Supplementary Material -**Managing the transition from purebred to rotational-crossbred dairy cattle herds: three technical pathways from a retrospective case-study analysis**

J. Quénon, S. Ingrand, M.-A. Magne

*animal* journal

Table S1 Structure and content of the interview guide on crossbreeding management in the dairy cattle farms sampled

|  |  |  |
| --- | --- | --- |
| Topic of the interview guide | Collected data (for each section) | Selected encoded variable |
| Breeding management | Breeds, dairy crossbreeding schemes, percentage of crossbred in the herd, selection criteria for crossbred mating, mating season, mating methods1, selection criteria for bulls, dairy crossbred mating, crossbred mating with beef breeds, age at first calving | V1: Changes in dairy crossbreeding schemeV2: Changes in dairy crossbred mating V3: Changes in mating season V4: Changes in the number of bulls used for matingV5: Changes in mating method V6: Changes in percentage of crossbred mating with beef breeds |
| Replacement management | Selection criteria for replacement, replacement rate2, purchase of heifers, sale of heifers | V7: Changes in replacement rate V8: Changes in purchase of heifers V9: Changes in sale of heifers V10: Changes in selection criteria for replacement |
| Culling management | Selection criteria for culling, culling rate | V11: Changes in selection criteria for culling |

1 Mating methods: artificial insemination *vs.* natural mating;

2 Replacement rate is calculated by dividing number of primiparous females with number of dairy cows

Table S2 Classes of the 10 supplementary variables (SVi.j, i = 1-10 and j = 1-4) to describe the changes in general characteristics or practices of the dairy cattle farms sampled

|  |  |
| --- | --- |
| Supplementary variable | Class of the variable |
| SV1 Major dairy crossbreeding scheme | SV1.1 Procross1 schemeSV1.2 Normande or Simmental breeds-based schemeSV1.3 Jersey breed-based scheme |
| SV2 Breed of sire used on PB2 cows | SV2.1 Montbéliarde sire on PB2 cowsSV2.2 Normande or Simmental sire on PB2 cowsSV2.3 Viking Red or Swiss Brown sire on PB2 cows |
| SV3 Breed of sire used on F13 cows | SV3.1 Montbéliarde sire on F13 cowsSV3.2 Normande or Simmentale sire on F13 cowsSV3.3 Viking Red or Swiss Brown sire on F13 cowsSV3.4 Jersey sire on F13 cows |
| SV4 Breed of sires used on G24 cows | SV4.1 Holstein sire on G24 cowsSV4.2 Normande or Simmentale sire on G24 cowsSV4.3 Viking Red or Swiss Brown sire on G24 cowsSV4.3 Jersey sire on G24 cows |
| SV5 Evolution in farm size | SV5.1 Increase of Utilised Agricultural AreaSV5.2 Decrease of the Utilised Agricultural AreaSV5.3 Utilised Agricultural Area remained stable |
| SV6 Evolution in the percentage of grassland area | SV6.1 Increase in grassland areaSV6.2 Decrease in grassland areaSV6.3 Grassland areas remained stable |
| SV7 Evolution in the percentage of silage maize area | SV7.1 Increase in silage maize areaSV7.2 Decrease of silage maize areaSV7.3 Silage maize area remained stable |
| SV8 Evolution in herd size | SV8.1 Increase in herd sizeSV8.2 Herd size remained stable |
| SV9 Evolution in milk yield per cow | SV9.1 Increase in milk yield per cowSV9.2 Decrease in milk yield per cowSV9.3 Stable milk yield per cow |
| SV10 Evolution in farming | SV10.1 Converted to OF before dairy crossbreedingSV10.2 Conversion to OF after dairy crossbreedingSV10.3 Conventional farming |

1 Procross is a 3-breed crossbreeding scheme: (HO x MO) x VR or (HO x VR) x MO

2 Purebred animal

3 First-generation crossbred animal

4 Second-generation crossbred animal