Overflow Troubleshooting Review

Context: *As a field technician for Fruition Sciences, an ag-tech start-up, I frequently troubleshot an issue in the data classified as 'overflow'. There was no set protocol for remediating overflow, so I retroactively analyzed 4 separate instances to determine which solution proved the most effective.*

Increasing sensor size can help overflow, although my examples show that I defaulted to this as a troubleshoot, rather than first increasing AVRS. Example 3 shows the overlapping symptoms of Low vin and overflow. Example 4 shows the overlapping symptoms of Bad TC contact and overflow.

Example 1:

- Colgin Tychson, bilateral canes
- Stem diameters at insall- **V1** 11x12 **| V2** 10x10
- Stem diameters on 7/10: **V1** 13x15 **| V2** 14x14
- Installed V1 & V2 with size 10 sensors

Date	Overflow timespan	Vin	V1 sensor	V2 sensor	V1 flow	V2 flow	# of invalids
7/08	12:30-13:15	4.3	10	10	High	Normal	4
7/09	10:15-18:45	4.3	10	10	High	High	35
7/10 *site visit		**4.4**	**Changed to 13**	**Changed to 16**			
7/11	11:45-17:15	4.4	13	16	High	High	7 * V1
7/12	12:00-15:45	4.4	13	16	High/normal	High	6 *V1
7/13	10:45-17:45	4.4	13	16	High/normal	High	3
7/14	11:45-18:00	4.4	13	16	Normal	High	1

In this example, I think increasing the sensor size to accommodate the cane growth did help overflow, even though it meant having a 10 mm OL on both vines. I am also not

accounting for a possible drop in temperature and can't know for sure if it wasn't just the AVRS increase that helped it.

Example 2:

- Dana Lotus, bilateral canes
- Stem diameters at install: **V1** 15x15 **| V2** 17x18
- Stem diameters on 7/18: **V1** 20x20 **| V2** 21x21
- Installed V1 & V2 with size 13 sensors

Date	Overflow Timespan	Vin	V1 sensor	V2 sensor	V1 flow	V2 flow	# of invalids
7/16	8:45-19:30	4.8	16	16	High	Normal	0
7/17	10:00-19:00	4.8	16	16	High	Normal	0
7/18 *site visit		4.8	**Changed to 19**	**Changed to 19**			
7/20	11:30-19:00	4.8	19	19	High	Normal	8 *V1
7/21	**n/a**	4.8	19	19	Normal	Normal	0
8/6	13:30-18:30	4.8	19	19	High	Normal	2 *V1
8/7	14:00-15:30	4.8	19	19	High	Normal	0
8/8 *site visit		4.8	**Changed to 25**	19			
8/9	n/a	4.8	25	19	Normal	Normal	0
8/10	n/a	4.8	25	19	Normal	Normal	0

The sensor size increase in this example is independent from AVRS increase and so the effects can be seen in isolation. In this case, the 25 sensor on V1 did help the high flow. In hindsight however, I should have brought AVRS up to 4900 or 5000 before changing to a 25.

Example 3:

- Larkmead A3b, bilateral cordons
- Stem diameters at install: **V1** 11x11 **| V2** 13x13

- Stem diameters on 6/8: **V1** 15x16 | **V2** 12x14
- Installed with size 10 sensors

Date	Overflow Timespan	Vin	V1 sensor	V2 sensor	V1 flow	V2 flow	# of invalids
6/4	10:00-18:30	3.8	10	10	High	High	47
6/5 *site visit	**Changed harness-vin issue**	**3.8**	**Changed to 13**	**Changed to 13**			
6/6	8:15-18:45	3.8	13, but still 10 on VMMS	13, but still 10 on VMMS	Normal	High	32 *V2 only
6/8 *site visit		3.8	**13**	**Changed to 16**			
6/9	13:00-17:30	4.0	13	16	High	Normal	0
6/10	10:00-16:45	4.0	13	16	High	Normal	0
6/12 *site vist		4.0	**Changed to 16**	**16**			
6/15	10:30-12:45	4.0	16	16	High	Normal	7
6/22 *increased AVRS	9:15-18:30	**4.2**	16	16	High	High	48
6/25	11:15-17:45	4.2	16	16	High	High	0
7/6	10:15-14:15	4.2	16	16	High	High	23
7/7 *site visit		4.2	**Changed to 19**	**Changed to 19**			
7/8	9:15-17:30	4.2	19	19	Normal	High	3
7/11	n/a	4.2	19	19	Normal	Normal	0

This is an example of a misdiagnosed overflow. The overflow was probably due to the Vin not registering the AVRS. On 6/22, I increased AVRS from 4400 to 4500 but the Vin shows an increase from 4.0 to 4.2. However, the overflow did subside after installing the 19's. This conflicts with the idea that it is specifically the dx and not the overall larger sensor that helps overflow because 16's and 19's both have dx=5mm (see Dynagage summary).

Example 4:

- Harlan Slawson A4, bilateral cordons
- Stem diameters at install: **V1** 20x21 **| V2** 18x19
- Stem diameters on 8/21: **V1** 26x27 | **V2 ?**
- Installed V1 with 19 & V2 with 16

Date	**-ah timespan**	**Vin**	**V1 sensor**	**V2 sensor**	**V1 flow**	**V2 flow**	**# of invalids**
8/6	11:15-18:15	4.6	19	19	High	Normal	19
8/9* site visit			**Adjusted TC contact**				
8/10	12:30-17:15	4.7	19	19	High	Normal	9
8/20	12:00-17:15	4.7	19	19	High	Normal	3
8/21 *site visit		4.7	**Changed 19 for 13**	19			
8/23	n/a	4.8	13	19	High (3hrs)	Normal	0

This example shows the overlapping symptoms of TC contact and overflow. The V1 –ah values correlated with High flows. On site, I got all positive V1 values with the 13 sensor. This meant having a 30 mm gap, but there were no invalids (-ah or overflow) for the rest of the season.