CRC for Premium Quality Wool

Fibre Diameter Variation Defined

Produced for the CRC for Premium Quality Wool undergraduate program by;
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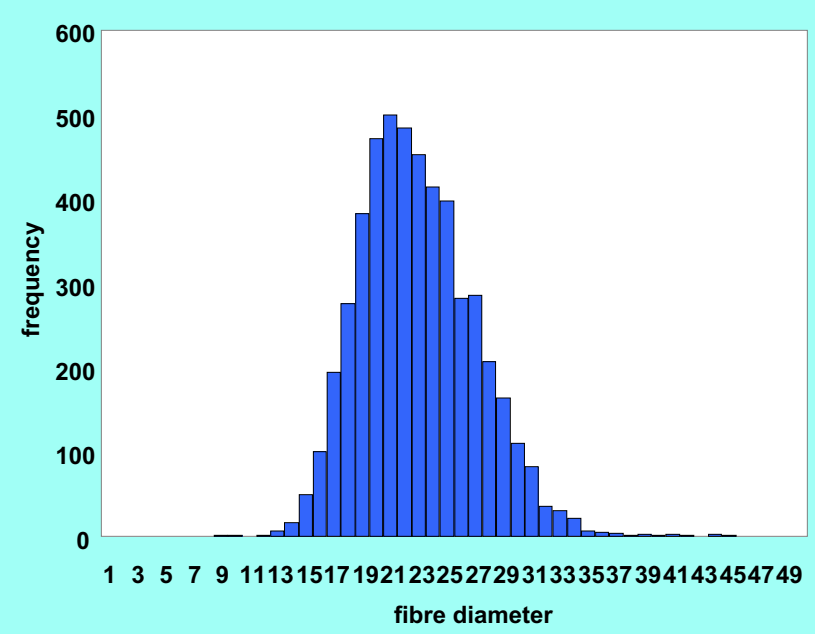
Fibre diameter variation (FDV)



Fibre diameter distribution (FDD)

- is an <u>inherent</u> feature of wool
- while there is an average fibre diameter (AFD), there is variation around this mean
- variation occurs:
  - between fibres at 1 point in staple
  - along fibres within a staple
  - between staples within a site
  - between sites within a fleece
  - between sheep within a mob
- no <u>direct</u> economic value at present

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Parameters of the FDD:

- average fibre diameter (AFD, µm)
- standard deviation (SD, µm)
  - indicates amount of spread in diameters around AFD
  - 68% diameters: AFD ± 1SD
  - 95% diameters: AFD ± 2SD
  - if AFD = 20 µm and SD = 3 µm, then:
    - 68% diameters in range 17-23 µm
    - 95% diameters in range 14-26 µm
- coefficient of variation (CV%)
  - a relative measure of variation: (SD/AFD) x 100%
- % fibres >30 µm
  - "coarse edge", "prickle factor"

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Standard deviation vs CV%

AFD	CV% when SD=3.5	SD when CV=20%
19	18.4	3.8
22	16.0	4.4
25	14.0	5.0

same spread, different CV%

different spread, same CV%

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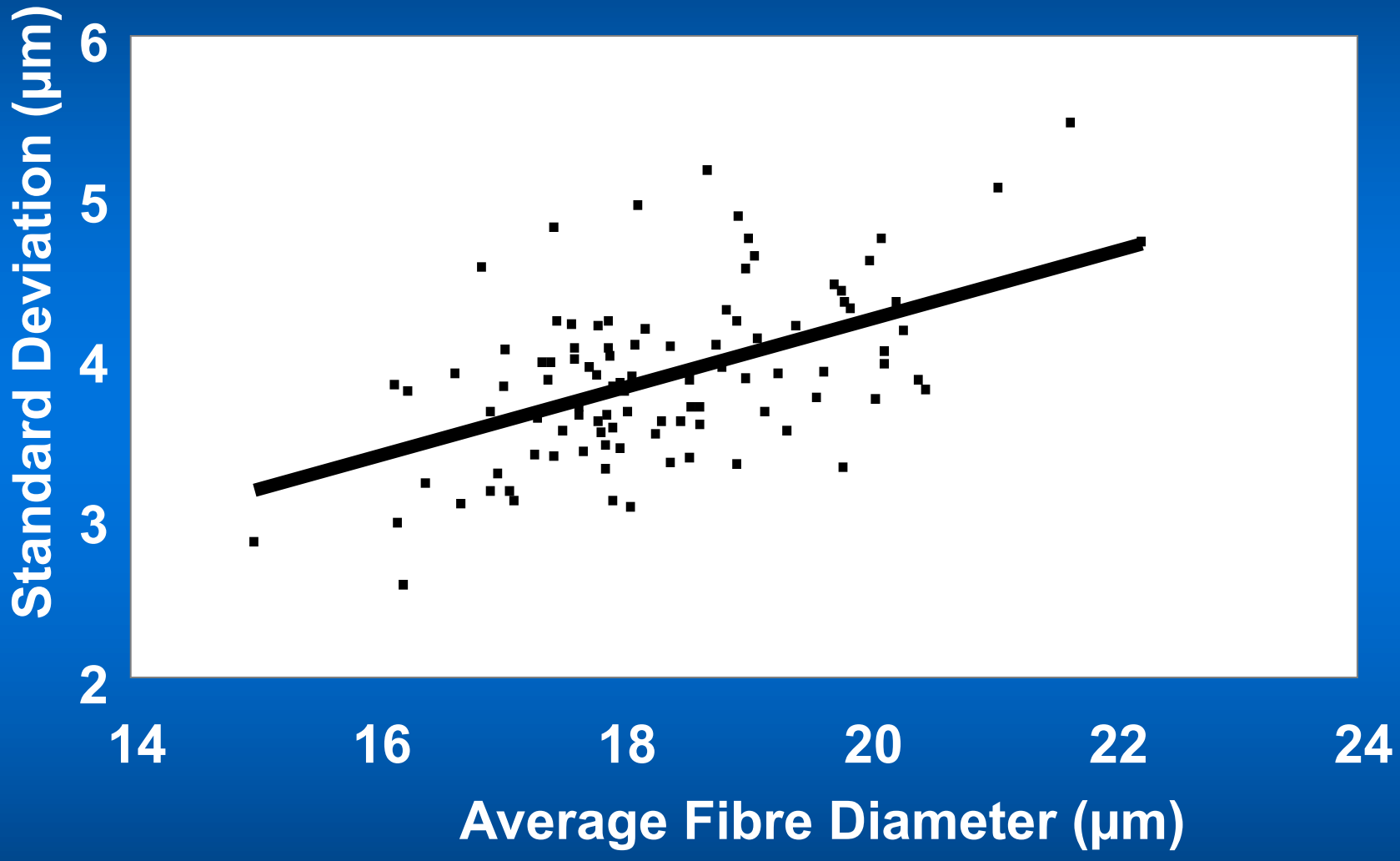
AFD vs SD: within-flock



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Source: Crook et al. (1994)

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