ANKOM TDF Dietary Fiber Analyzer

- Automates AOAC 991.43, 985.29, 2001.03
- Optionally 2009.01, 2011.25, 2017.16 & 2022.01
- IDF/SDF/TDF Values
- Automates addition of chemicals, enzymes & rinses
- Auto controlled temperatures and agitation
- Reduces labor >50%
- Eliminates water baths and filtration flasks – Frees up lab space
- 6 sample positions
- Accomplish 3 runs or 9 duplicates/day/shift (i.e. 18 samples within an 8 hr workday)

AOAC 991.43 – Conventional Steps

Prepare for Test	
1	Prepare Crucibles
1a	Ash crucibles overnight
1b	Clean with vacuum
1c	Soak 1 hr @ room temp
1d	Rinse with 3 solutions
1e	Prepare DE filter bed
1f	Dry at 130°C
1g	Cool 1 Hour & weigh
2	Weigh Samples
3	Prepare/Heat Water Baths
4	Place samples in beakers

Digest Sample	
5	Heat to 95°C
6	Add buffer
7	Add Amylase
8	Digest at 95°C for 35 min
9	Scrape beaker walls and rinse with H_2O to move all residue to bottom
10	Cool to 60°C
11	Add Protease
12	Digest at 60°C for 30 min
13	Add HCl
14	Add AMG
15	Check/adjust pH
16	Digest at 60°C for 30 min

Isolate IDF Residue	
17	Transfer to filter
18	Filter with vacuum
19	Scratch filter bed as needed
20	Rinse with 70°C H_2O
21	Rinse with 78% EtOH
22	Rinse with 95% EtOH
23	Rinse with Acetone
24	Dry IDF residue
25	Weigh IDF residue

Isolate SDF Residue	
26	Add 95% EtOH to filtrate
27	Precipitate for 60 min
28	Transfer to filter
29	Filter with vacuum
30	Scratch filter bed as needed
31	Rinse with 78% EtOH
32	Rinse with 95% EtOH
33	Rinse with Acetone
34	Dry SDF residue
35	Weigh SDF residue

Calculate Results	
36	Correct for Protein
37	Correct for Ash
38	Calculate results using weights and corrections

AOAC 991.43 – Ankom Automated

Prepare for Test	
1	Weigh Filter Bags
2	Weigh DE and Samples
3	Prepare/Heat Water Baths
4	Place samples in beakers

Digest Sample	
5	Heat to 95°C
6	Add buffer
7	Add Amylase
8	Digest at 95°C for 35 min
10	Cool to 60°C
11	Add Protease
12	Digest at 60°C for 30 min
13	Add HCl
14	Add AMG
15	Check/adjust pH
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Isolate SDF Residue	
26	Add 95% EtOH to filtrate
27	Precipitate for 60 min
28	Transfer to filter
29	Filter with vacuum
31	Rinse with 78% EtOH
32	Rinse with 95% EtOH
33	Rinse with Acetone
34	Dry SDF residue
35	Weigh SDF residue

Calculate Results	
36	Correct for Protein
37	Correct for Ash
38	Calculate results using weights and corrections

Blank = Steps eliminated due to automation and Filter Bag Technology
Green = Steps automated by instrument, no technician intervention
White = Steps still required by technician

AOAC 991.43 – Ankom Automated

Prepare for Test	
1	Weigh Filter Bags
2	Weigh DE and Samples
3	Install Filter Bags
4	Place sample & DE in bags

Digest Sample	
15	Check/adjust pH

Isolate IDF Residue	
23	Rinse with Acetone
24	Dry IDF residue
25	Weigh IDF residue

Isolate SDF Residue	
33	Rinse with Acetone
34	Dry SDF residue
35	Weigh SDF residue

Calculate Results	
36	Correct for Protein
37	Correct for Ash
38	Calculate results using weights and corrections

Went from 38 manual steps to 14

AOAC 2017.19 – Conventional Steps

Prepare for Test	
1	Prepare Crucibles
1a	Ash crucibles overnight
1b	Clean with vacuum
1c	Soak 1 hr @ room temp
1d	Rinse with 3 solutions
1e	Prepare DE filter bed
1f	Dry at 130°C
1g	Cool 1 Hour & weigh
2	Weigh Samples
3	Prepare water baths
4	Place samples in beakers

Digest Sample	
5	Add buffer
6	Add Amylase/AMG
7	Heat to 37°C
8	Digest for 4 hours
9	Scrape beaker walls and rinse with H_2O to move all residue to bottom
10	Add Trizma Base
11	Check/adjust pH
12	Heat to 90°C
13	Incubate for 20 min
14	Cool to 60°C
15	Add Protease
16	Digest for 30 min
17	Add Acetic Acid
18	Check/ adjust pH
19	Add internal standard

Isolate IDF Residue	
20	Transfer to filter
21	Filter with vacuum
22	Scratch filter bed as needed
23	Rinse with H_2O
24	Rinse with 78% EtOH
25	Rinse with 95% EtOH
26	Rinse with Acetone
27	Dry IDF residue
28	Weigh IDF residue

Isolate SDF Residue	
29	Add 95% EtOH to filtrate
30	Precipitate for 60 min
31	Transfer to filter
32	Filter with vacuum
33	Scratch filter bed as needed
34	Rinse with 78% EtOH
35	Rinse with 95% EtOH
36	Rinse with Acetone
37	Dry SDF residue
38	Weigh SDF residue

Calculate Results	
39	Correct for Protein
40	Correct for Ash
41	Determine WASDF
42	Calculate results using weights and corrections

AOAC 2017.19 – Ankom Automated

Prepare for Test	
1	Weigh filter bags
2	Weigh Samples
3	Prepare water baths
4	Place samples in beakers

Digest Sample	
5	Add buffer
6	Add Amylase/AMG
7	Heat to 37°C
8	Digest for 4 hours
10	Add Trizma Base
11	Check/adjust pH
12	Heat to 90°C
13	Incubate for 20 min
14	Cool to 60°C
15	Add Protease
16	Digest for 30 min
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30	Precipitate for 60 min
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32	Filter with vacuum
34	Rinse with 78% EtOH
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36	Rinse with Acetone
37	Dry SDF residue
38	Weigh SDF residue

Calculate Results	
39	Correct for Protein
40	Correct for Ash
41	Determine WASDF
42	Calculate results using weights and corrections

Blank = Steps eliminated due to automation and Filter Bag Technology
Green = Steps automated by instrument, no technician intervention
White = Steps still required by technician

AOAC 2017.19 – Ankom Automated

Prepare for Test	
1	Weigh filter bags
2	Weigh Samples
3	Prepare water baths
4	Place samples in beakers

Digest Sample	
11	Check/adjust pH
18	Check/ adjust pH
19	Add internal standard

Isolate IDF Residue	
20	Transfer to filter
21	Filter with vacuum
26	Rinse with Acetone
27	Dry IDF residue
28	Weigh IDF residue

Isolate SDF Residue	
36	Rinse with Acetone
37	Dry SDF residue
38	Weigh SDF residue

Calculate Results	
39	Correct for Protein
40	Correct for Ash
41	Determine WASDF
42	Calculate results using weights and corrections

Went from 42 manual steps to 19

ANKOM TDF Dietary Fiber Analyzer

IDF

Automatic enzymatic digestion
Temperature controlled agitation
Technician free filtration
Eliminates water baths & filtration flasks

SDF / TDF

Automatic precipitation
No Transfer Error
Eliminates clogged filters
Technician free filtration
Eliminates water baths & filtration flasks

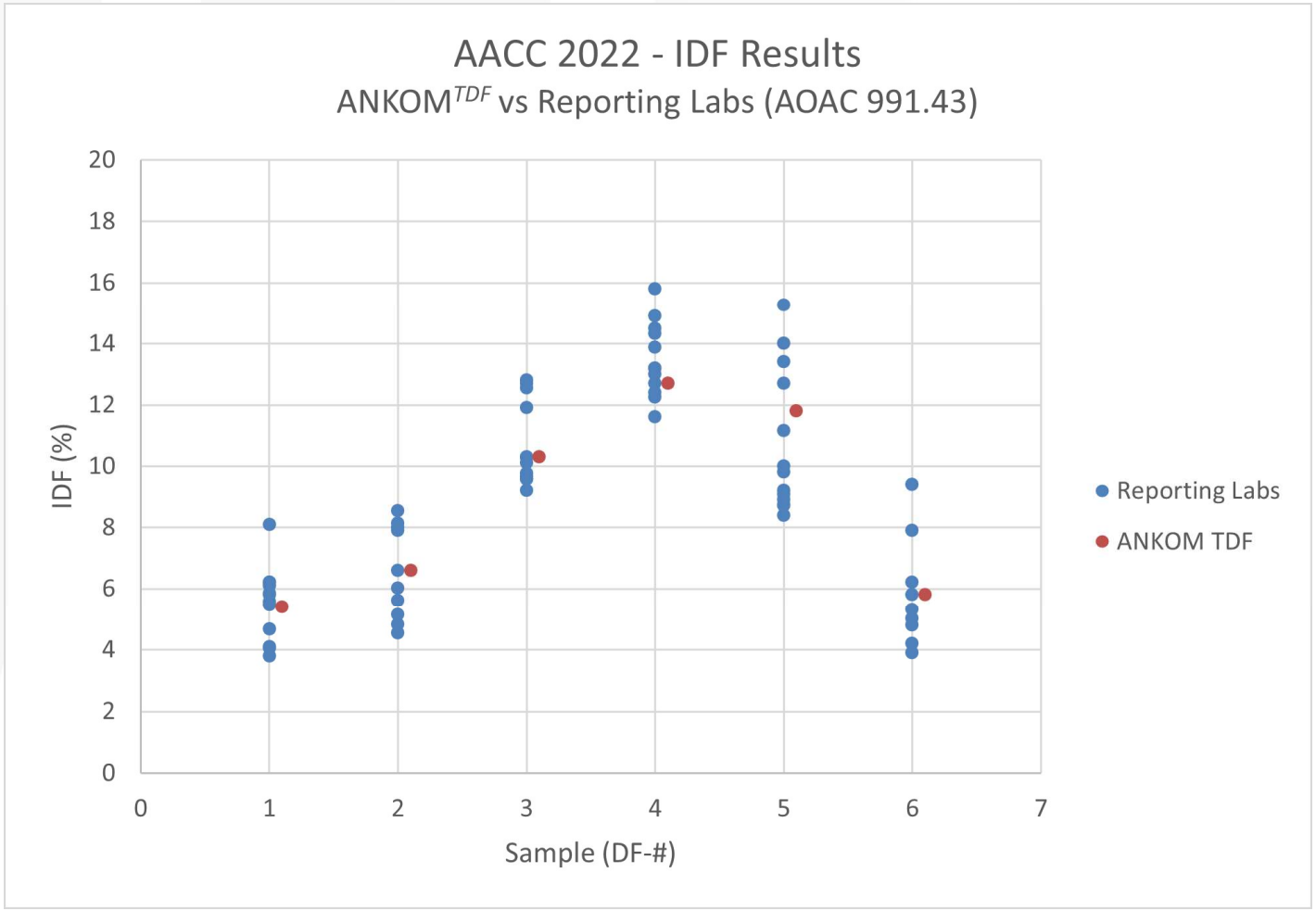
Filtrate available for HPLC

Filter Bag Technology

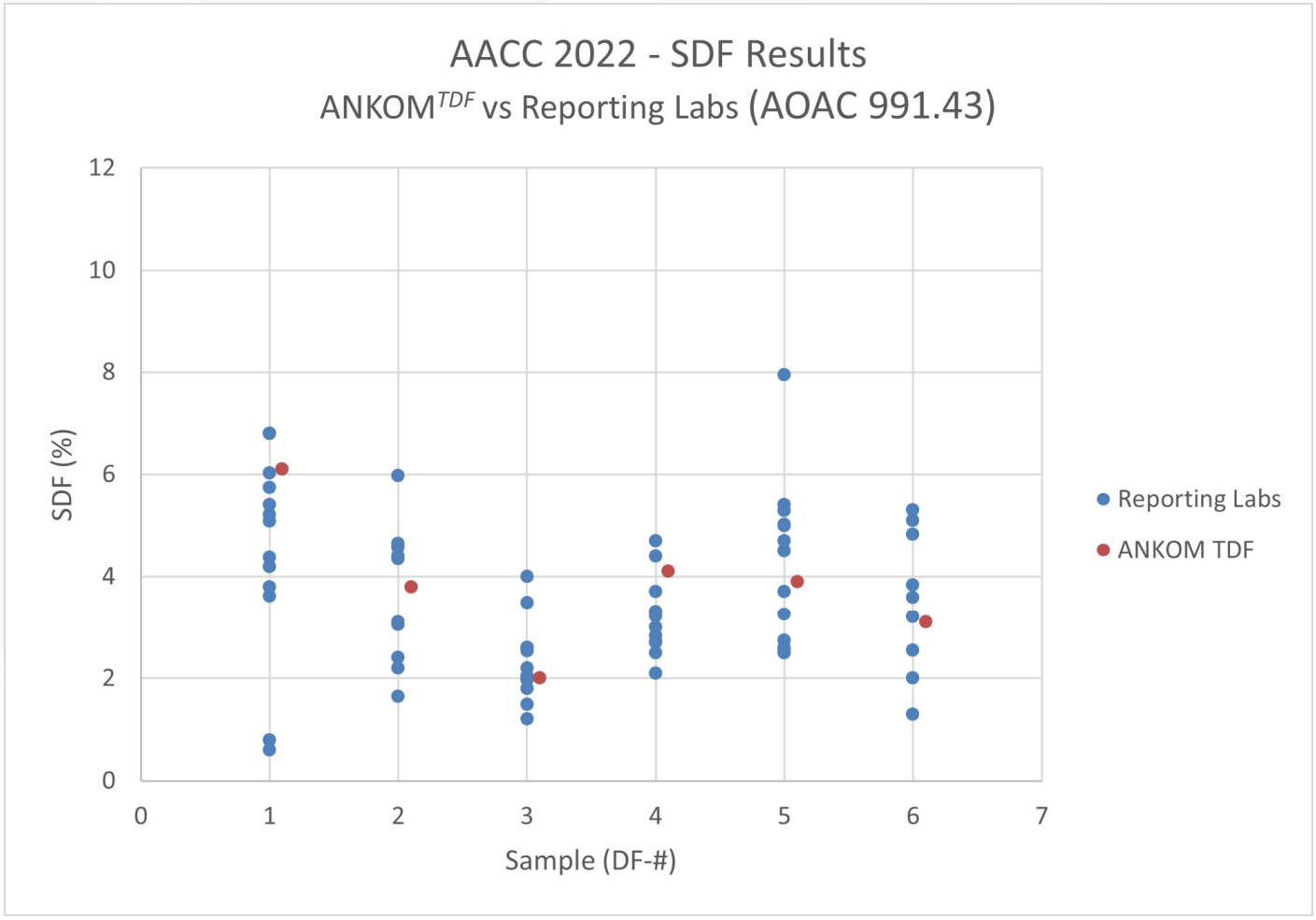
- Dual chamber Filter Bag Technology
  - Allows the separation of Digestion and Filtration
  - Eliminates sample loss during transfer steps
- Increased filtering surface area reduces the time needed to filter samples and eliminates the use of vacuum flasks and crucibles
- Enables automation
- Reduces error
- Reduces labor and cost per assay

Insoluble Dietary Fiber (IDF) Filter Bag
Dietary Fiber Flow-Thru Bag
Soluble Dietary Fiber (SDF) Filter Bag

Comparison of Data – IDF



Comparison of Data – SDF



Comparison of Data – TDF