irrigation Water Conveyance Pipeline | | |
| 442 | Sprinkler Irrigation System | | |
| 449 | Irrigation Water Management | | |
| 472 | Use Exclusion | | |
| 511 | Forage Harvest Management | | |
| 512 | Pasture and Hayland Planting | | |
| 521 | Pond Sealing or Lining | | |
| 533 | Pumping Plant for Water Control | | |
| 558 | Roof Runoff Management | | |
| 560 | Access Road | | |
| 561 | Heavy Use Area Protection | | |
| 590 | Nutrient Management | | |
| 595 | Pest Management | | |
| 606 | Subsurface Drainage | | |
| 607, 608 | Surface Drainage | | |
| 620 | Underground Outlet | | |
| 633 | Waste Utilization | | |
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Notes

CROPLAND INVENTORY WORKSHEET #1

CROP ROTATION AND CROP MANAGEMENT

Client Name Bob Kat Assisted by tmg Date March 1999
 Business Name Oregon Farms Address 555 NW Fields, Anywhere, OR
 Farm (Place) Name Home Place Rainfall Zone 18" + Other ---

Rotation Information

| Tracts(s) | Field(s) | Field Name | Soil Test ^{1/} | Typical Rotation Sequences |
|-----------|-----------|-------------|-------------------------|--|
| 486 | 3 | Lake Bottom | N | 5 yr. Per. Ryegrass Seed – 1 yr. W. Wheat – 5 yr. Mint |
| 1311 | 1, 2 & 14 | --- | N | Winter Wheat – Fallow |
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^{1/} Yes/No. If yes, attach soil test. If irrigated, has water been tested for nutrients? Yes/No. If yes, attach test results

Additional Comments/Observations:

Tract 1311 – All fields; spring barley used to reduce cheatgrass and stripe fungus. 1 x each field last 10 yrs. SB in #2 in 1996. Interest in trial fall canola T1311.

CROPLAND INVENTORY WORKSHEET #1

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Crop and Residue Management Information:

| Crop | Planting Date | Harvest Date | Avg. Yield | Residue Removed Y or N | Residue Removed Y or N | Removal Method |
|-------------------------|------------------|------------------|----------------|---------------------------|---------------------------|--|
| <i>Per. Ryegrass</i> | <i>10/15</i> | <i>7/1-7/25</i> | <i>1400#</i> | <i>Y</i> | <i>6,000#</i> | <i>Rake & bale</i> |
| <i>W. Wheat (irr.)</i> | <i>10/20</i> | <i>8/1</i> | <i>100 bu</i> | <i>N</i> | <i>---</i> | <i>---</i> |
| <i>Mint</i> | <i>Late fall</i> | <i>August</i> | <i>90# oil</i> | <i>Y</i> | <i>Not Known</i> | <i>Mint harvester</i> |
| <i>W. Wheat (nirr.)</i> | <i>10/1</i> | <i>7/20-8/20</i> | <i>52 bu</i> | <i>Y</i> | <i>5 %</i> | <i>Livestock Grazing Sept/Oct. 20-30 Au.</i> |
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Additional Comments/Observations:

All grain stubble nirr. W. Wheat left standing over winter. Irr. W. Wheat stubble buried by mb. plow after harvest. (Stephans wheat used irr. & nirr.)

CROPLAND INVENTORY WORKSHEET #2
TILLAGE EQUIPMENT AND TILLAGE SEQUENCE

| Tillage Equipment Inventory (Include drills, sprayers, fertilizer applicator, etc.) | Description |
|--|---|
| <i>D6 Cat 100 hp tracks JD 4WD 150 hp</i> | <i>D6 old. Limited use on tract 1311.</i> |
| <i>Chisel plow Mb plow 6 – 16</i> | <i>Chisel – 18” shank spacing; have st & twst pts.</i> |
| <i>Sweep Cult-weeder</i> | <i>12’ – sweep; old 36’ with cult pts, rodweeder + tine harrow</i> |
| <i>Disk-harrow Rodweeder</i> | <i>24’ – heavy primary tillage 36’ – plain bar – no hydraulics</i> |
| <i>Drill-double disk Drill – hoe opener</i> | <i>32’ – 7” spacing – No fert. Placement either drill 24’ – 10” spacing – “ “ “ “ “</i> |
| <i>Fert shank applicator</i> | <i>40’ – co-op machine rental</i> |
| <i>Broadcast spreader</i> | <i>36’ – co-op machine</i> |
| <i>Combines 2</i> | <i>18’ header 22’ header – hillside – no straw/chaff spreader</i> |
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Additional Comments/Observations:

Mint establishment done by custom operator.

CROPLAND INVENTORY WORKSHEET #2

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| Crop/Previous Crop | Typical Tillage Sequences by Crop (Average Dates of all Operators) |
|----------------------------|--|
| <i>Per. Ryegrass/Mint</i> | <i>9/1 – Disk-harrow, 9/15 mb plow. 10/1 disk – harrow. 10/10 cult-weed. 10/15 – double disk drill.</i> |
| <i>Fallow/Winter Wheat</i> | <i>9/1 – 11/1 – grz stubble, 3/15 – herbicide application, 4/20 chisel st. pt. 5/10 – cult-weed, 6/10 & 7/15 rodweed, 8/25 rodweed & fert.</i> |
| <i>W. Wheat / Fallow</i> | <i>9/20 rodweed, 10/1-10/15 hoe drill</i> |
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Additional Comments/Observations:

Volunteer weeds/wheat very evident in chaff rows during January field inventory in T1311, field 14.

CROPLAND INVENTORY WORKSHEET #3
CROP NUTRIENT INPUTS

| Crop | Nutrient 1/ Source (kind) | Application 2/ Rate | Application Method/Date | Application Depth |
|-------------------------|------------------------------|-----------------------------|--|------------------------------|
| <i>w. Wheat (Irr.)</i> | <i>20-0-0-5</i> | <i>100 #/AC</i> | <i>Broadcast pre-plant 10/1 – 10/15</i> | <i>2" – 3" cover w/cult.</i> |
| ↓ | <i>45-0-0-10</i> | <i>300#/AC</i> | <i>Split appl. In spring Broadcast 150# - 2x</i> | <i>Surface</i> |
| <i>Established Mint</i> | <i>11-48-0</i> | <i>10 #N & 30 #P</i> | <i>Broadcast late August</i> | <i>Surface</i> |
| ↓ | <i>Custom Blend</i> | <i>80# N 25# P.K.S.</i> | <i>Broadcast late Apr. or early May</i> | <i>Surface</i> |
| ↓ | <i>Aqua</i> | <i>100# - 200# N</i> | <i>Fertigation w/ Irr. Application</i> | <i>Surface</i> |
| <i>W. Wheat (nirr.)</i> | <i>82-0-0</i> | <i>60-80# N + 15# S</i> | <i>Late August in fallow-shank</i> | <i>6"-8"</i> |
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If irrigated, has water been tested for nutrients? Yes ___ No X If yes, attach results.

1/ e.g., 16-20-0, urea, liquid dairy manure, etc.

2/ Units (lbs/ac., gals/ac., inches/ac.)

Additional Nutrient Management Information (Attach copies of soil tests, manure test, etc., if applicable:

Irrigation water from aquifer with know 5-10 ppm No 3. Need well test to account for N in irr. Application.

CROPLAND INVENTORY WORKSHEET #4
PEST MANAGEMENT INPUTS

| Crop | Target Pests | Control Method 1/ | Pesticide (if used) 2/ | Pesticide Application Rate 3/ | Date/Application Method |
|-----------------|---------------------------|-------------------|------------------------|-------------------------------|---|
| Fallow | Vol. Grain Downy brome | Chemical | Glyphosate | 16 oz. | Early March by air. |
| W. Wheat (nirr) | Downy Brome | | Metribuzin | 0-3 # ai | Fall by Nov. 1 |
| | ↓ | | Chlor-sulfuron | 0-4 oz | ↓ ↓ |
| | broadleafs | | Thifen-sulfuron | 0.4 oz | Spring - air |
| | ↓ | | dicamba | 0.12 # ai | ↓ ↓ |
| | Canada Thistle | | 2, 4 - D | 0.75 # ai | Spring - ground |
| | Stripe fungus | Cultural | --- | --- | Annual crop spring barley |
| Mint | Dock & thistle | Chemical | Stinger | 8 oz. | mid Fall – only if weeds present. Ground appl. |
| | Symphia mint root borer | | Dyfonate | 2# ai. | Early Sept., before 9/15 |
| | | | Lorsban | | |
| | Strawberry rootweevil | | ↓ | ↓ | Ground Application. |

1/ Cultural, chemical, mechanical, biological
 2/ Common name or trade name
 3/ Lbs. or oz. of active ingredient

Historic field conditions for weeds, disease, insects, other pests and observations, comments on current management:
Tract 1311 – fields have increase in stripe fungus w/ residue increase @ planting w/ mulch till.

CROPLAND INVENTORY WORKSHEET #6
RUSLE FIELD DATA

| Farm # | Tract # | Field # | Field Name | R or Reg | Soil Mu | KF | LS <u>1/</u> | Contour Farmed <u>2/</u> | Terraces <u>3/</u> | Stripcropping <u>4/</u> | Subsurface Drains <u>5/</u> |
|--------|---------|---------|-------------|----------|---------|-----|--------------|--------------------------|--------------------|-------------------------|-----------------------------|
| | 486 | 3 | Lake Bottom | 80 | 31 | .24 | 0.16 | N/A | N/A | N/A | 40' spacing P = .70 |
| | 1311 | 2 | ---- | 55 | 22D | .43 | 3.70 | 1" - 2" 3% - 5% | N/A | | N/A |
| | | | --- | 55 | 20D | | 3.63 | | Ends @ terrace | | |
| | | | --- | | 20D | | 2.74 | | 225' | | |
| | | 14 | --- | | 12C | | 3.18 | N/A | 390' | | |
| | | | --- | | 12E | | 3.20 | | 230' | | |
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Erosion / Tillage / Soil Condition Observations:

Tract 1311, Fields 2 & 14, severe rill erosion @ end of L's going into terrace channels.

- 1/ Use planning LS. Attach map showing field locations of LS.
- 2/ If contoured, indicated row and grade ridge height at beginning of critical period (this includes cross-slope farming).
- 3/ Indicate average terrace interval for planning LS.
- 4/ Indicate average strip width. Applies to stripcropping and crop strips w/ grass buffers.
- 5/ Western Oregon only. Indicate subsurface drain lateral spacing for relief type drainage system. See P factors, Section I, Erosion Predicting, FOTG.

