**final_logoNo-till/Direct-Seed Production Evaluation Tool**

**(Barley, Beans, Canola, Chickpeas, Corn, Flax, Lentils, Millet, Peas, Rape, Sunflower, Wheat, Yellow Mustard, etc.)**

To be used in conjunction with the Food Alliance Whole Farm/Ranch Evaluation Tool.

|  |  |
| --- | --- |
| **Operation Name:** |  |
| **Address:** |  |
| **Evaluation Date:** |  |
| **Evaluator/Inspector:** |  |

**Scoring System**

Compliance with the Food Alliance Direct-Seed Standard requires an average overall score of 3.0 (75%) or above in the following Direct-Seed scored evaluation criteria:

|  |  |
| --- | --- |
| **Cultural Practices**  Adjacent Area Management  Site Preparation  Rotation  Crop Selection  Green Bridge  Residue Management  Seed Selection  Seedbed Preparation  Seeding Rates  Harvest  Crop Storage | **Crop Nutrition**  Fertilizer Applications  Fertilizer Placement  Soil pH Levels |

#### Instructions for Use

1. Using the performances indicators listed in Levels 1-4 of each of the scored evaluation criteria, assign a score for each. Level 1 is worth 1 point; Level 2 is worth 2 points, and so on. Scoring half points is allowed. Example: All Level 2 requirements and half of Level 3 requirements are met. In this instance, a score of 2.5 may be assigned.
2. Inspectors: In the “**Verification methods and notes**“ section at the end of each criterion, include any pertinent additional information which was considered in determining the score. These notes will provide important background that will be carefully considered in the final certification decision. As applicable, please include reference to documents which were reviewed to verify compliance with requirements.
3. Complete the scoring table and calculate the final percentage score. Points for non-applicable criteria are not included in the final percentage score.

**Cultural Practices**

Adjacent Area Management

**Level 1:** Areas adjacent to the field are not managed.

**Level 2:** Areas adjacent to crop fields and under the control of the farmer are managed in response to pest problems that are exacerbated by conditions in these areas, e.g., overwintering sites for pests exceeding thresholds are disrupted.

**Level 3:** As per Level 2 and adjacent areas are managed to reduce potential for pest immigration, and pesticide and fertilizer movement off-site, and road sides are managed to reduce erosion.

**Level 4:** As per Level 3 and adjacent areas are planted with hedgerows, windbreaks, or other low-maintenance plantings to encourage specific beneficial organisms, reduce erosion, and/or preserve moisture.

**Score:**

**Verification methods and notes:**

Site Preparation

**Level 1:** Fields transitioned to direct-seeded crops are not prepared in any way.

**Level 2:** Drainage ditches are eliminated from fields before transitioning to direct-seeded crops.

**Level 3:** As per Level 2 and eroded gullies are also eliminated.

**Level 4:** As per Level 3 and fields transitioned to direct-seeded crops are free of visibly eroded areas before planting.

**Score:**

**Verification methods and notes:**

Rotation

**Level 1:** Direct-seeded fields are not rotated.

**Level 2:** Direct-seeded fields are in a two-crop rotation with a fallow period.

**Level 3:** Direct-seeded crops are in a three-crop rotation, moisture permitting, with at least two of three crops direct-seeded.

**Level 4:** As per Level 3 and rotations do not include a chemical fallow. All crops in the rotation are direct-seeded.

**Score:**

**Verification methods and notes:**

Crop Selection

**Level 1:** Crops are selected without regard to pest or nutrient management.

**Level 2:** Rotation crops are selected and sequenced to minimize insect, disease, and weed pressure.

**Level 3:** As per Level 3 and crops in the rotation are selected and sequenced to maximize nutrient and moisture efficiency. Varieties are appropriate for direct-seeding (e.g., semi-leafless peas for easier harvest).

**Level 4:** As per Level 2 and rotation crops are selected and sequenced to minimize herbicide use and resistance potential, by permitting rotation of herbicide classes and/or methods (cultural, mechanical, and chemical).

**Score:**

**Verification methods and notes:**

Green Bridge

**Level 1:** The “green bridge” between previous crops or fallow and newly seeded crops is not monitored or managed.

**Level 2:** At least a two-week vegetation-free period is maintained before seeding new crops.

**Level 3:** At least a three-week vegetation-free period is maintained before seeding new crops.

**Level 4:** As per Level 3 and physical, cultural, or mechanical methods are used to manage the green bridge in place of chemical methods.

**Score:**

**Verification methods and notes:**

Residue Management

**Level 1:** Residue is not monitored or managed.

**Level 2:** Residue is monitored after harvest. Overly heavy residue is lightly disked, harrowed, and/or chisel plowed to prevent seeding problems.

**Level 3:** As per Level 2 and chaff is spread or chopped during or after harvest.

**Level 4:** As per Level 3 and burning is not used to manage residue.

**Score:**

**Verification methods and notes:**

Seed Selection

**Level 1:** Seed is not certified and plants used for seed are not inspected before harvest.

**Level 2:** Seed is not certified. Plants used for seed are inspected in the field before harvest, and areas with problem weeds or seedborne+ diseases are avoided.

**Level 3:** Seed is certified, or plants used for seed are inspected as per Level 2. Germination is tested and seeds are not planted unless germination is at least 85%.

**Level 4:** Seed is certified or meets all requirements for certified seed as determined by field and seed inspection.

**Score:**

**Verification methods and notes:**

Seedbed Preparation

**Level 1:** Seedbed receives no preparation.

**Level 2:** As per Level 2 and any post-harvest or pre-planting tillage is light and shallow to preserve moisture.

**Level 3:** Seeding depth is appropriate to the crop and soil moisture levels and adjusted from conventional recommendations to fit direct-seeding (i.e., not as deep as conventional, moisture permitting).

**Level 4:** As per Level 3 and seedbed is firm to a depth of 4 inches (10 cm), with no more than 2 trips over the land before seeding, and adequate moisture is available for germination.

**Score:**

**Verification methods and notes:**

Seeding Rates

**Level 1:** Seeding rates are determined without regard to desired plant density.

**Level 2:** Seeding rates are based on desired plant density, row spacing, and variety.

**Level 3:** As per Level 2 and germination and mortality rates are estimated and used to calculate seeding rates.

**Level 4:** As per Level 3 and seed tests are performed for germination and mortality, and test results are used to calculate seeding rates.

**Score:**

**Verification methods and notes:**

Harvest

**Level 1:** Harvest is scheduled without regard to intended market or crop use.

**Level 2:** The crop is monitored as harvest approaches and is harvested at the proper stage for the intended use.

**Level 3:** The crop is closely monitored for color and tested for moisture content, if appropriate, and is harvested at the proper stage and using the appropriate harvest method to optimize quality for the intended use.

**Level 4:** As per Level 3 and all residue is retained on fields.

**Score:**

**Verification methods and notes:**

Crop Storage

**Level 1:** Crop is stored without regard to condition, moisture content, or intended use, and is not monitored while in storage. Labeled pesticides or fumigants are applied routinely to storages or stored crops to control stored product pests.

**Level 2:** Stored crop moisture, temperature, soundness, and oxygen supply are monitored and controlled to maximize quality. Pesticides or fumigants are applied to storages or stored crops only when duration of storage, intended market, and/or pest monitoring indicate need.

**Level 3:** As per Level 2, and where necessary, crop is properly conditioned to establish optimal initial moisture and temperature. Cultural or physical methods such as cold temperature, sanitation and proper storage construction and maintenance are used to control stored crop pests. Pesticides labeled “Danger” or “Warning” are not used to control stored crop pests.

**Level 4:** As per Level 3 and only reduced toxicity pesticides (labeled “Caution”), biopesticides or cultural controls are used to control stored crop pests.

**Score:**

**Verification methods and notes:**

**Crop Nutrition**

Fertilizer Applications

**Level 1:** Fertilizers are applied on a regular schedule without regard to nutrient testing of soil or foliage.

**Level 2:** Soil and/or leaf tissue or sap tests are performed, and fertilizers are applied according to test results. Fertilizers are not applied unless a deficiency or low level of that specific nutrient has been shown to exist by testing or deficiency symptoms.

**Level 3:** As per Level 2 and fertilizer/nutrient materials and application rates are selected to minimize leaching and runoff. Applications are timed to optimize effectiveness at the lowest possible rates.

**Level 4:** Fertilizers are applied as per Level 3. Soil quality, including organic matter content, is established at planting and maintained at an optimum level to minimize commercial fertilizer needs.

**Score:**

**Verification methods and notes:**

Fertilizer Placement

**Level 1:** Fertilizers are broadcast-applied.

**Level 2:** At least some fertilizer applications are placed in and/or under the seed row or between paired seed rows.

**Level 3:** Most fertilizer applications are in and/or under the seed row.

**Level 4:** All fertilizer applications are in and/or under the seed row.

**Score:**

**Verification methods and notes:**

Soil pH Levels

**Level 1:** pH levels are not monitored or adjusted.

**Level 2:** pH is tested regularly. Soil amendments are applied to adjust pH according to test results.

**Level 3:** pH is monitored and tested as per Level 2. Irrigation water pH is monitored and adjusted according to test results.

**Level 4:** pH levels are adjusted prior to planting and maintained as per Level 3.

**Score:**

**Verification methods and notes:**

Scorecard for No-till Evaluation Criteria

|  |  |
| --- | --- |
|  | SCORE/LEVEL |
| Adjacent Area Management |  |
| Site Preparation |  |
| Rotation |  |
| Crop Selection |  |
| Green Bridge |  |
| Residue Management |  |
| Seed Selection |  |
| Seedbed Preparation |  |
| Seeding Rates |  |
| Harvest |  |
| Crop Storage |  |
| Fertilizer Applications |  |
| Fertilizer Placement |  |
| Soil pH Levels |  |
|  |  |
| (1) TOTAL POINTS EARNED |  |
|  |  |
| Total Points Available | 56 |
| - Minus Total Points Not Applicable |  |
| (2) TOTAL APPLICABLE POINTS |  |
|  |  |
| (3) AVERAGE PERCENTAGE SCORE = [(1) / (2)] \* 100 |  |

**Acknowledgements**

These Guidelines were developed with information from the following sources:

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2. Compendium of Wheat Diseases. 1977. M. V. Wiese. American Phytopathological Society, St. Paul, MN. ISBN 0-89054-023-3.
3. Considerations and Strategies for Selecting Crops and Rotations for Direct Seed Systems. 1999. Huggins, D. http://pnwsteep.wsu.edu/DirectSeed/conf99/ds99conf.htm
4. Crop Profile for Wheat in Oregon. 1999. USDA Office of Pest Management Policy & Pesticide Impact Assessment Program. http://cipm.ncsu.edu/CropProfiles/Detail.CFM?FactSheets\_\_RecordID=134
5. Direct Seed Case Study Series for the Inland Northwest. Pacific Northwest Extension Publication No. PNW514 through PNW527. http://pnwsteep.wsu.edu/dscases/index.html
6. Guide to Crop Protection 1999: Weeds, Plant Diseases, Insects. Saskatchewan Agriculture and Food. http://www.agr.gov.sk.ca/crops/wheat/pest\_control/crop1999.pdf
7. Insect Pests of Small Grains. 1995. W. L. Morrill. American Phytopathological Society, St. Paul, MN. ISBN 0-89054-200-7.
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13. Weed Identification. Saskatchewan Agriculture and Food. http://www.agr.gov.sk.ca/crops/crop\_prot/weed\_id/
14. Wheat Diseases of Montana. Montana State University Extension Service. http://scarab.msu.montana.edu/extension/Petehtml/