Exhibit A: Sampling Protocol

Pre-Harvest Testing

Purpose:

1. Standard sampling guidelines are specified for field and greenhouse sampling of hemp.
2. Samples are taken to obtain specimens for the measurement of tetrahydrocannabinol (THC) content, which determine whether the specimens are hemp or marijuana. The measurements are intended to be representative of the THC content in a "lot" of hemp crop acreage as identified by the producer. Hemp producers may not harvest hemp prior to the hemp being sampled and tested for THC concentration. Testing procedures are provided in a separate document.

Scope:

1. Samples collected under this procedure are acceptable for submission to a qualified, DEAregistered laboratory for determination of THC in hemp.
2. Since the THC content of hemp generally peaks as the plant ripens, the timing of when sampling occurs is important to accurately measure THC concentration and monitor compliance with the USDA hemp production program.
3. Samples must be collected by a USDA approved sampling agent, or a Federal, State or Tribal law enforcement agent authorized by USDA to collect samples. It is the responsibility of the licensed producer to pay any fees associated with sampling.

Summary of Practice:

1. This practice provides procedures for entering a growing area and collecting the minimum number of plant specimens necessary to represent a homogeneous composition of the "lot" that is to be sampled. An authorized representative enters a growing area, strategically examines the growing area, establishes an approach for navigating the growing area, and collects individual specimens of plants in order to obtain a representative sample of hemp in the designated lot.
2. Cuttings from each "lot" of hemp crop acreage, as identified by the producer, and submitted to and uniquely identified by the Farm Service Agency per the requirements of the USDA hemp production program, shall be organized as composite samples. For the purposes of these procedures, a "lot" is a contiguous area in a field, greenhouse, or indoor growing structure containing the same variety or strain of cannabis throughout. In addition, "lot" refers to the batch of contiguous, homogeneous whole of a product being sold to a single buyer at a single time. "Lot" is to be defined by the producer in terms of farm location, field acreage, and to be reported as such to the FSA.

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Equipment and Supplies:

1. Garden pruners/shears (Cleaned prior to and following each composite sample. Some examples of appropriate cleaning agents and supplies to use on garden pruners/shears are bleach, rubbing alcohol, steel wool, and/or sandpaper.)
2. Sample bags, paper.
    2.1. The size of the bags will depend upon the number of clippings collected per lot.
    2.2 The bags should be made from a material known to be free from THC.
3. Security tape
4. Permanent markers
5. Sample collection forms
6. GPS Unit
7. Disposable gloves – Nitrile

Sampling Guidelines:

1. The licensee or designated employee shall accompany the sampling agent throughout the sampling process.

2. Surveillance of the growing area.

2.1. The inspector shall verify the GPS coordinates of the growing area as compared with the GPS coordinates submitted by the licensee to USDA.

2.2. The inspector shall estimate the average height, appearance, approximate density, condition of the plants, and degree of maturity of the flowering material, meaning inflorescences (flowers/buds).

2.3. The inspector shall visually establish the homogeneity of the stand to establish that the growing area is of like variety.

3. Time of Sampling:

3.1. Within 15 days prior to the anticipated harvest of cannabis plants, an approved Federal, State, local, or Tribal law enforcement agency or other State or Tribal designated person shall collect representative samples from such cannabis plants for THC concentration level testing.

4. Field Sampling:

4.1. For purposes of determining the number of individual plants to select for sampling, the size of the growing area shall be considered. For sampling purposes, samples from separate “lots” must be kept separate and not be commingled.

4.2. For lots of less than one acre, including greenhouses, select a minimum of 1 plant, then take a cutting from the plant to form a sample. For lots of 2 to 10 acres, including greenhouses, select a minimum of one plant per acre, then take cuttings of each plant, then combine to form a composite sample.

4.3. For growing areas larger than ten (10) acres, including greenhouses, the number of plants that will be selected to form a composite sample is based upon the Codex Alimentarius Recommended Methods of Sampling for the Determination of Pesticide Residues for Compliance with MRLS CAC/GL 33-1999.

4.3.1.The sample size is estimated in a two-step process. The first step is to estimate the number of primary plants to be sampled. The second step is to adjust the estimate of primary plants by the acreage under cultivation.

4.3.2.The initial number of primary plants is estimated using

$$No = \ln(1-p) / \ln(1-i)$$

where p is the confidence level to detect hemp plants having THC content greater than the acceptable hemp THC level and i is the proportion of hemp plants having THC content greater than the acceptable hemp THC level. The values for i are based on past experience in the same or similar growing areas, or if no previous experience is available, than a proportion of hemp plants having a THC content greater than the acceptable hemp THC level greater than the acceptable hemp THC level equal to 0.01 is considered appropriate.

4.3.3.The initial primary plants estimate is adjusted by the number of acres to calculate the minimum number of primary plants for composting as follows: $Na = No / (1 + ((No - 1) / N))$ where Na is the minimum number of primary plants to be selected for forming a composite sample, No is the initial number of primary plants, and N is the number of acres under cultivation. The adjusted primary plant sample sizes for fields from 11 to 200 acres in size are shown in the following table.

4.3.4 It is recommended to have the proportion of hemp plants having THC content greater than the acceptable hemp THC level as small as possible so as to lower the total number of samples that are required to be taken over time.

Table 1.0 **Number of Primary Plants to Sample vs. Total Acres of Production**

Number of Acres	Number of Primary Plants for Composite Sample		Number of Acres	Number of Primary Plants for Composite Sample		Number of Acres	Number of Primary Plants for Composite Sample
11	11		57	48		118 - 119	85
12 - 13	12		58 - 59	49		120 - 121	86
14	13		60	50		122 - 123	87
15	14		61 - 62	51		124 - 125	88
16	15		63	52		126 - 127	89
17	16		64	53		128 - 129	90
18	17		65 - 66	54		130 - 131	91
19	18		67	55		132 - 133	92
20	19		68 - 69	56		134 - 135	93
21	20		70 - 71	57		136 - 137	94
22 - 23	21		72	58		138 - 140	95
24	22		73 - 74	59		141 - 142	96
25	23		75	60		143 - 144	97
26	24		76 - 77	61		145 - 146	98
27	25		78	62		147 - 148	99
28	26		79 - 80	63		149 - 151	100
29 - 30	27		81 - 82	64		152 - 153	101
31	28		83	65		154 - 155	102
32	29		84 - 85	66		156 - 158	103
33	30		86	67		159 - 160	104
34 - 35	31		87 - 88	68		161 - 162	105
36	32		89 - 90	69		163 - 165	106
37	33		91 - 92	70		166 - 167	107
38	34		93	71		168 - 170	108
39 - 40	35		94 - 95	72		171 - 172	109
41	36		96 - 97	73		173 - 175	110
42	37		98	74		176 - 177	111
43 - 44	38		99 - 100	75		178 - 180	112
45	39		101 - 102	76		181 - 182	113
46	40		103 - 104	77		183 - 185	114
47 - 48	41		105 -106	78		186 - 187	115
49	42		107 - 108	79		188 - 190	116
50	43		109	80		191 - 193	117
51 - 52	44		110 - 111	81		194 - 196	118
53	45		112 - 113	82		197 - 198	119
54	46		114 - 115	83		199 - 200	120
55 - 56	47		116 - 117	84			

6. Collecting Samples from each lot:

6.1. Sampling agents shall always walk at right angles to the rows of plants, beginning at one point of the lot and walking towards another point on the opposite side of the lot.

6.2. While walking through the growing area, the inspector shall cut at least “n” flowering material, meaning inflorescences (the flower or bud of a plant) at random but convenient distances. Avoid collecting too many specimens from the borders of the field/greenhouse.

6.3. The cut shall be made just underneath a flowering material, meaning inflorescence (the flower or bud of a plant), located at the top one-third {1/3) of the plant. (See figure below.) The sample size must be of adequate volume to accommodate laboratory tests.

6.4. Utilize a paper sample bag for collecting sample cuttings. Ensure that each bag has the minimum number of cuttings, n, as calculated by 4.3.3, or in the Example Tables 1 and 2.

6.5. Seal each bag and record the sample number.

7. Sample identification:

7.1 The inspector shall seal each bag and record the sample identification number. The sample shall also be identified with the following information:

(1) The sample ID shall include: Sampling agent contact information ; name and contact information of the producer; producer hemp license or authorization number ; date of sample; and “lot” ID as provided by the USDA Farm Service Agency; any other information that may be required by States, Tribes, Law Enforcement Authorities, mail delivery services, customers or groups of customers.

8. Simple Random Sampling in the Field:

8.1 Once you have determined the number of primary plants to be sampled as described in Section 4 of Exhibit A you must identify the sampling areas for the registered land area.

8.2 For each contiguous lot divide the lot into general sampling areas equal to the total number of primary plants which must be sampled. Assign each division of the sampling area a number from one (1) to the maximum number of primary plants that need to be sampled.

8.3 Randomly select one number between 1 and 100 for each general sampling area.

8.4 Consult Table 2.0 “100 Sets of Random Site Selection Directions”, under Entry Number, to find the random numbers you have selected. Record the set of walking instructions listed in the table for each of your random numbers.

8.5 Select the first general sampling area of the lot to be sampled.

8.6 Use the walking instructions to locate your actual sample site.

8.6.1 Locating the sample:

8.6.2 Go to the edge of the first area to be sampled. If it is a field edge go into the field 30 paces. From this starting point, follow the walking instructions for the chosen general sampling area. Once you have reached the destination sample the plant in front of you or at a right angle from you.

8.6.3 Go to the next general sampling area and repeat the process using the second set of walking instructions.

Table 2.0 100 Sets of Random Site Selection Directions.

Table 2. 100 Sets of Random Site Selection Directions			
Entry Number	Direction - Left or Right	Paces - Left or Right	Paces Away
1	Right	1	5
2	Right	3	19
3	Right	16	9
4	Right	17	24
5	Left	13	17
6	Right	5	6
7	Left	19	4
8	Left	11	18
9	Right	14	16
10	Right	7	20
11	Left	25	7
12	Right	24	14
13	Right	18	11
14	Right	6	21
15	Left	20	25
16	Right	15	1
17	Right	21	22
18	Left	23	23
19	Left	8	10
20	Right	2	2
Entry Number	Direction - Left or Right	Paces - Left or Right	Paces Away
21	Left	22	13
22	Right	16	8
23	Right	12	3
24	Left	9	12
25	Left	4	15
26	Right	2	6
27	Right	12	13
28	Left	11	22
29	Right	7	11
30	Right	4	14
31	Right	3	15
32	Right	21	3
33	Left	16	4
34	Right	19	17
35	Left	5	8
36	Right	6	19
37	Left	24	9
38	Right	23	5
39	Right	25	1
40	Right	15	23
Entry Number	Direction - Left or Right	Paces - Left or Right	Paces Away
41	Left	8	24
42	Left	10	25
43	Left	20	10
44	Right	22	16
45	Left	1	20
46	Right	9	7
47	Left	13	2
48	Left	18	12
49	Left	17	21
50	Right	14	18
51	Left	11	3
52	Right	6	19
53	Left	14	10
54	Left	22	22
55	Left	13	11
56	Left	3	12
57	Left	10	13
58	Right	18	21
59	Left	8	20
60	Left	2	15
Entry Number	Direction - Left or Right	Paces - Left or Right	Paces Away
61	Right	12	18
62	Left	4	8
63	Right	21	6
64	Right	15	24
65	Right	24	4
66	Left	5	13
67	Left	23	23
68	Left	7	14
69	Left	19	11
70	Left	25	1
71	Left	20	25
72	Right	1	12
73	Right	16	8
74	Left	17	7
75	Right	9	19
76	Left	10	24
77	Right	6	6
78	Left	7	15
79	Left	8	5
80	Left	17	21
Entry Number	Direction - Left or Right	Paces - Left or Right	Paces Away
81	Right	3	18
82	Right	18	17
83	Left	25	2
84	Left	20	16
85	Left	22	3
86	Right	23	22
87	Right	1	9
88	Left	16	10
89	Left	24	1
90	Right	14	23
91	Left	4	24
92	Left	2	25
93	Left	15	10
94	Left	19	16
95	Left	12	11
96	Right	11	23
97	Right	21	1
98	Right	9	4
99	Left	13	18
100	Left	5	21