Developing a System for Organaleptic Testing of Flax Straw, Fiber and Shive

PAPTAC
Nonwood Fiber
Meeting

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Organaleptic Testing

- Using the human “organs” of eyes, nose, and skin to see, smell and touch to judge certain properties and give a ranking or comparison of one test specimen with another specimen

- examples: buying fruit at a supermarket or judging at a dog show

Organaleptic Testing

- Advantages:
  - fast
  - relatively easy to carry out and to understand (after some training)
  - cheap
  - tester is usually very mobile

Organaleptic Testing

- Disadvantages:
  - is subjective (differences in mood, stress and natural abilities of organs can give different scores and rankings of the same specimen)
  - some important properties (e.g., fiber content) cannot be easily measured
  - “Standards” may accidentally change over time (e.g., the color of the standard “yellow” straw may fad over time)

Notes to Following Pages:

☐ Indicates where a ✓ or “x” should be placed

___ Indicates where the initials of the person doing the judgement should be placed

..... Indicates where a number or value should be placed

Background of straw:

- Amount & packaging (e.g., square ☐ round bales ☐ , loose ☐) of straw: weight .....

- ..... Moisture content:_____Determined by (e.g., bale probe, microwave oven, other):

- Source of straw:

  Location:

  Year:

  Variety:

  Collected by:

  Harvest method and field treatments:

  Other treatments:

General Observations:

Take small hand samples from a variety of places within the straw lot to give a good representation of the total lot of straw. Divide this sample into 2 bags and label each bag. One bag will represent the starting material and will be archived. The other bag will be used to determine the following:

NIR estimate of Fiber Content:

____Degree of Retting (Fried Shake Test):

☐ Unretted ☐ Partially Retted

☐ Optimal retting

____Color:

☐ Green ☐ Yellow

☐ Light beige/grey ☐ Dark beige/grey

☐ Other

____Odor: ☐ none ☐ slight

☐ moderate ☐ strong

____Feeling when grasped in Hand:

____Stem Diameters:

☐ Thin ☐ Medium ☐ Thick

____Stem Lengths: range from ---------- cm to ---------- cm

____Stem Broken Pieces:

☐ Consistent

☐ Inconsistent

____Seed Holders and Seed Bolls:

☐ Yes ☐ No

____Other:

____ PH Reading if available Straw..... shives .....

Objective(s) of Processing:

(The type of processing that is carried out can have a very big impact on the properties of the resultant fiber and shives; thus we need to know the objectives of processing (e.g., greatest possible throughput; best quality fiber, cleanest shives, etc.) and how the processing machines were set up so that our judgements about the resultant fiber and shives have a “context”

Processing Protocol:

____Step 1:

___Run remaining straw through the following machines the indicated number of times:

#1 Opener _ _ _ Xs #2 Spreader _ _ _ Xs

#3 Crusher _ _ _ Xs #4 Cleaner _ _ _ Xs All_ _ _ _ Xs

___Bag a sample of fiber, weigh it and label with weight, Step #, and Job #

___Bag a sample of shive, weigh it and label with weight, Step #, and Job #

___Bag all fiber clumps in shives, weigh and label it with: weight, Step #, and Job #

___Bag all fiber, weigh and label with weight, Step # and Job #

___Bag all shive, weigh and label with weight, Step # and Job #

Processing Protocol: (cont.)

____Step 2:

___Run fiber through the following machines the indicated number of times:

#1 Opener _ _ _ Xs #2 Spreader _ _ _ Xs

#3 Crusher _ _ _ Xs #4 Cleaner _ _ _ Xs

All_ _ _ _ Xs

___Bag a sample of fiber, weigh it and label with weight, Step #, and Job #

___Bag a sample of shive, weigh it and label with weight, Step #, and Job #

___Bag all fiber clumps in shives, weigh and label it with: weight, Step #, and Job #

___Bag all fiber, weigh and label with weight, Step # and Job #

___Bag all shive, weigh and label with weight, Step # and Job #

Processing Protocol: (cont.)

____Step 3:

___Run fiber through the following machines the indicated number of times:

#1 Opener _ _ _ Xs #2 Spreader _ _ _ Xs

#3 Crusher _ _ _ Xs #4 Cleaner _ _ _ Xs All_ _ _ Xs

___Bag a sample of fiber, weigh it and label with weight, Step # and Job #

___Bag a sample of shive, weigh it and label with weight, Step # and Job #

___Bag all fiber clumps in shives, weigh it and label with weight, Step #, and Job #

___Bag all fiber, weigh and label with weight, Step # and Job #

___Bag all shive, weigh and label with weight, Step # and Job #

Processing Protocol: (cont.)

____Step 4:

___Add up weight of: all fiber samples, all shive samples, and all fiber clumps

___Calculate weight of dust

(beginning straw weight – weight of (fiber+ shive + clumps)

___Calculate fiber content (%) by:

(Roughly cleaned fiber/beginning weight) x 100

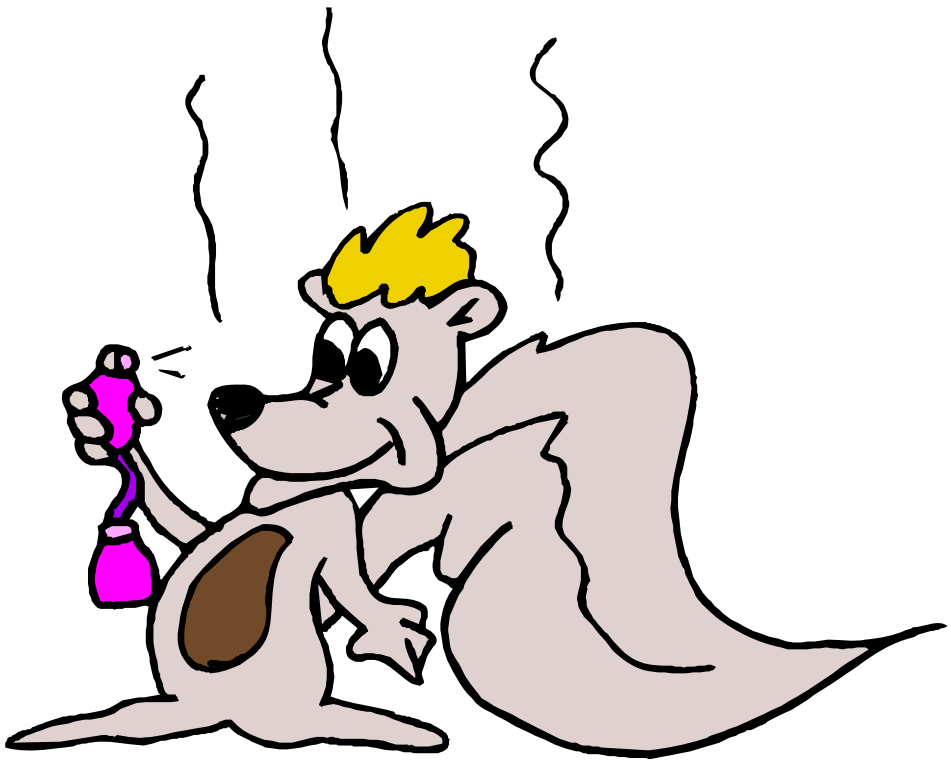
(Roughly cleaner fiber)/(roughly cleaned fiber + clean shives) x 100

Results and Comments on fiber and shives

Fiber:

_____ Odor:

☐ none ☐ slight ☐ moderate ☐ strong



____ Color:

- ☐ green
- ☐ yellow
- ☐ light beige/grey
- ☐ dark beige/grey
- ☐ very dark
- ☐ white
- ☐ other

____Strength:

☐ very strong ☐ strong ☐ moderate

☐ weak ☐ very weak

____ Fineness:

☐ very coarse ☐ coarse ☐ moderate

☐ fine ☐ very fine

____ Other Observations:

Shives remaining on and in Fiber:

____ Amount: ☐ many ☐ some ☐ very few

____ Attachment: ☐ strongly attached ☐ some attached ☐ few are attached

____ Other Observations:

Shives bag:

____ Odor: ☐ none ☐ slight ☐ moderate ☐ strong

____ Color: ☐ yellow ☐ light beige/grey ☐ dark beige/grey ☐ very dark

____ Amount of big pieces:

☐ many ☐ some ☐ very few

____ Amount of dust:

☐ lots ☐ some ☐ very little

____ Fineness: ☐ very coarse ☐ coarse
☐ moderate ☐ fine
☐ very fine

____ Other Observations:

Conclusions (in regard to objectives)

examples:

What was the throughput per hour?

What end uses would this straw, fiber or shive be suitable for?

What is the approximate per tonne value of this sample?

What could have been done to improve the value of this sample?

Other?

Any Questions?

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