|  |
| --- |
| **Table 1.**  Survey questions used to gauge incorporation of residual feed intake (**RFI**) and technology into breeding programs.1  |
| Number2 | Question |
| 1 | I currently have a selection program for feed efficiency.  |
| 2 | I select sires based on EPD information. |
| 3 | I am knowledgeable about residual feed intake.  |
| 4 | I would be interested in more information on residual feed intake.  |
| 5 | I avoid selecting for traits that unfavorably affect reproduction.  |
| 6 | Carcass merit traits (i.e. backfat, loin eye area, and marbling) are important to me.  |
| 7 | I select for wool characteristics (i.e. fiber diameter or fiber length). |
| 8 | I have used genetic markers previously. |
| 9 | If available, I would use a genetic marker to assess feed efficiency. |
| 10 | I am interested in information on genetic markers. |
| 11 | After being provided with information on feed efficiency, I would select for residual feed intake.  |
| 1Responses to questions were: 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree. 2Questions 1 – 10 were on initial survey and questions 1 – 11 were on the final survey after being provided with information on residual feed intake (**RFI**) and how individual rams performed.  |

**Figure 2.** Individual ewe (n = 61) residual feed intake (**RFI**) on concentrate and forage rations. Each bar represents an individual ewe’s **RFI** estimate. There was a positive correlation (*P* < 0.001, r = 0.69) between **RFI** rankings when ewes were tested on concentrate and the forage diets.

|  |
| --- |
| **Table 2.** Performance differences in selected ewes on concentrate and forage rations1, 2.  |
| **Item** | **Low RFI****(n = 6)** | **Medium RFI****(n = 6)** | **High RFI****(n = 6)** | ***P*-value** |
| *Concentrate ration* |
| RFI (kg/d)3 | -0.2702 ± 0.09a | -0.0202 ± 0.09ab | 0.5338 ± 0.09c | < 0.001 |
| ADG (kg) | 0.20 ± 0.02 | 0.18 ± 0.02 | 0.21 ± 0.02 | 0.502 |
| MMWT (kg)4 | 18.41 ± 1.07 | 18.19 ± 0.53 | 18.72 ± 0.46 | 0.880 |
| ADI (kg)5 | 1.72 ± 0.12a | 1.94 ± 0.12ab | 2.56 ± 0.12c | < 0.001 |
| *Forage ration* |
| RFI (kg/d)3 | -0.6385 ± 0.08a | -0.0112 ± 0.08b | 0.7287 ± 0.08c | < 0.001 |
| ADG (kg) | 0.25 ± 0.02 | 0.26 ± 0.02 | 0.25 ± 0.02 | 0.977 |
| MMWT (kg)4 | 19.67 ± 0.86 | 19.73 ± 0.66 | 20.04 ± 0.50 | 0.919 |
| ADI (kg)5 | 2.22 ± 0.09a | 2.86 ± 0.09b | 3.62 ± 0.09c | < 0.001 |
| 1Selected ewes chosen based on ewes with highest (least efficient), middle (moderately efficient), and lowest (most efficient) RFI values (n = 18) on the forage diet. 2abc Different subscripts denote significant differences (*P* < 0.05) among selected ewe groups.3RFI = Residual feed intake.4MMWT = Metabolic mid-weight0.75.5ADI = Average daily intake.  |

**Figure 3**. Selected ewe (n = 18) residual feed intake (**RFI**) on concentrate and forage rations among ewes **LRFI** (low residual feed intake; n = 6), **MRFI** (moderate residual feed intake; n = 6), and **HRFI** (high residual feed intake; n = 6). There was a positive correlation (r = 0.69; *P* = 0.001) between **RFI** rankings from the concentrate and forage rations among the selected ewes (n = 18).

|  |
| --- |
| **Table 3**. Reproductive parameters among residual feed intake (**RFI**) selected .  |
| **Item** | **LRFI1,2****(n = 6)** | **MRFI1,2****(n = 6)** | **HRFI1,2****(n = 6)** | ***P*-value** |
| *Ewes* (n = 14) |
| Pregnant3  | 1.00 ± 0.00 | 1.00 ± 0.00 | 0.83 ± 0.17 | 0.391 |
| Date Bred4 | 4.33 ± 1.76 | 6.75 ± 3.04 | 2.00 ± 0.41 | 0.337 |
| Puberty5  | 50.33 ± 7.38 | 56.17 ± 5.83 | 56.17 ± 5.83 | 0.761 |
| Mothering ability (1 -4) | 3.33 ± 0.33 | 3.50 ± 0.50 | 3.25 ± 0.25 | 0.891 |
| Utter score (1 – 4) | 3.00 ± 0.00 | 3.25 ± 0.25 | 3.50 ± 0.29 | 0.414 |
| Dystocia6 | 0.25 ± 0.25 | 0.50 ± 0.22 | 0.00 ± 0.00 | 0.269 |
| *Lambs* (n = 17) |
| Birth Type7 | 1.50 ± 0.29 | 1.17 ± 0.17 | 1.00 ± 0.00 | 0.251 |
| Sex8 | 1.67 ± 0.21 | 1.57 ± 0.20 | 1.25 ± 0.26 | 0.466 |
| Vigor score (1 – 4) | 3.00 ± 0.51 | 2.57 ± 0.47 | 4.00 ± 0.62 | 0.221 |
| Birth Weight (kg) | 4.81 ± 0.43a | 5.82 ± 0.43ab | 6.88 ± 0.61b | 0.047 |
| 1Selected ewes chosen based on ewes with highest (**HRFI**; least efficient), middle (**MRFI**; moderately efficient), and lowest (**LRFI**; most efficient) residual feed intake (**RFI**) values (n = 18) from the forage diet. 2abc Different subscripts denote significant difference (*P* < 0.05) among selected ewe groups.3Pregnant status analyzed (yes = 1 and no = 0).4Date bred from d 0 of estrus. 5Puberty date determined during concentrate feeding trial by the presence of two consecutive progesterone readings of > 1 ng/μL by radioimmunoassay.6Dystocia presence (yes = 1 and no = 0).7Birth type (1 = single, 2 = twin, and 3 = triplet).8Sex (1 = male and 2 = female). |

|  |
| --- |
| **Table 4.** Correlations of ram sale price and slaughter age with residual feed intake (**RFI**).  |
| **Item** | **n** | **Mean ± SD1** | **r** | ***P*-value2** |
| Price ($)  | 65 | 580.49 ± 264.96 | 0.14 | 0.402 |
| Slaughter age (wk during performance test) | 378 | 8.65 ± 3.68 | 0.01 | 0.829 |
| 1SD = standard deviation.2Significance indicated by *P* < 0.05. |