to dry the majority of the surface moisture in the sun. Pods were slightly wet to the touch when tested, similar to the surface moisture imposed in "Wet Test 1".

The results from the tests suggest that surface moisture can affect sensor response. The mass flow sensor response was presented as three different flow models (Model 1, Model 2, and Model 3) based upon different manipulations of the sensor response. As seen in FIG. **26**, the pods with surface moisture in "Wet Test 1" and "Wet Test 2" had sensor responses suggestive of much higher mass flow rates than what was actually applied; mass flow rates demonstrated are dry mass flow rates. Pods with moisture applied but dry surfaces in "Wet Test 2", however, demonstrated similar sensor response as a function of dry mass flow rate. Because "Wet Test 1" and "Wet Test 2" had similar amounts of moisture applied, this is highly suggestive that the surface moisture affects mass flow sensor response. Furthermore, the magnitude of the effect on "Wet Test 1" (surface moisture only) and "Wet Test 3" (surface moisture and kernel moisture) is similar, suggesting that the additional kernel moisture in the pods from "Wet Test 3" had a lesser effect on sensor response than did the surface moisture on the same pods.

The table below provides moisture's effect on linearity of different models of the sensor response, with a comparison of coefficients of determination for linear regression models. The first row is for models applied across data from the dry tests only and the second row is for models applied across data from the dry and wet tests. The table shows that inclusion of wet test data had different impact on R^2 values depending on the sensor response model used.

Tests Included	R^2 for Model 1	R^2 for Model 2	R^2 for Model 3	R^2 for Model 4
Dry Only	0.939	0.956	0.954	0.987
Dry and Wet	0.713	0.698	0.820	0.953

FIG. **27** and the table below demonstrate error experienced in estimating mass flow of wetted peanuts using calibration coefficients developed for dry peanuts, FIG. **27** illustrates the predicted mass flow rate according to four different sensor response models (FIG. **27**A, FIG. **27**B, FIG. **27**C, FIG. **27**D) as a function of actual mass flow rate for stationary tests demonstrating error of wet tests. Calibration coefficients applied in FIG. **27** were for dry peanuts.

The table below provides the relative percent error for mass flow predictions of wet tests when applying dry test calibration coefficients across the models. Negative values represent under-predictions and positive values represent over-predictions.

Test	% Error for Model 1	% Error for Model 2	% Error for Model 3	% Error for Model 4
Wet Test 1	150.7	172.3	93.2	107.9
Wet Test 2	0.6	−5.6	−22.9	−4.8
Wet Test 3	169.2	162.4	155.4	161.7
Average % Error	107.8	113.4	90.5	91.5

Independent of sensor response model used, the peanut mass flow rates for "Wet Test 1" and "Wet Test 2" (with greater surface moisture) were over-predicted. When comparing the degree of over-prediction from "Wet Test 1" to that from "Wet Test 3", it can be seen that over-prediction is independent of model used, despite the higher kernel moisture contents for "Wet Test 3", further suggesting the importance of surface moisture as compared internal moisture. Further supporting this is the relative lack of error for "Wet Test 2", which had a similar moisture content as that in "Wet Test 1", but with a lack of surface moisture.

The tests confirmed that presence of surface moisture can lead to over-prediction independent of the sensor response model utilized and that correction for surface moisture, perhaps as an additional regressor, can help yield prediction error.

These and other modifications and variations of the present invention may be practiced by those of ordinary skill in the art, without departing from the spirit and scope of the present invention. In addition, it should be understood that aspects of the various embodiments may be interchanged both in whole or in part. Furthermore, those of ordinary skill in the art will appreciate that the foregoing description is by way of example only, and is not intended to limit the invention so further described in such appended claims.

What is claimed is:

1. A yield monitoring system for a harvesting machine comprising

an impact plate attached adjacent a wall of a pneumatic crop conveyance duct, the impact plate including a first side and an opposite second side and defining a series of apertures therethrough passing from the first side to the opposite second side, the series of apertures having a size to allow air flow through the impact plate from the first side to the second side and to block crop flow through the impact plate; and

a force sensor in mechanical communication with the impact plate.

2. The yield monitoring system of claim **1**, wherein the impact plate is located at or near a bend of the duct.

3. The yield monitoring system of claim **1**, further comprising an attachment bracket directly attaching the impact plate to the wall.

4. The yield monitoring system of claim **3**, wherein the attachment bracket is on an upstream side of the impact plate, the remainder of the impact plate being physically separated from the wall.

5. The yield monitoring system of claim **3**, wherein the attachment bracket is on a downstream side of the impact plate, the remainder of the impact plate being physically separated from the wall.

6. The yield monitoring system of claim **3**, wherein the attachment bracket comprises a hinge mount.

7. The yield monitoring system of claim **1**, wherein the impact plate is indirectly attached adjacent to the wall with no direct contact between the impact plate and the wall.

8. The yield monitoring system of claim **1**, further comprising an optical sensor.

9. The yield monitoring system of claim **1**, further comprising an air pressure sensor.

10. The yield monitoring system of claim **1**, further comprising a moisture sensor.

11. The yield monitoring system of claim **1**, wherein the force sensor is a load cell.

12. The yield monitoring system of claim **1**, further comprising an unloading cylinder pressure sensor.

13. The yield monitoring system of claim **12**, further comprising a container position sensor.

14. The yield monitoring system of claim **1**, wherein the crop is peanuts.