Appendix Chapter 3: Winbugs code

Model mj10 3 test no conditional dependence between test

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:8] ~ dmulti (p1 [i, 1:8], n[ i ])
p1 [i, 1]<- pi [ i ]*Secc*Seln*Semj + (1-pi[i])*(1-Spcc)*(1-Spln)*(1-Spmj)
p1 [i, 2] <- pi [ i ]*Secc*Seln*(1-Semj) + (1-pi[i])*(1-Spcc)*(1-Spln)*Spmj
p1 [i, 3] <- pi [ i ]*Secc*(1-Seln)*(1-Semj) + (1-pi[i])*(1-Spcc)*Spln*Spmj
p1 [i, 4] <- pi [ i ]*Secc*(1-Seln)*Semj + (1-pi[i])*(1-Spcc)*Spln*(1-Spmj)
p1 [i, 5] <- pi [ i ]*(1-Secc)*Seln*Semj + (1-pi[i])*Spcc*(1-Spln)*(1-Spmj)
p1 [i, 6] <- pi [ i ]*(1-Secc)*Seln*(1-Semj) + (1-pi[i])*Spcc*(1-Spln)*Spmj
p1 [i, 7] <- pi [ i ]*(1-Secc)*(1-Seln)*Semj + (1-pi[i])*Spcc*Spln*(1-Spmj)
p1 [i, 8] <- pi [ i ]*(1-Secc)*(1-Seln)*(1-Semj) + (1-pi[i])*Spcc*Spln*Spmj
pi[i] ~dbeta(18.937, 16.2797) # prior of pig prevalence at abattoir
}
Secc ~ dbeta(13.3494,29.8154) # caecal culture sensitivity Mode=0.30, 95% sure > 0.2
Seln ~ dbeta(12.1391,14.6145) # lymph node sensitivity mode=0.45, 95% sure >0.30
Spcc <- 1.0 # culture specificity
Spln <- 1.0 # culture specificity
#pi2 ~ dbeta (1.73, 2.71) ## Mode=0.30, 95% sure pi2 > 0.08
#mj sens and spec
Semj ~ dbeta(4.8416, 3.5611) ## Mode=0.60, 95% sure >0.30
Spmj ~ dbeta(26.8438, 5.9226) ## Mode 0.84, 95% sure >0.70
}
```

Model MJ10 3 tests and non-informative priors

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:8] ~ dmulti (p1 [i, 1:8], n[ i ])
p1 [i, 1]<- pi [ i ]*Secc*Seln*Semj + (1-pi[i])*(1-Spcc)*(1-Spln)*(1-Spmj)
p1 [i, 2] <- pi [ i ]*Secc*Seln*(1-Semj) + (1-pi[i])*(1-Spcc)*(1-Spln)*Spmj
p1 [i, 3] <- pi [ i ]*Secc*(1-Seln)*(1-Semj) + (1-pi[i])*(1-Spcc)*Spln*Spmj
p1 [i, 4] <- pi [ i ]*Secc*(1-Seln)*Semj + (1-pi[i])*(1-Spcc)*Spln*(1-Spmj)
p1 [i, 5] <- pi [ i ]*(1-Secc)*Seln*Semj + (1-pi[i])*Spcc*(1-Spln)*(1-Spmj)
p1 [i, 6] <- pi [ i ]*(1-Secc)*Seln*(1-Semj) + (1-pi[i])*Spcc*(1-Spln)*Spmj
p1 [i, 7] <- pi [ i ]*(1-Secc)*(1-Seln)*Semj + (1-pi[i])*Spcc*Spln*(1-Spmj)
p1 [i, 8] <- pi [ i ]*(1-Secc)*(1-Seln)*(1-Semj) + (1-pi[i])*Spcc*Spln*Spmj
pi[i] ~dbeta(1,1) # prior of pig prevalence at abattoir
}
Secc ~ dbeta(1,1) # caecal culture sensitivity non-informative prior
Seln ~ dbeta(1,1) # lymph node sensitivity non-informative prior
Spcc <- 1.0 # culture specificity
Spln <- 1.0 # culture specificity
#pi2 ~ dbeta (1,1) ## non-informative prior
#mj sens and spec
Semj ~ dbeta(1, 1) ## non-informative prior
Spmj ~ dbeta(1, 1) ## non-informative prior
}
```

Model mj10 3 tests conditional dependence between caecal content and lymph node

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:8] ~ dmulti (p1 [i, 1:8], n[ i ])
p1 [i, 1]<- pi [ i ]*(Secc*Seln+covDp)*Semj + (1-pi[i])*(1-Spcc)*(1-Spln)*(1-Spmj)
p1 [i, 2] <- pi [ i ]*(Secc*Seln+covDp)*(1-Semj) + (1-pi[i])*(1-Spcc)*(1-Spln)*Spmj
p1 [i, 3] <- pi [ i ]*(Secc*(1-Seln)-covDp)*(1-Semj) + (1-pi[i])*(1-Spcc)*Spln*Spmj
p1 [i, 4] <- pi [ i ]*(Secc*(1-Seln)-covDp)*Semj + (1-pi[i])*(1-Spcc)*Spln*(1-Spmj)
p1 [i, 5] <- pi [ i ]*((1-Secc)*Seln-covDp)*Semj + (1-pi[i])*Spcc*(1-Spln)*(1-Spmj)
p1 [i, 6] <- pi [ i ]*((1-Secc)*Seln-covDp)*(1-Semj) + (1-pi[i])*Spcc*(1-Spln)*Spmj
p1 [i, 7] <- pi [ i ]*((1-Secc)*(1-Seln)+covDp)*Semj + (1-pi[i])*Spcc*Spln*(1-Spmj)
p1 [i, 8] <- pi [ i ]*((1-Secc)*(1-Seln)+covDp)*(1-Semj) + (1-pi[i])*Spcc*Spln*Spmj
pi[i] ~dbeta(18.937, 16.2797) # prior of pig prevalence at abattoir
}

# terms for codependence cc ln
ls <- (Secc-1)*(1-Seln)
us <- min(Secc, Seln) - Secc*Seln
covDp ~ dunif (ls, us)
rhoD <- covDp/ sqrt(Secc*(1-Secc)*Seln*(1-Seln))

Secc ~ dbeta(13.3494,29.8154) # caecal culture sensitivity Mode=0.30, 95% sure >
0.2
Seln ~ dbeta(12.1391,14.6145) # lymph node sensitivity mode=0.45, 95% sure
>0.30
Spcc <- 1.0 # culture specificity
Spln <- 1.0 # culture specificity
#pi2 ~ dbeta (1.73, 2.71) ## Mode=0.30, 95% sure pi2 > 0.08
#mj sens and spec
Semj ~ dbeta(4.8416, 3.5611) ## Mode=0.60, 95% sure >0.30
Spmj ~ dbeta(26.8438, 5.9226) ## Mode 0.84, 95% sure >0.70
}
```

Model mj10 4 tests and no conditional dependence

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:16] ~ dmulti (p1 [i, 1:16], n[ i ])
p1 [i, 1]<- pi [ i ]*Secc*Seln*Secs*Semj + (1-pi[i])*(1-Spcc)*(1-Spln)*(1-Spcs)*(1-Spmj)
p1 [i, 2] <- pi [ i ]*Secc*Seln*Secs*(1-Semj) + (1-pi[i])*(1-Spcc)*(1-Spln)*(1-Spcs)*Spmj
p1 [i, 3] <- pi [ i ]*Secc*Seln*(1-Secs)*Semj + (1-pi[i])*(1-Spcc)*(1-Spln)*Spcs*(1-Spmj)
p1 [i, 4] <- pi [ i ]*Secc*Seln*(1-Secs)*(1-Semj) + (1-pi[i])*(1-Spcc)*(1-Spln)*Spcs*Spmj
p1 [i, 5] <- pi [ i ]*Secc*(1-Seln)*Secs*Semj + (1-pi[i])*(1-Spcc)*Spln*(1-Spcs)*(1-Spmj)
p1 [i, 6] <- pi [ i ]*Secc*(1-Seln)*Secs*(1-Semj) + (1-pi[i])*(1-Spcc)*Spln*(1-Spcs)*Spmj
p1 [i, 7] <- pi [ i ]*Secc*(1-Seln)*(1-Secs)*Semj + (1-pi[i])*(1-Spcc)*Spln*Spcs*(1-Spmj)
p1 [i, 8] <- pi [ i ]*Secc*(1-Seln)*(1-Secs)*(1-Semj) + (1-pi[i])*(1-Spcc)*Spln*Spcs*Spmj
p1 [i, 9] <- pi [ i ]*(1-Secc)*Seln*Secs*Semj + (1-pi[i])*Spcc*(1-Spln)*(1-Spcs)*(1-Spmj)
p1 [i, 10] <- pi [ i ]*(1-Secc)*Seln*Secs*(1-Semj) + (1-pi[i])*Spcc*(1-Spln)*(1-Spcs)*Spmj
p1 [i, 11] <- pi [ i ]*(1-Secc)*Seln*(1-Secs)*Semj + (1-pi[i])*Spcc*(1-Spln)*Spcs*(1-Spmj)
p1 [i, 12] <- pi [ i ]*(1-Secc)*Seln*(1-Secs)*(1-Semj) + (1-pi[i])*Spcc*(1-Spln)*Spcs*Spmj
p1 [i, 13] <- pi [ i ]*(1-Secc)*(1-Seln)*Secs*Semj + (1-pi[i])*Spcc*Spln*(1-Spcs)*(1-Spmj)
p1 [i, 14] <- pi [ i ]*(1-Secc)*(1-Seln)*Secs*(1-Semj) + (1-pi[i])*Spcc*Spln*(1-Spcs)*Spmj
p1 [i, 15] <- pi [ i ]*(1-Secc)*(1-Seln)*(1-Secs)*Semj + (1-pi[i])*Spcc*Spln*Spcs*(1-Spmj)
p1 [i, 16] <- pi [ i ]*(1-Secc)*(1-Seln)*(1-Secs)*(1-Semj) + (1-pi[i])*Spcc*Spln*Spcs*Spmj
pi[i] ~dbeta(18.937, 16.2797) # prior of pig prevalence at abattoir
}
Secc ~ dbeta(13.3494,29.8154) # caecal culture sensitivity Mode=0.30, 95% sure > 0.2
Seln ~ dbeta(12.1391,14.6145) # lymph node sensitivity mode=0.45, 95% sure >0.30
Secs ~ dbeta(1,1) # carcass swab sensitivity
Spcc <- 1.0 # culture specificity
Spln <- 1.0 # culture specificity
Spcs <- 1.0 # culture specificity
#pi2 ~ dbeta (1.73, 2.71) ## Mode=0.30, 95% sure pi2 > 0.08
#mj sens and spec
Semj ~ dbeta(4.8416, 3.5611) ## Mode=0.60, 95% sure >0.30
Spmj ~ dbeta(26.8438, 5.9226) ## Mode 0.84, 95% sure >0.70
}
```

Model mj10 4 tests and non-informative priors

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:16] ~ dmulti (p1 [i, 1:16], n[ i ])
p1 [i, 1]<- pi [ i ]*Secc*Seln*Secs*Semj + (1-pi[i])*(1-Spcc)*(1-Spln)*(1-Spcs)*(1-Spmj)
p1 [i, 2] <- pi [ i ]*Secc*Seln*Secs*(1-Semj) + (1-pi[i])*(1-Spcc)*(1-Spln)*(1-Spcs)*Spmj
p1 [i, 3] <- pi [ i ]*Secc*Seln*(1-Secs)*Semj + (1-pi[i])*(1-Spcc)*(1-Spln)*Spcs*(1-Spmj)
p1 [i, 4] <- pi [ i ]*Secc*Seln*(1-Secs)*(1-Semj) + (1-pi[i])*(1-Spcc)*(1-Spln)*Spcs*Spmj
p1 [i, 5] <- pi [ i ]*Secc*(1-Seln)*Secs*Semj + (1-pi[i])*(1-Spcc)*Spln*(1-Spcs)*(1-Spmj)
p1 [i, 6] <- pi [ i ]*Secc*(1-Seln)*Secs*(1-Semj) + (1-pi[i])*(1-Spcc)*Spln*(1-Spcs)*Spmj
p1 [i, 7] <- pi [ i ]*Secc*(1-Seln)*(1-Secs)*Semj + (1-pi[i])*(1-Spcc)*Spln*Spcs*(1-Spmj)
p1 [i, 8] <- pi [ i ]*Secc*(1-Seln)*(1-Secs)*(1-Semj) + (1-pi[i])*(1-Spcc)*Spln*Spcs*Spmj
p1 [i, 9] <- pi [ i ]*(1-Secc)*Seln*Secs*Semj + (1-pi[i])*Spcc*(1-Spln)*(1-Spcs)*(1-Spmj)
p1 [i, 10] <- pi [ i ]*(1-Secc)*Seln*Secs*(1-Semj) + (1-pi[i])*Spcc*(1-Spln)*(1-Spcs)*Spmj
p1 [i, 11] <- pi [ i ]*(1-Secc)*Seln*(1-Secs)*Semj + (1-pi[i])*Spcc*(1-Spln)*Spcs*(1-Spmj)
p1 [i, 12] <- pi [ i ]*(1-Secc)*Seln*(1-Secs)*(1-Semj) + (1-pi[i])*Spcc*(1-Spln)*Spcs*Spmj
p1 [i, 13] <- pi [ i ]*(1-Secc)*(1-Seln)*Secs*Semj + (1-pi[i])*Spcc*Spln*(1-Spcs)*(1-Spmj)
p1 [i, 14] <- pi [ i ]*(1-Secc)*(1-Seln)*Secs*(1-Semj) + (1-pi[i])*Spcc*Spln*(1-Spcs)*Spmj
p1 [i, 15] <- pi [ i ]*(1-Secc)*(1-Seln)*(1-Secs)*Semj + (1-pi[i])*Spcc*Spln*Spcs*(1-Spmj)
p1 [i, 16] <- pi [ i ]*(1-Secc)*(1-Seln)*(1-Secs)*(1-Semj) + (1-pi[i])*Spcc*Spln*Spcs*Spmj
pi[i] ~dbeta(1,1) # prior of pig prevalence at abattoir
}
Secc ~ dbeta(1,1) # caecal culture sensitivity
Seln ~ dbeta(1,1) # lymph node sensitivity
Secs ~ dbeta(1,1) # carcass swab sensitivity
Spcc <- 1.0 # culture specificity
Spln <- 1.0 # culture specificity
Spcs <- 1.0 # culture specificity
#pi2 ~ dbeta (1,1)
#mj sens and spec
Semj ~ dbeta(1,1)
Spmj ~ dbeta(1,1)
}
```

Model mj10 four tests, with conditional dependence between lymph node and carcass swab

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:16] ~ dmulti (p1 [i, 1:16], n[ i ])
p1 [i, 1]<- pi [ i ]*Secc*(Seln*Secs+covDp)*Semj + (1-pi[i])*(1-Spcc)*(1-Spln)*(1-Spcs)*(1-Spmj)
p1 [i, 2] <- pi [ i ]*Secc*(Seln*Secs+covDp)*(1-Semj) + (1-pi[i])*(1-Spcc)*(1-Spln)*(1-
Spcs)*Spmj
p1 [i, 3] <- pi [ i ]*Secc*(Seln*(1-Secs)-covDp)*Semj + (1-pi[i])*(1-Spcc)*(1-Spln)*Spcs*(1-Spmj)
p1 [i, 4] <- pi [ i ]*Secc*(Seln*(1-Secs)-covDp)*(1-Semj) + (1-pi[i])*(1-Spcc)*(1-Spln)*Spcs*Spmj
p1 [i, 5] <- pi [ i ]*Secc*((1-Seln)*Secs-covDp)*Semj + (1-pi[i])*(1-Spcc)*Spln*(1-Spcs)*(1-Spmj)
p1 [i, 6] <- pi [ i ]*Secc*((1-Seln)*Secs-covDp)*(1-Semj) + (1-pi[i])*(1-Spcc)*Spln*(1-Spcs)*Spmj
p1 [i, 7] <- pi [ i ]*Secc*((1-Seln)*(1-Secs)+covDp)*Semj + (1-pi[i])*(1-Spcc)*Spln*Spcs*(1-
Spmj)
p1 [i, 8] <- pi [ i ]*Secc*((1-Seln)*(1-Secs)+covDp)*(1-Semj) + (1-pi[i])*(1-
Spcc)*Spln*Spcs*Spmj
p1 [i, 9] <- pi [ i ]*(1-Secc)*(Seln*Secs+covDp)*Semj + (1-pi[i])*Spcc*(1-Spln)*(1-Spcs)*(1-
Spmj)
p1 [i, 10] <- pi [ i ]*(1-Secc)*(Seln*Secs+covDp)*(1-Semj) + (1-pi[i])*Spcc*(1-Spln)*(1-
Spcs)*Spmj
p1 [i, 11] <- pi [ i ]*(1-Secc)*(Seln*(1-Secs)-covDp)*Semj + (1-pi[i])*Spcc*(1-Spln)*Spcs*(1-
Spmj)
p1 [i, 12] <- pi [ i ]*(1-Secc)*(Seln*(1-Secs)-covDp)*(1-Semj) + (1-pi[i])*Spcc*(1-
Spln)*Spcs*Spmj
p1 [i, 13] <- pi [ i ]*(1-Secc)*((1-Seln)*Secs-covDp)*Semj + (1-pi[i])*Spcc*Spln*(1-Spcs)*(1-
Spmj)
p1 [i, 14] <- pi [ i ]*(1-Secc)*((1-Seln)*Secs-covDp)*(1-Semj) + (1-pi[i])*Spcc*Spln*(1-
Spcs)*Spmj
p1 [i, 15] <- pi [ i ]*(1-Secc)*((1-Seln)*(1-Secs)+covDp)*Semj + (1-pi[i])*Spcc*Spln*Spcs*(1-
Spmj)
p1 [i, 16] <- pi [ i ]*(1-Secc)*((1-Seln)*(1-Secs)+covDp)*(1-Semj) + (1-
pi[i])*Spcc*Spln*Spcs*Spmj

pi[i] ~dbeta(18.937, 16.2797) # prior of pig prevalence at abattoir
}

# terms for codependence ln cs
ls <- (Seln-1)*(1-Secs)
us <- min(Seln, Secs) - Seln*Secs
covDp ~ dunif (ls, us)
rhoD <- covDp/ sqrt(Seln*(1-Seln)*Secs*(1-Secs))

Secc ~ dbeta(13.3494,29.8154) # caecal culture sensitivity Mode=0.30, 95% sure > 0.2
Seln ~ dbeta(12.1391,14.6145) # lymph node sensitivity mode=0.45, 95% sure >0.30
Secs ~ dbeta(1,1) # carcass swab sensitivity
Spcc <- 1.0 # culture specificity
Spln <- 1.0 # culture specificity
Spcs <- 1.0 # culture specificity
#pi2 ~ dbeta (1.73, 2.71) ## Mode=0.30, 95% sure pi2 > 0.08
#mj sens and spec
Semj ~ dbeta(4.8416, 3.5611) ## Mode=0.60, 95% sure >0.30
Spmj ~ dbeta(26.8438, 5.9226) ## Mode 0.84, 95% sure >0.70
}
```

Model mj10 four tests, with conditional dependence between caecal content and carcass swab

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:16] ~ dmulti (p1 [i, 1:16], n[ i ])
p1 [i, 1]<- pi [ i ]*(Secc*Seln+covDp)*Secs*Semj + (1-pi[i])*(1-Spcc)*(1-Spln)*(1-Spcs)*(1-Spmj)
p1 [i, 2] <- pi [ i ]*(Secc*Seln+covDp)*Secs*(1-Semj) + (1-pi[i])*(1-Spcc)*(1-Spln)*(1-Spcs)*Spmj
p1 [i, 3] <- pi [ i ]*(Secc*Seln+covDp)*(1-Secs)*Semj + (1-pi[i])*(1-Spcc)*(1-Spln)*Spcs*(1-Spmj)
p1 [i, 4] <- pi [ i ]*(Secc*Seln+covDp)*(1-Secs)*(1-Semj) + (1-pi[i])*(1-Spcc)*(1-Spln)*Spcs*Spmj
p1 [i, 5] <- pi [ i ]*(Secc*(1-Seln)-covDp)*Secs*Semj + (1-pi[i])*(1-Spcc)*Spln*(1-Spcs)*(1-Spmj)
p1 [i, 6] <- pi [ i ]*(Secc*(1-Seln)-covDp)*Secs*(1-Semj) + (1-pi[i])*(1-Spcc)*Spln*(1-Spcs)*Spmj
p1 [i, 7] <- pi [ i ]*(Secc*(1-Seln)-covDp)*(1-Secs)*Semj + (1-pi[i])*(1-Spcc)*Spln*Spcs*(1-Spmj)
p1 [i, 8] <- pi [ i ]*(Secc*(1-Seln)-covDp)*(1-Secs)*(1-Semj) + (1-pi[i])*(1-Spcc)*Spln*Spcs*Spmj
p1 [i, 9] <- pi [ i ]*((1-Secc)*Seln-covDp)*Secs*Semj + (1-pi[i])*Spcc*(1-Spln)*(1-Spcs)*(1-Spmj)
p1 [i, 10] <- pi [ i ]*((1-Secc)*Seln-covDp)*Secs*(1-Semj) + (1-pi[i])*Spcc*(1-Spln)*(1-Spcs)*Spmj
p1 [i, 11] <- pi [ i ]*((1-Secc)*Seln-covDp)*(1-Secs)*Semj + (1-pi[i])*Spcc*(1-Spln)*Spcs*(1-Spmj)
p1 [i, 12] <- pi [ i ]*((1-Secc)*Seln-covDp)*(1-Secs)*(1-Semj) + (1-pi[i])*Spcc*(1-Spln)*Spcs*Spmj
p1 [i, 13] <- pi [ i ]*((1-Secc)*(1-Seln)+covDp)*Secs*Semj + (1-pi[i])*Spcc*Spln*(1-Spcs)*(1-Spmj)
p1 [i, 14] <- pi [ i ]*((1-Secc)*(1-Seln)+covDp)*Secs*(1-Semj) + (1-pi[i])*Spcc*Spln*(1-Spcs)*Spmj
p1 [i, 15] <- pi [ i ]*((1-Secc)*(1-Seln)+covDp)*(1-Secs)*Semj + (1-pi[i])*Spcc*Spln*Spcs*(1-Spmj)
p1 [i, 16] <- pi [ i ]*((1-Secc)*(1-Seln)+covDp)*(1-Secs)*(1-Semj) + (1-pi[i])*Spcc*Spln*Spcs*Spmj
pi[i] ~dbeta(18.937, 16.2797) # prior of pig prevalence at abattoir
}

# terms for codependence cc ln
ls <- (Secc-1)*(1-Seln)
us <- min(Secc, Seln) - Secc*Seln
covDp ~ dunif (ls, us)
rhoD <- covDp/ sqrt(Secc*(1-Secc)*Seln*(1-Seln))

Secc ~ dbeta(13.3494,29.8154) # caecal culture sensitivity Mode=0.30, 95% sure > 0.2
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Secs ~ dbeta(1,1) # carcass swab sensitivity
Spcc <- 1.0 # culture specificity
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#pi2 ~ dbeta (1.73, 2.71) ## Mode=0.30, 95% sure pi2 > 0.08
#mj sens and spec
Semj ~ dbeta(4.8416, 3.5611) ## Mode=0.60, 95% sure >0.30
Spmj ~ dbeta(26.8438, 5.9226) ## Mode 0.84, 95% sure >0.70
}
```

Model mj10 4 tests with conditional dependence between caecal content and lymph node

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:16] ~ dmulti (p1 [i, 1:16], n[ i ])
p1 [i, 1]<- pi [ i ]*(Secc*Seln+covDp)*Secs*Semj + (1-pi[i])*(1-Spcc)*(1-Spln)*(1-Spcs)*(1-Spmj)
p1 [i, 2] <- pi [ i ]*(Secc*Seln+covDp)*Secs*(1-Semj) + (1-pi[i])*(1-Spcc)*(1-Spln)*(1-Spcs)*Spmj
p1 [i, 3] <- pi [ i ]*(Secc*Seln+covDp)*(1-Secs)*Semj + (1-pi[i])*(1-Spcc)*(1-Spln)*Spcs*(1-Spmj)
p1 [i, 4] <- pi [ i ]*(Secc*Seln+covDp)*(1-Secs)*(1-Semj) + (1-pi[i])*(1-Spcc)*(1-Spln)*Spcs*Spmj
p1 [i, 5] <- pi [ i ]*(Secc*(1-Seln)-covDp)*Secs*Semj + (1-pi[i])*(1-Spcc)*Spln*(1-Spcs)*(1-Spmj)
p1 [i, 6] <- pi [ i ]*(Secc*(1-Seln)-covDp)*Secs*(1-Semj) + (1-pi[i])*(1-Spcc)*Spln*(1-Spcs)*Spmj
p1 [i, 7] <- pi [ i ]*(Secc*(1-Seln)-covDp)*(1-Secs)*Semj + (1-pi[i])*(1-Spcc)*Spln*Spcs*(1-Spmj)
p1 [i, 8] <- pi [ i ]*(Secc*(1-Seln)-covDp)*(1-Secs)*(1-Semj) + (1-pi[i])*(1-Spcc)*Spln*Spcs*Spmj
p1 [i, 9] <- pi [ i ]*((1-Secc)*Seln-covDp)*Secs*Semj + (1-pi[i])*Spcc*(1-Spln)*(1-Spcs)*(1-Spmj)
p1 [i, 10] <- pi [ i ]*((1-Secc)*Seln-covDp)*Secs*(1-Semj) + (1-pi[i])*Spcc*(1-Spln)*(1-Spcs)*Spmj
p1 [i, 11] <- pi [ i ]*((1-Secc)*Seln-covDp)*(1-Secs)*Semj + (1-pi[i])*Spcc*(1-Spln)*Spcs*(1-Spmj)
p1 [i, 12] <- pi [ i ]*((1-Secc)*Seln-covDp)*(1-Secs)*(1-Semj) + (1-pi[i])*Spcc*(1-Spln)*Spcs*Spmj
p1 [i, 13] <- pi [ i ]*((1-Secc)*(1-Seln)+covDp)*Secs*Semj + (1-pi[i])*Spcc*Spln*(1-Spcs)*(1-Spmj)
p1 [i, 14] <- pi [ i ]*((1-Secc)*(1-Seln)+covDp)*Secs*(1-Semj) + (1-pi[i])*Spcc*Spln*(1-Spcs)*Spmj
p1 [i, 15] <- pi [ i ]*((1-Secc)*(1-Seln)+covDp)*(1-Secs)*Semj + (1-pi[i])*Spcc*Spln*Spcs*(1-Spmj)
p1 [i, 16] <- pi [ i ]*((1-Secc)*(1-Seln)+covDp)*(1-Secs)*(1-Semj) + (1-pi[i])*Spcc*Spln*Spcs*Spmj
pi[i] ~dbeta(18.937, 16.2797) # prior of pig prevalence at abattoir
}

# terms for codependence cc ln
ls <- (Secc-1)*(1-Seln)
us <- min(Secc, Seln) - Secc*Seln
covDp ~ dunif (ls, us)
rhoD <- covDp/ sqrt(Secc*(1-Secc)*Seln*(1-Seln))

Secc ~ dbeta(13.3494,29.8154) # caecal culture sensitivity Mode=0.30, 95% sure > 0.2
Seln ~ dbeta(12.1391,14.6145) # lymph node sensitivity mode=0.45, 95% sure >0.30
Secs ~ dbeta(1,1) # carcass swab sensitivity
Spcc <- 1.0 # culture specificity
Spln <- 1.0 # culture specificity
Spcs <- 1.0 # culture specificity
#pi2 ~ dbeta (1.73, 2.71) ## Mode=0.30, 95% sure pi2 > 0.08
#mj sens and spec
Semj ~ dbeta(4.8416, 3.5611) ## Mode=0.60, 95% sure >0.30
Spmj ~ dbeta(26.8438, 5.9226) ## Mode 0.84, 95% sure >0.70
}
```

Model mj25 3 tests no conditional dependence

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:8] ~ dmulti (p1 [i, 1:8], n[ i ])
p1 [i, 1]<- pi [ i ]*Secc25*Seln25*Semj25 + (1-pi[i])*(1-Spcc25)*(1-Spln25)*(1-Spmj25)
p1 [i, 2] <- pi [ i ]*Secc25*Seln25*(1-Semj25) + (1-pi[i])*(1-Spcc25)*(1-Spln25)*Spmj25
p1 [i, 3] <- pi [ i ]*Secc25*(1-Seln25)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*Spln25*Spmj25
p1 [i, 4] <- pi [ i ]*Secc25*(1-Seln25)*Semj25 + (1-pi[i])*(1-Spcc25)*Spln25*(1-Spmj25)
p1 [i, 5] <- pi [ i ]*(1-Secc25)*Seln25*Semj25 + (1-pi[i])*Spcc25*(1-Spln25)*(1-Spmj25)
p1 [i, 6] <- pi [ i ]*(1-Secc25)*Seln25*(1-Semj25) + (1-pi[i])*Spcc25*(1-Spln25)*Spmj25
p1 [i, 7] <- pi [ i ]*(1-Secc25)*(1-Seln25)*Semj25 + (1-pi[i])*Spcc25*Spln25*(1-Spmj25)
p1 [i, 8] <- pi [ i ]*(1-Secc25)*(1-Seln25)*(1-Semj25) + (1-pi[i])*Spcc25*Spln25*Spmj25
pi[i] ~dbeta(43.1003, 127.3008) # prior of pig prevalence at abattoir
}
Secc25 ~ dbeta(13.3494,29.8154) # caecal culture sensitivity Mode=0.30, 95% sure > 0.2
Seln25 ~ dbeta(12.1391,14.6145) # lymph node sensitivity mode=0.45, 95% sure >0.30
Spcc25 <- 1.0 # culture specificity
Spln25 <- 1.0 # culture specificity
#pi2 ~ dbeta (1.73, 2.71) ## Mode=0.30, 95% sure pi2 > 0.08
#mj sens and spec
Semj25 ~ dbeta(4.8416, 3.5611) ## Mode=0.60, 95% sure >0.30
Spmj25 ~ dbeta(26.8438, 5.9226) ## Mode 0.84, 95% sure >0.70
}
```

Model mj25 3 tests non-informative priors

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:8] ~ dmulti (p1 [i, 1:8], n[ i ])
p1 [i, 1]<- pi [ i ]*Secc25*Seln25*Semj25 + (1-pi[i])*(1-Spcc25)*(1-Spln25)*(1-Spmj25)
p1 [i, 2] <- pi [ i ]*Secc25*Seln25*(1-Semj25) + (1-pi[i])*(1-Spcc25)*(1-Spln25)*Spmj25
p1 [i, 3] <- pi [ i ]*Secc25*(1-Seln25)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*Spln25*Spmj25
p1 [i, 4] <- pi [ i ]*Secc25*(1-Seln25)*Semj25 + (1-pi[i])*(1-Spcc25)*Spln25*(1-Spmj25)
p1 [i, 5] <- pi [ i ]*(1-Secc25)*Seln25*Semj25 + (1-pi[i])*Spcc25*(1-Spln25)*(1-Spmj25)
p1 [i, 6] <- pi [ i ]*(1-Secc25)*Seln25*(1-Semj25) + (1-pi[i])*Spcc25*(1-Spln25)*Spmj25
p1 [i, 7] <- pi [ i ]*(1-Secc25)*(1-Seln25)*Semj25 + (1-pi[i])*Spcc25*Spln25*(1-Spmj25)
p1 [i, 8] <- pi [ i ]*(1-Secc25)*(1-Seln25)*(1-Semj25) + (1-pi[i])*Spcc25*Spln25*Spmj25
pi[i] ~dbeta(1, 1) # prior of pig prevalence at abattoir
}
Secc25 ~ dbeta(1,1) # caecal culture sensitivity Mode=0.30, 95% sure > 0.2
Seln25 ~ dbeta(1,1) # lymph node sensitivity mode=0.45, 95% sure >0.30
Spcc25 <- 1.0 # culture specificity
Spln25 <- 1.0 # culture specificity
#pi2 ~ dbeta (1, 1) ## Mode=0.30, 95% sure pi2 > 0.08
#mj sens and spec
Semj25 ~ dbeta(1, 1) ## Mode=0.60, 95% sure >0.30
Spmj25 ~ dbeta(1, 1) ## Mode 0.84, 95% sure >0.70
}
```

Model mj25 3 tests conditional dependence between caecal content and lymph node

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:8] ~ dmulti (p1 [i, 1:8], n[ i ])
p1 [i, 1]<- pi [ i ]*(Secc25*Seln25+covDp)*Semj25 + (1-pi[i])*(1-Spcc25)*(1-Spln25)*(1-Spmj25)
p1 [i, 2] <- pi [ i ]*(Secc25*Seln25+covDp)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*(1-Spln25)*Spmj25
p1 [i, 3] <- pi [ i ]*(Secc25*(1-Seln25)-covDp)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*Spln25*Spmj25
p1 [i, 4] <- pi [ i ]*(Secc25*(1-Seln25)-covDp)*Semj25 + (1-pi[i])*(1-Spcc25)*Spln25*(1-Spmj25)
p1 [i, 5] <- pi [ i ]*((1-Secc25)*Seln25-covDp)*Semj25 + (1-pi[i])*Spcc25*(1-Spln25)*(1-Spmj25)
p1 [i, 6] <- pi [ i ]*((1-Secc25)*Seln25-covDp)*(1-Semj25) + (1-pi[i])*Spcc25*(1-Spln25)*Spmj25
p1 [i, 7] <- pi [ i ]*((1-Secc25)*(1-Seln25)+covDp)*Semj25 + (1-pi[i])*Spcc25*Spln25*(1-Spmj25)
p1 [i, 8] <- pi [ i ]*((1-Secc25)*(1-Seln25)+covDp)*(1-Semj25) + (1-pi[i])*Spcc25*Spln25*Spmj25
pi[i] ~dbeta(43.1003, 127.3008) # prior of pig prevalence at abattoir
}

# terms for codependence cc ln
ls <- (Secc25-1)*(1-Seln25)
us <- min(Secc25, Seln25) - Secc25*Seln25
covDp ~ dunif (ls, us)
rhoD <- covDp/ sqrt(Secc25*(1-Secc25)*Seln25*(1-Seln25))

Secc25 ~ dbeta(13.3494,29.8154) # caecal culture sensitivity Mode=0.30, 95% sure > 0.2
Seln25 ~ dbeta(12.1391,14.6145) # lymph node sensitivity mode=0.45, 95% sure >0.30
Spcc25 <- 1.0 # culture specificity
Spln25 <- 1.0 # culture specificity
#pi2 ~ dbeta (1.73, 2.71) ## Mode=0.30, 95% sure pi2 > 0.08
#mj sens and spec
Semj25 ~ dbeta(4.8416, 3.5611) ## Mode=0.60, 95% sure >0.30
Spmj25 ~ dbeta(26.8438, 5.9226) ## Mode 0.84, 95% sure >0.70
}
```

Model mj25 4 tests no conditional dependence

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:16] ~ dmulti (p1 [i, 1:16], n[ i ])
p1 [i, 1]<- pi [ i ]*Secc25*Seln25*Secs25*Semj25 + (1-pi[i])*(1-Spcc25)*(1-Spln25)*(1-Spcs25)*(1-Spmj25)
p1 [i, 2] <- pi [ i ]*Secc25*Seln25*Secs25*(1-Semj25) + (1-pi[i])*(1-Spcc25)*(1-Spln25)*(1-Spcs25)*Spmj25
p1 [i, 3] <- pi [ i ]*Secc25*Seln25*(1-Secs25)*Semj25 + (1-pi[i])*(1-Spcc25)*(1-Spln25)*Spcs25*(1-Spmj25)
p1 [i, 4] <- pi [ i ]*Secc25*Seln25*(1-Secs25)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*(1-Spln25)*Spcs25*Spmj25
p1 [i, 5] <- pi [ i ]*Secc25*(1-Seln25)*Secs25*Semj25 + (1-pi[i])*(1-Spcc25)*Spln25*(1-Spcs25)*(1-Spmj25)
p1 [i, 6] <- pi [ i ]*Secc25*(1-Seln25)*Secs25*(1-Semj25) + (1-pi[i])*(1-Spcc25)*Spln25*(1-Spcs25)*Spmj25
p1 [i, 7] <- pi [ i ]*Secc25*(1-Seln25)*(1-Secs25)*Semj25 + (1-pi[i])*(1-Spcc25)*Spln25*Spcs25*(1-Spmj25)
p1 [i, 8] <- pi [ i ]*Secc25*(1-Seln25)*(1-Secs25)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*Spln25*Spcs25*Spmj25
p1 [i, 9] <- pi [ i ]*(1-Secc25)*Seln25*Secs25*Semj25 + (1-pi[i])*Spcc25*(1-Spln25)*(1-Spcs25)*(1-Spmj25)
p1 [i, 10] <- pi [ i ]*(1-Secc25)*Seln25*Secs25*(1-Semj25) + (1-pi[i])*Spcc25*(1-Spln25)*(1-Spcs25)*Spmj25
p1 [i, 11] <- pi [ i ]*(1-Secc25)*Seln25*(1-Secs25)*Semj25 + (1-pi[i])*Spcc25*(1-Spln25)*Spcs25*(1-Spmj25)
p1 [i, 12] <- pi [ i ]*(1-Secc25)*Seln25*(1-Secs25)*(1-Semj25) + (1-pi[i])*Spcc25*(1-Spln25)*Spcs25*Spmj25
p1 [i, 13] <- pi [ i ]*(1-Secc25)*(1-Seln25)*Secs25*Semj25 + (1-pi[i])*Spcc25*Spln25*(1-Spcs25)*(1-Spmj25)
p1 [i, 14] <- pi [ i ]*(1-Secc25)*(1-Seln25)*Secs25*(1-Semj25) + (1-pi[i])*Spcc25*Spln25*(1-Spcs25)*Spmj25
p1 [i, 15] <- pi [ i ]*(1-Secc25)*(1-Seln25)*(1-Secs25)*Semj25 + (1-pi[i])*Spcc25*Spln25*Spcs25*(1-Spmj25)
p1 [i, 16] <- pi [ i ]*(1-Secc25)*(1-Seln25)*(1-Secs25)*(1-Semj25) + (1-pi[i])*Spcc25*Spln25*Spcs25*Spmj25
pi[i] ~dbeta(43.1003, 127.3008) # prior of pig prevalence at abattoir mode=0.25 95% sure >0.20
}
Secc25 ~ dbeta(13.3494,29.8154) # caecal culture sensitivity Mode=0.30, 95% sure > 0.2
Seln25 ~ dbeta(12.1391,14.6145) # lymph node sensitivity mode=0.45, 95% sure >0.30
Secs25 ~ dbeta(1,1) # carcass swab sensitivity
Spcc25 <- 1.0 # culture specificity
Spln25 <- 1.0 # culture specificity
Spcs25 <- 1.0 # culture specificity
#pi2 ~ dbeta (1.73, 2.71) ## Mode=0.30, 95% sure pi2 > 0.08
#mj sens and spec
Semj25 ~ dbeta(4.8416, 3.5611) ## Mode=0.60, 95% sure >0.30
Spmj25 ~ dbeta(26.8438, 5.9226) ## Mode 0.84, 95% sure >0.70
}
```

Model mj25 4 tests non-informative priors and no conditional dependence

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:16] ~ dmulti (p1 [i, 1:16], n[ i ])
p1 [i, 1]<- pi [ i ]*Secc25*Seln25*Secs25*Semj25 + (1-pi[i])*(1-Spcc25)*(1-Spln25)*(1-Spcs25)*(1-Spmj25)
p1 [i, 2] <- pi [ i ]*Secc25*Seln25*Secs25*(1-Semj25) + (1-pi[i])*(1-Spcc25)*(1-Spln25)*(1-Spcs25)*Spmj25
p1 [i, 3] <- pi [ i ]*Secc25*Seln25*(1-Secs25)*Semj25 + (1-pi[i])*(1-Spcc25)*(1-Spln25)*Spcs25*(1-Spmj25)
p1 [i, 4] <- pi [ i ]*Secc25*Seln25*(1-Secs25)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*(1-Spln25)*Spcs25*Spmj25
p1 [i, 5] <- pi [ i ]*Secc25*(1-Seln25)*Secs25*Semj25 + (1-pi[i])*(1-Spcc25)*Spln25*(1-Spcs25)*(1-Spmj25)
p1 [i, 6] <- pi [ i ]*Secc25*(1-Seln25)*Secs25*(1-Semj25) + (1-pi[i])*(1-Spcc25)*Spln25*(1-Spcs25)*Spmj25
p1 [i, 7] <- pi [ i ]*Secc25*(1-Seln25)*(1-Secs25)*Semj25 + (1-pi[i])*(1-Spcc25)*Spln25*Spcs25*(1-Spmj25)
p1 [i, 8] <- pi [ i ]*Secc25*(1-Seln25)*(1-Secs25)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*Spln25*Spcs25*Spmj25
p1 [i, 9] <- pi [ i ]*(1-Secc25)*Seln25*Secs25*Semj25 + (1-pi[i])*Spcc25*(1-Spln25)*(1-Spcs25)*(1-Spmj25)
p1 [i, 10] <- pi [ i ]*(1-Secc25)*Seln25*Secs25*(1-Semj25) + (1-pi[i])*Spcc25*(1-Spln25)*(1-Spcs25)*Spmj25
p1 [i, 11] <- pi [ i ]*(1-Secc25)*Seln25*(1-Secs25)*Semj25 + (1-pi[i])*Spcc25*(1-Spln25)*Spcs25*(1-Spmj25)
p1 [i, 12] <- pi [ i ]*(1-Secc25)*Seln25*(1-Secs25)*(1-Semj25) + (1-pi[i])*Spcc25*(1-Spln25)*Spcs25*Spmj25
p1 [i, 13] <- pi [ i ]*(1-Secc25)*(1-Seln25)*Secs25*Semj25 + (1-pi[i])*Spcc25*Spln25*(1-Spcs25)*(1-Spmj25)
p1 [i, 14] <- pi [ i ]*(1-Secc25)*(1-Seln25)*Secs25*(1-Semj25) + (1-pi[i])*Spcc25*Spln25*(1-Spcs25)*Spmj25
p1 [i, 15] <- pi [ i ]*(1-Secc25)*(1-Seln25)*(1-Secs25)*Semj25 + (1-pi[i])*Spcc25*Spln25*Spcs25*(1-Spmj25)
p1 [i, 16] <- pi [ i ]*(1-Secc25)*(1-Seln25)*(1-Secs25)*(1-Semj25) + (1-pi[i])*Spcc25*Spln25*Spcs25*Spmj25
pi[i] ~dbeta(1,1) # prior of pig prevalence at abattoir
}
Secc25 ~ dbeta(1,1) # caecal culture sensitivity
Seln25 ~ dbeta(1,1) # lymph node sensitivity
Secs25 ~ dbeta(1,1) # carcass swab sensitivity
Spcc25 <- 1.0 # culture specificity
Spln25 <- 1.0 # culture specificity
Spcs25 <- 1.0 # culture specificity
#pi2 ~ dbeta (1, 1) ##
#mj sens and spec
Semj25 ~ dbeta(1, 1)
Spmj25 ~ dbeta(1, 1)
}
```

Model mj25 4 tests with conditional dependence between caecal content and lymph node

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:16] ~ dmulti (p1 [i, 1:16], n[ i ])
p1 [i, 1]<- pi [ i ]*(Secc25*Seln25+covDp)*Secs25*Semj25 + (1-pi[i])*(1-Spcc25)*(1-Spln25)*(1-Spcs25)*(1-Spmj25)
p1 [i, 2] <- pi [ i ]*(Secc25*Seln25+covDp)*Secs25*(1-Semj25) + (1-pi[i])*(1-Spcc25)*(1-Spln25)*(1-Spcs25)*Spmj25
p1 [i, 3] <- pi [ i ]*(Secc25*Seln25+covDp)*(1-Secs25)*Semj25 + (1-pi[i])*(1-Spcc25)*(1-Spln25)*Spcs25*(1-Spmj25)
p1 [i, 4] <- pi [ i ]*(Secc25*Seln25+covDp)*(1-Secs25)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*(1-Spln25)*Spcs25*Spmj25
p1 [i, 5] <- pi [ i ]*(Secc25*(1-Seln25)-covDp)*Secs25*Semj25 + (1-pi[i])*(1-Spcc25)*Spln25*(1-Spcs25)*(1-Spmj25)
p1 [i, 6] <- pi [ i ]*(Secc25*(1-Seln25)-covDp)*Secs25*(1-Semj25) + (1-pi[i])*(1-Spcc25)*Spln25*(1-Spcs25)*Spmj25
p1 [i, 7] <- pi [ i ]*(Secc25*(1-Seln25)-covDp)*(1-Secs25)*Semj25 + (1-pi[i])*(1-Spcc25)*Spln25*Spcs25*(1-Spmj25)
p1 [i, 8] <- pi [ i ]*(Secc25*(1-Seln25)-covDp)*(1-Secs25)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*Spln25*Spcs25*Spmj25
p1 [i, 9] <- pi [ i ]*((1-Secc25)*Seln25-covDp)*Secs25*Semj25 + (1-pi[i])*Spcc25*(1-Spln25)*(1-Spcs25)*(1-Spmj25)
p1 [i, 10] <- pi [ i ]*((1-Secc25)*Seln25-covDp)*Secs25*(1-Semj25) + (1-pi[i])*Spcc25*(1-Spln25)*(1-Spcs25)*Spmj25
p1 [i, 11] <- pi [ i ]*((1-Secc25)*Seln25-covDp)*(1-Secs25)*Semj25 + (1-pi[i])*Spcc25*(1-Spln25)*Spcs25*(1-Spmj25)
p1 [i, 12] <- pi [ i ]*((1-Secc25)*Seln25-covDp)*(1-Secs25)*(1-Semj25) + (1-pi[i])*Spcc25*(1-Spln25)*Spcs25*Spmj25
p1 [i, 13] <- pi [ i ]*((1-Secc25)*(1-Seln25)+covDp)*Secs25*Semj25 + (1-pi[i])*Spcc25*Spln25*(1-Spcs25)*(1-Spmj25)
p1 [i, 14] <- pi [ i ]*((1-Secc25)*(1-Seln25)+covDp)*Secs25*(1-Semj25) + (1-pi[i])*Spcc25*Spln25*(1-Spcs25)*Spmj25
p1 [i, 15] <- pi [ i ]*((1-Secc25)*(1-Seln25)+covDp)*(1-Secs25)*Semj25 + (1-pi[i])*Spcc25*Spln25*Spcs25*(1-Spmj25)
p1 [i, 16] <- pi [ i ]*((1-Secc25)*(1-Seln25)+covDp)*(1-Secs25)*(1-Semj25) + (1-pi[i])*Spcc25*Spln25*Spcs25*Spmj25
pi[i] ~dbeta(43.1005, 127.3008) # prior of pig prevalence at abattoir
}

# terms for codependence cc ln
ls <- (Secc25-1)*(1-Seln25)
us <- min(Secc25, Seln25) - Secc25*Seln25
covDp ~ dunif (ls, us)
rhoD <- covDp/ sqrt(Secc25*(1-Secc25)*Seln25*(1-Seln25))

Secc25 ~ dbeta(26.453,52.677) # caecal culture sensitivity 95% sure >0.25 mode=0.33
Seln25 ~ dbeta(12.1391,14.6145) # lymph node sensitivity 95% sure >0.30 mode=0.45
Secs25 ~ dbeta(1,1) # carcass swab sensitivity non-informative prior
Spcc25 <- 1.0 # culture specificity
Spln25 <- 1.0 # culture specificity
Spcs25 <- 1.0 # culture specificity
#pi2 ~ dbeta (1.73, 2.71) ## Mode=0.30, 95% sure pi2 > 0.08
#mj sens and spec
Semj25 ~ dbeta(4.8416, 3.5611) ## Mode=0.60, 95% sure >0.30
Spmj25 ~ dbeta(26.8438, 5.9226) ## Mode 0.84, 95% sure >0.70
}
```

Model mj25 4 tests with conditional dependence between lymph node and carcass swab

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:16] ~ dmulti (p1 [i, 1:16], n[ i ])
p1 [i, 1]<- pi [ i ]*Secc25*(Seln25*Secs25+covDp)*Semj25 + (1-pi[i])*(1-Spcc25)*(1-Spln25)*(1-Spcs25)*(1-Spmj25)
p1 [i, 2] <- pi [ i ]*Secc25*(Seln25*Secs25+covDp)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*(1-Spln25)*(1-Spcs25)*Spmj25
p1 [i, 3] <- pi [ i ]*Secc25*(Seln25*(1-Secs25)-covDp)*Semj25 + (1-pi[i])*(1-Spcc25)*(1-Spln25)*Spcs25*(1-Spmj25)
p1 [i, 4] <- pi [ i ]*Secc25*(Seln25*(1-Secs25)-covDp)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*(1-Spln25)*Spcs25*Spmj25
p1 [i, 5] <- pi [ i ]*Secc25*((1-Seln25)*Secs25-covDp)*Semj25 + (1-pi[i])*(1-Spcc25)*Spln25*(1-Spcs25)*(1-Spmj25)
p1 [i, 6] <- pi [ i ]*Secc25*((1-Seln25)*Secs25-covDp)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*Spln25*(1-Spcs25)*Spmj25
p1 [i, 7] <- pi [ i ]*Secc25*((1-Seln25)*(1-Secs25)+covDp)*Semj25 + (1-pi[i])*(1-Spcc25)*Spln25*Spcs25*(1-Spmj25)
p1 [i, 8] <- pi [ i ]*Secc25*((1-Seln25)*(1-Secs25)+covDp)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*Spln25*Spcs25*Spmj25
p1 [i, 9] <- pi [ i ]*(1-Secc25)*(Seln25*Secs25+covDp)*Semj25 + (1-pi[i])*Spcc25*(1-Spln25)*(1-Spcs25)*(1-Spmj25)
p1 [i, 10] <- pi [ i ]*(1-Secc25)*(Seln25*Secs25+covDp)*(1-Semj25) + (1-pi[i])*Spcc25*(1-Spln25)*(1-Spcs25)*Spmj25
p1 [i, 11] <- pi [ i ]*(1-Secc25)*(Seln25*(1-Secs25)-covDp)*Semj25 + (1-pi[i])*Spcc25*(1-Spln25)*Spcs25*(1-Spmj25)
p1 [i, 12] <- pi [ i ]*(1-Secc25)*(Seln25*(1-Secs25)-covDp)*(1-Semj25) + (1-pi[i])*Spcc25*(1-Spln25)*Spcs25*Spmj25
p1 [i, 13] <- pi [ i ]*(1-Secc25)*((1-Seln25)*Secs25-covDp)*Semj25 + (1-pi[i])*Spcc25*Spln25*(1-Spcs25)*(1-Spmj25)
p1 [i, 14] <- pi [ i ]*(1-Secc25)*((1-Seln25)*Secs25-covDp)*(1-Semj25) + (1-pi[i])*Spcc25*Spln25*(1-Spcs25)*Spmj25
p1 [i, 15] <- pi [ i ]*(1-Secc25)*((1-Seln25)*(1-Secs25)+covDp)*Semj25 + (1-pi[i])*Spcc25*Spln25*Spcs25*(1-Spmj25)
p1 [i, 16] <- pi [ i ]*(1-Secc25)*((1-Seln25)*(1-Secs25)+covDp)*(1-Semj25) + (1-pi[i])*Spcc25*Spln25*Spcs25*Spmj25

pi[i] ~dbeta(18.2007,32.9441) # prior of pig prevalence at abattoir
}
# terms for codependence ln cs
ls <- (Seln25-1)*(1-Secs25)
us <- min(Seln25, Secs25) - Seln25*Secs25
covDp ~ dunif (ls, us)
rhoD <- covDp/ sqrt(Seln25*(1-Seln25)*Secs25*(1-Secs25))

Secc25 ~ dbeta(7.3057, 12.7106) # caecal culture sensitivity 95% sure >0.2 mode 0.35
Seln25 ~ dbeta(12.1391,14.6145) # lymph node sensitivity 95% sure > 0.30 mode 0.45
Secs25 ~ dbeta(1,1) # carcass swab sensitivity
Spcc25 <- 1.0 # culture specificity
Spln25 <- 1.0 # culture specificity
Spcs25 <- 1.0 # culture specificity
#pi2 ~ dbeta (1.73, 2.71) ## Mode=0.30, 95% sure pi2 > 0.08
#mj sens and spec
Semj25 ~ dbeta(4.8416, 3.5611) ## Mode=0.60, 95% sure >0.30
Spmj25 ~ dbeta(26.8438, 5.9226) ## Mode 0.84, 95% sure >0.70
}
```

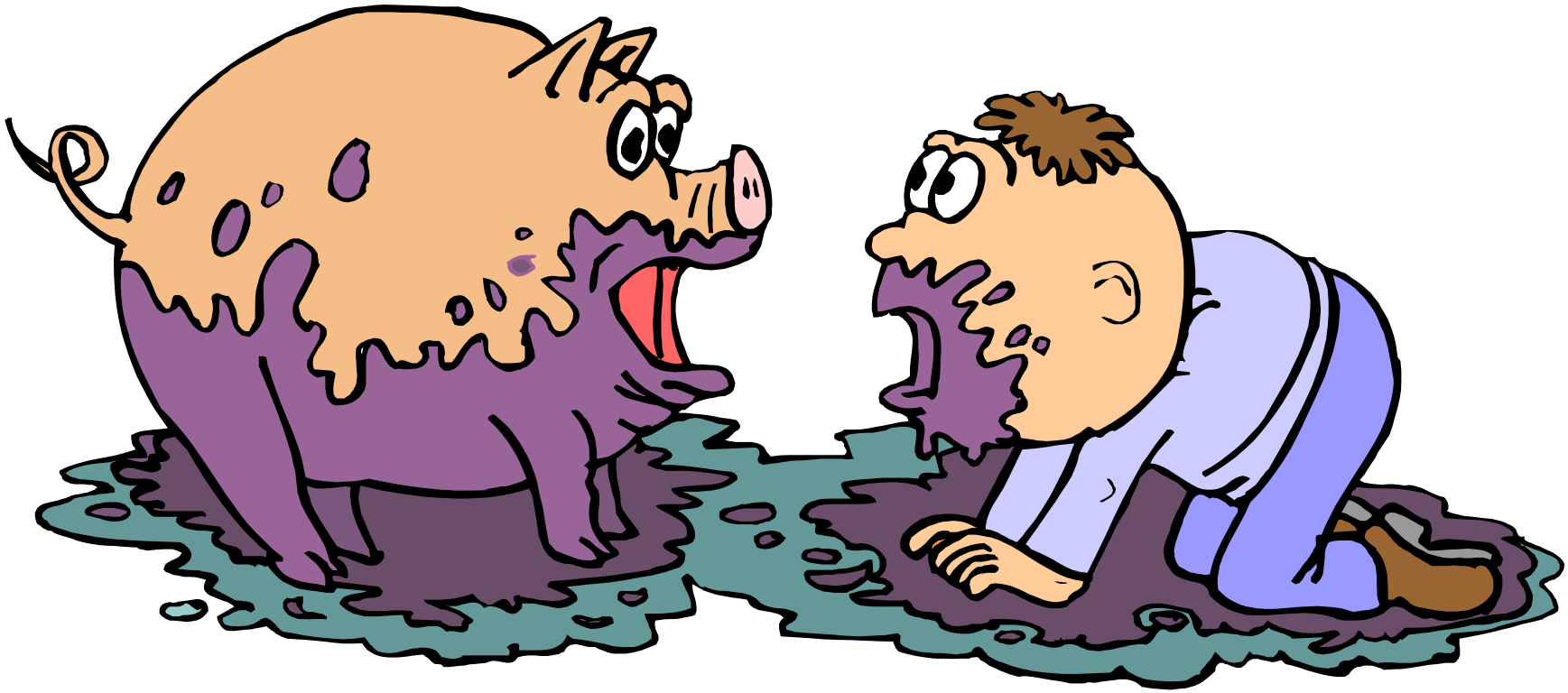
Model mj25 4 tests conditional dependence between caecal content and carcass swab

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:16] ~ dmulti (p1 [i, 1:16], n[ i ])
p1 [i, 1]<- pi [ i ]*(Secc25*Secs25+covDp)*Seln25*Semj25 + (1-pi[i])*(1-Spcc25)*(1-Spln25)*(1-Spcs25)*(1-Spmj25)
p1 [i, 2] <- pi [ i ]*(Secc25*Secs25+covDp)*Seln25*(1-Semj25) + (1-pi[i])*(1-Spcc25)*(1-Spln25)*(1-Spcs25)*Spmj25
p1 [i, 3] <- pi [ i ]*(Secc25*(1-Secs25)-covDp)*Seln25*Semj25 + (1-pi[i])*(1-Spcc25)*(1-Spln25)*Spcs25*(1-Spmj25)
p1 [i, 4] <- pi [ i ]*(Secc25*(1-Secs25)-covDp)*Seln25*(1-Semj25) + (1-pi[i])*(1-Spcc25)*(1-Spln25)*Spcs25*Spmj25
p1 [i, 5] <- pi [ i ]*(Secc25*Secs25+covDp)*(1-Seln25)*Semj25 + (1-pi[i])*(1-Spcc25)*Spln25*(1-Spcs25)*(1-Spmj25)
p1 [i, 6] <- pi [ i ]*(Secc25*Secs25+covDp)*(1-Seln25)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*Spln25*(1-Spcs25)*Spmj25
p1 [i, 7] <- pi [ i ]*(Secc25*(1-Secs25)-covDp)*(1-Seln25)*Semj25 + (1-pi[i])*(1-Spcc25)*Spln25*Spcs25*(1-Spmj25)
p1 [i, 8] <- pi [ i ]*(Secc25*(1-Secs25)-covDp)*(1-Seln25)*(1-Semj25) + (1-pi[i])*(1-Spcc25)*Spln25*Spcs25*Spmj25
p1 [i, 9] <- pi [ i ]*((1-Secc25)*Secs25-covDp)*Seln25*Semj25 + (1-pi[i])*Spcc25*(1-Spln25)*(1-Spcs25)*(1-Spmj25)
p1 [i, 10] <- pi [ i ]*((1-Secc25)*Secs25-covDp)*Seln25*(1-Semj25) + (1-pi[i])*Spcc25*(1-Spln25)*(1-Spcs25)*Spmj25
p1 [i, 11] <- pi [ i ]*((1-Secc25)*(1-Secs25)+covDp)*Seln25*Semj25 + (1-pi[i])*Spcc25*(1-Spln25)*Spcs25*(1-Spmj25)
p1 [i, 12] <- pi [ i ]*((1-Secc25)*(1-Secs25)+covDp)*Seln25*(1-Semj25) + (1-pi[i])*Spcc25*(1-Spln25)*Spcs25*Spmj25
p1 [i, 13] <- pi [ i ]*((1-Secc25)*Secs25-covDp)*(1-Seln25)*Semj25 + (1-pi[i])*Spcc25*Spln25*(1-Spcs25)*(1-Spmj25)
p1 [i, 14] <- pi [ i ]*((1-Secc25)*Secs25-covDp)*(1-Seln25)*(1-Semj25) + (1-pi[i])*Spcc25*Spln25*(1-Spcs25)*Spmj25
p1 [i, 15] <- pi [ i ]*((1-Secc25)*(1-Secs25)+covDp)*(1-Seln25)*Semj25 + (1-pi[i])*Spcc25*Spln25*Spcs25*(1-Spmj25)
p1 [i, 16] <- pi [ i ]*((1-Secc25)*(1-Secs25)+covDp)*(1-Seln25)*(1-Semj25) + (1-pi[i])*Spcc25*Spln25*Spcs25*Spmj25

pi[i] ~dbeta(18.2007, 32.9441) # prior of pig prevalence at abattoir 95% sure >0.25 mode 0.35
}
# terms for codependence cc cs
ls <- (Secc25-1)*(1-Secs25)
us <- min(Secc25, Secs25) - Secc25*Secs25
covDp ~ dunif (ls, us)
rhoD <- covDp/ sqrt(Secc25*(1-Secc25)*Secs25*(1-Secs25))

Secc25 ~ dbeta(7.3057, 12.7106) # caecal culture sensitivity 95% sure >0.2 mode 0.35
Seln25 ~ dbeta(12.1391,14.6145) # lymph node sensitivity 95% sure > 0.30 mode 0.45
Secs25 ~ dbeta(1,1) # carcass swab sensitivity
Spcc25 <- 1.0 # culture specificity
Spln25 <- 1.0 # culture specificity
Spcs25 <- 1.0 # culture specificity
#pi2 ~ dbeta (1.73, 2.71) ## Mode=0.30, 95% sure pi2 > 0.08
#mj sens and spec
Semj25 ~ dbeta(4.8416, 3.5611) ## Mode=0.60, 95% sure >0.30
Spmj25 ~ dbeta(26.8438, 5.9226) ## Mode 0.84, 95% sure >0.70
}
```

Model 3-test no conditional dependence for culture of caecal content (cc), carcass swab (cs and lymph node (ln).

```
Model
{
for (i in 1:NoOfAbs) {
z[i, 1:8] ~ dmulti (p1 [i, 1:8], n[ i ])
p1 [i, 1]<- pi [ i ]*Secc*Seln*Secs + (1-pi[i])*(1-Spcc)*(1-Spln)*(1-
Spcs)
p1 [i, 2] <- pi [ i ]*Secc*Seln*(1-Secs) + (1-pi[i])*(1-Spcc)*(1-
Spln)*Spcs
p1 [i, 3] <- pi [ i ]*Secc*(1-Seln)*(1-Secs) + (1-pi[i])*(1-
Spcc)*Spln*Spcs
p1 [i, 4] <- pi [ i ]*Secc*(1-Seln)*Secs + (1-pi[i])*(1-Spcc)*Spln*(1-
Spcs)
p1 [i, 5] <- pi [ i ]*(1-Secc)*Seln*Secs + (1-pi[i])*Spcc*(1-Spln)*(1-
Spcs)
p1 [i, 6] <- pi [ i ]*(1-Secc)*Seln*(1-Secs) + (1-pi[i])*Spcc*(1-
Spln)*Spcs
p1 [i, 7] <- pi [ i ]*(1-Secc)*(1-Seln)*Secs + (1-pi[i])*Spcc*Spln*(1-
Spcs)
p1 [i, 8] <- pi [ i ]*(1-Secc)*(1-Seln)*(1-Secs) + (1-
pi[i])*Spcc*Spln*Spcs
pi[i] ~dbeta(115, 385) # prior of pig prevalence at abattoir
}
Secc ~ dbeta(40,11) # caecal culture sensitivity
Seln ~ dbeta(1,1) # lymph node sensitivity
Secs ~ dbeta(1,1) # carcass swab sensitivity
Spcc <- 1.0 # culture specificity
Spln <- 1.0 # culture specificity
Spcs <- 1.0 # culture specificity
#pi2 ~ dbeta (1.73, 2.71) ## Mode=0.30, 95% sure pi2 > 0.08
}
```

PIG SALMONELLA – FARMER QUESTIONNAIRE



IN CONFIDENCE

Please read the following notes before you answer the questions:

- Most questions can be answered by ticking a box ☑ or writing down a number
- Where a question relates to past events, this period is measured from the date on which you complete the questionnaire e.g. 'In the last 12 months' refers to 12 months from today
- There is only ONE answer for most questions, unless you are asked to tick every applicable box
- Please write any comments on the notes page provided at the back
- If you have any questions, please get in touch with: Alasdair Cook ☎ 01932 357977; 💻 a.j.cook@vla.defra.gsi.gov.uk
  or Sandy Miller ☎ 01932 357623; 💻 a.miller@vla.defra.gsi.gov.uk
- Please look through your questionnaire to check that you have not missed any questions, and return it to us in the reply-paid envelope provided
- Please DO NOT send any samples with this questionnaire

➢ **Are all of the pigs in your enterprise kept at one site?** YES ☐ NO ☐

➢ **If NO, then please give the number of different sites at which pigs are kept?** ☐

➢ **And if NO, do you hold either a Defra 'Sole Occupancy Licence' (SOL)?** YES ☐ NO ☐

or 'Sole Occupancy Authority' (SOA)? YES ☐ NO ☐

If you have several sites, but don't hold an SOL or SOA then please complete the questionnaire for **only the main site** in your enterprise.

If you do hold an SOL or SOA then please answer the questions for your **whole enterprise**, treating every site together as one unit.

Farm ID:

CPH Number: / /

Farm Owner

Name of Farm Manager/Foreman

Farm Address
(including County and Postcode)

If your pig enterprise operates from more than one site, then you should use the main postal address here

County:

Postcode:

Address where pigs are kept
(if different from the main postal address)

County:

Postcode:

OS Map Reference of pig unit *(if known)*

Name of person completing questionnaire

Please give your daytime telephone number

Position of person completing this questionnaire

- **Owner/ manager** ☐
- **Owner** ☐
- **Manager** ☐
- **Stockperson** ☐
- **Other (please specify)** _____ ☐

Date of completion of questionnaire:

Are you or your farm part of: **NPA** ☐ **ABPigs** ☐ **QMS** ☐ **Others**……☐

PTO

SECTION 1: STAFF & VISITORS

1.1 Staff. In answering the following, include yourself as appropriate. If staff divide their time between the pig enterprise and other work, then they are regarded as **part time** for the purpose of this questionnaire:

Please Write Number

a) How many people are employed **full time** to work with pigs? ☐

b) How many of these people have received or are currently receiving **formal** training (e.g. NVQ, OND, BSc etc.) ☐

c) How many people are employed **part time** to work with pigs? ☐

d) How many of these people have received or are currently receiving **formal** training (e.g. NVQ, OND, BSc etc.) ☐

e) Do any of the **part time** staff also work on other enterprises **on <u>this</u> farm**? YES ☐ NO ☐ Not Known ☐ Not Applicable ☐

f) Do any of the **part time** staff also work on other enterprises **on <u>other</u> farms**? YES ☐ NO ☐ Not Known ☐ Not Applicable ☐

If you answered **YES** to either **e) or f)**, then please list the enterprises on which staff work below:

Type of Enterprise	Your Farm	Other Farm
e.g. Beef cattle	☑	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐

1.2 How many times has your vet visited the farm during the **past 12 months?**

- 12 or more times ☐
- 4-11 times ☐
- 2-3 times ☐
- Once ☐
- Never ☐
- Not Known ☐

1.3 Visitors.

List everyone who has visited your pig unit during the **past four weeks**. Please state 1) how often they usually visit the farm 2) whether they entered pig houses, 3) whether they entered pig pens, 4) to the best of your knowledge, if they had contact with livestock on other farms within 24 hours prior to their visit.

Visitor Occupation	1) How often do they usually visit?			2) Entered pig houses		3) Entered pig pens		4) Contact with livestock on other farms in previous 24 hours					
	At Least Once/ month	Once/ month to Once/ 3 months	Less than once/3 months	Yes	No	Yes	No	Yes	No	Not Known	If YES, what type(s) of livestock		
eg Ventilation engineer			✓	✓			✓	✓			*pigs*	*cattle*	

Please use the sheets at the end for any further responses

SECTION 2: FARM LOCALITY AND SURROUNDINGS

2.1 Does a continuous perimeter fence secure the farm? YES ☐ NO ☐

2.2 Can the public go up to perimeter fences? YES ☐ NO ☐ Not Applicable ☐

2.3 How many entry/exit points are there to the pig unit:

a) for vehicles? 1 ☐ 2 ☐ 3 ☐ 4 or more ☐

b) on foot? 1 ☐ 2 ☐ 3 ☐ 4 or more ☐

2.4 Does a footpath used by the public cross the site or run around the periphery? Across site ☐ Around periphery ☐ Both ☐ No ☐

2.5 Are there any open watercourses **within one mile** of the farm? YES ☐ NO ☐ Not Known ☐

If YES, are these: *(tick all that apply)*

River ☐ Canal ☐ Stream ☐

Pond ☐ Lake ☐

Other *(specify)* _____

If YES, give the distance of the nearest one:

Runs through the farm ☐

Less than ½ mile from farm boundary ☐

½ - 1 mile ☐

PLEASE ANSWER CAREFULLY!

2.5 Continued…

Please indicate whether any of the following lie within 3 miles on this watercourse, and if they are *upstream and/*or *downstream* of your farm.

	Lies on watercourse (within 3 miles)			If YES, is it upstream or downstream of your farm?:			
	Yes	No	Not Known	Upstream	Downstream	Not Known	Not Applicable
Pig farm	☐	☐	☐	☐	☐	☐	☐
Poultry farm	☐	☐	☐	☐	☐	☐	☐
Cattle farm	☐	☐	☐	☐	☐	☐	☐
Sheep farm	☐	☐	☐	☐	☐	☐	☐
Sewage plant	☐	☐	☐	☐	☐	☐	☐
Landfill site	☐	☐	☐	☐	☐	☐	☐
Hospital	☐	☐	☐	☐	☐	☐	☐
Pharmaceutical or Chemical plant	☐	☐	☐	☐	☐	☐	☐
Abattoir	☐	☐	☐	☐	☐	☐	☐

2.6 Are any of the field boundaries of your farm formed by water-filled ditches? YES ☐ NO ☐ Not Known ☐

2.7 Are there any **pig** farms within 3 miles of the farm? YES ☐ NO ☐ Not Known ☐

If YES, enter the number of farms (if known) ☐

Is the nearest farm: Adjacent ☐ Less than 1 mile ☐ 1-2 miles ☐ More than 2 miles ☐

2.8 Are there any **poultry** farms within 3 miles of the farm? YES ☐ NO ☐ Not Known ☐

If YES, enter the number of farms (if known) ☐

Is the nearest farm: Adjacent ☐ Less than 1 mile ☐ 1-2 miles ☐ More than 2 miles ☐

PTO

2.9 Are there any **cattle** farms within 3 miles of the farm? YES ☐ NO ☐ Not Known ☐

If YES, enter the number of farms (if known) ☐

Is the nearest farm: Adjacent ☐ Less than 1 mile ☐ 1-2 miles ☐ More than 2 miles ☐

2.10 Are there any **sheep** farms within 3 miles of the farm? YES ☐ NO ☐ Not Known ☐

If YES, enter the number of farms (if known) ☐

Is the nearest farm: Adjacent ☐ Less than 1 mile ☐ 1-2 miles ☐ More than 2 miles ☐

2.11 Is there a **sewage plant** within 3 miles of the farm? YES ☐ NO ☐ Not Known ☐

If YES, is it: Adjacent ☐ Less than 1 mile ☐ 1-2 miles ☐ More than 2 miles ☐

2.12 Is there a **landfill site** within 3 miles of the farm? YES ☐ NO ☐ Not Known ☐

If YES, is it: Adjacent ☐ Less than 1 mile ☐ 1-2 miles ☐ More than 2 miles ☐

2.13 Is there a **hospital** within 3 miles of the farm? YES ☐ NO ☐ Not Known ☐

If YES, is it: Adjacent ☐ Less than 1 mile ☐ 1-2 miles ☐ More than 2 miles ☐

2.14 Is there a **pharmaceutical or chemical plant** within 3 miles of the farm? YES ☐ NO ☐ Not Known ☐

If YES, is it: Adjacent ☐ Less than 1 mile ☐ 1-2 miles ☐ More than 2 miles ☐

2.15 Is there an **abattoir** within 3 miles of the farm? YES ☐ NO ☐ Not Known ☐

If YES, is it: Adjacent ☐ Less than 1 mile ☐ 1-2 miles ☐ More than 2 miles ☐

2.16 Has any animal waste or sewage been **spread** on land adjacent to your pig unit in the past 12 months? YES ☐ NO ☐ Not Known ☐

If YES, was it:

(please tick all that apply)

Cattle ☐ Pig ☐ Poultry ☐ Human ☐

Other *(specify)* _____ ☐

2.17 Has any animal waste been **stored** on land adjacent to your pig unit in the past 12 months? YES ☐ NO ☐ Not Known ☐

If YES, was it:

(please tick all that apply)

Cattle ☐ Pig ☐ Poultry ☐ Human ☐

Other *(specify)* _____ ☐

2.18 Are pigs **only** loaded **and** unloaded at the perimeter of the site?

Loaded: YES ☐ NO ☐

Unloaded: YES ☐ NO ☐

2.19 Are feed lorries **only** unloaded at the perimeter of the site? YES ☐ NO ☐

2.20 What is the source of **drinking** water for the pigs? Mains ☐ Borehole ☐ Other *(specify)* _____ ☐

2.21 Is your pig unit: *(tick one box only)*

a) conventional? ☐

b) organic? ☐

c) in conversion to organic status? ☐

d) status not known ☐

SECTION 3: HYGIENE

3.1 Is any equipment (e.g. tractor) shared between the pig unit and other farm enterprises? YES ☐ NO ☐ Not Known ☐

If YES, then please list the equipment and the other enterprises that share it below:

Equipment	Enterprise	Is this enterprise under the same ownership?
e.g. Tractor	*arable*	YES ☑ NO ☐
		YES ☐ NO ☐
		YES ☐ NO ☐
		YES ☐ NO ☐
		YES ☐ NO ☐

3.2 Please list all disinfectants that are currently used (e.g. for cleaning, bootdips etc) on your pig unit and note any dilution rate used?

Disinfectant (*Name and Manufacturer)*	Dilution Rates (*e.g. 1 part disinfectant : 160 parts water = 1:160*)	
1.		Not Known ☐
2.		Not Known ☐
3.		Not Known ☐
4.		Not Known ☐
5.		Not Known ☐
6.		Not Known ☐

Please use the sheets at the end for any further responses

3.3 Are disinfectant wheeldips or sprays used? YES ☐ NO ☐

If YES, where they are used: *(please tick all that apply)*
At main entrance ☐ At all entrances ☐
Other *(specify)* _____ ☐

Which of the disinfectants in **Q3.2** is used? *(only enter the number)* ☐

How often is the disinfectant in the wheeldips topped up?
Daily ☐ 2-6 times/week ☐ Weekly ☐
1-3 times/month ☐ Less than once/month ☐ NK ☐

How often is the disinfectant in the wheeldips changed?
Daily ☐ 2-6 times/week ☐ Weekly ☐
1-3 times/month ☐ Less than once/month ☐ NK ☐

3.4 Are disinfectant bootdips or sprays available? YES ☐ NO ☐

If YES, where are they used:
At each building ☐ At each pig building ☐
At some buildings ☐
Other *(specify)* _____ ☐

Which of the disinfectants in **Q3.2** are used in the bootdips? *(only enter the number)* ☐

How often are the bootdips topped up?
Daily ☐ 2-6 times/week ☐ Weekly ☐
1-3 times/month ☐ Less than once/month ☐ NK ☐

How often are the bootdips emptied and refilled?
Daily ☐ 2-6 times/week ☐ Weekly ☐
1-3 times/month ☐ Less than once/month ☐ NK ☐

3.5 Is a boot brush present at the entrance to pig buildings?
Yes, all ☐ Yes, some ☐ No ☐ NK ☐

3.6 Do you have access to a pressure washer to clean pig buildings/equipment?
Yes, owned ☐ Yes, hired / shared ☐ No, not used ☐

If YES, do you use: Hot or cold water? Hot ☐ Cold ☐
Detergent? Yes ☐ No ☐

PTO

3.7 What dedicated hygiene facilities are provided for the pig unit? *(please tick all that apply)*

Wash Basin ☐ Toilet ☐ Hand Sanitiser/Bactericidal Soap ☐ Shower ☐ Hand Towel ☐

Warm Air Dryer ☐ Paper Towels ☐ Clean Bucket ☐ Soap ☐ Other *(specify)* _____ ☐

3.8 Are site dedicated boots and protective clothing provided for **and used** by staff and/or visitors to the pig unit?

	Overalls				Boots			
	Staff		Visitors		Staff		Visitors	
	Yes	No	Yes	No	Yes	No	Yes	No
Provided	☐	☐	☐	☐	☐	☐	☐	☐
Used	☐	☐	☐	☐	☐	☐	☐	☐

If YES to any of these: **how** are overalls washed? Machine ☐ Laundry Service ☐ Hand ☐ Other *(specify)* _____ ☐

how often are overalls washed? Every day ☐ Not every day but at least once/week ☐ Not every week but at least once/fortnight ☐ Not every fortnight but at least once/month ☐

Less than once/month ☐ Not known ☐ Other *(specify)* _____ ☐

3.9 Do other members of your family or friends ever enter the pig buildings (e.g. to find you, for a chat etc.) YES ☐ NO ☐

3.10 Are visitors required to take a shower on arrival on the farm? YES ☐ NO ☐

3.11 How many days must people be free from contact with other pigs before visiting the farm? *(if none, write "0")* _____ days

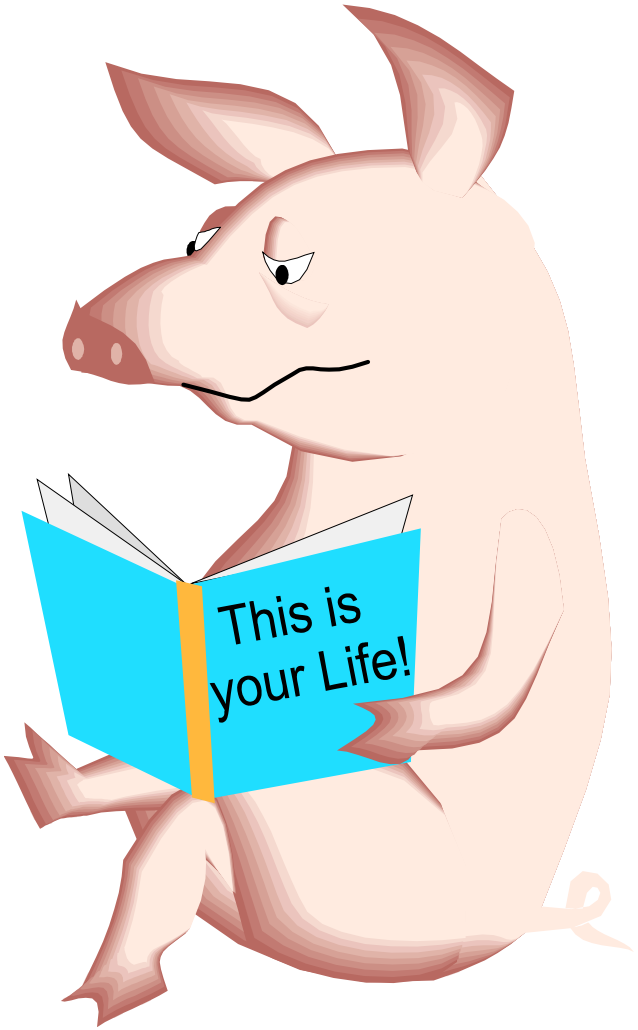
3.12 Is there a **written** biosecurity and /or hygiene plan for the farm? YES ☐ NO ☐ NK ☐

3.13 Do you take any actions on your farm **specifically against *Salmonella*?** YES ☐ NO ☐ NK ☐

If YES, please list these:

1. _____
2. _____
3. _____

Please use the sheets at the end for any further responses


This is
your Life!

SECTION 4: PIG MOVEMENTS AND TRANSPORT

4.1 Please complete the table below for all pigs that were **moved on to** the farm in the **past 12 months**. Write 0 (zero) in those boxes that do not apply to your farm. NB. There is a separate question for movements off the farm on the next page

- Class of pigs **delivered** (sucking piglets, weaners etc.)
- Approximate **total** number of pigs received of each class
- Approximate **total** number of deliveries of each class
- **Source** of most recent delivery (e.g. Bloggs Pedigree Pig Co)
- **Total** number of sources of each class of pig (e.g. if some pigs were from Bloggs and others from one other source enter "2")
- **Transport** used – i.e. your own transport, commercial haulier or suppliers transport. If more than one transport was used for any class of pig, then tick **all appropriate** boxes

EXAMPLE

Class of pig	Number received	Number of deliveries	Most recent source	Total number of sources	Transport used (tick)		
					Own	Haulier	Supplier
Sucking Piglets	0				☐	☐	☐
Weaner (3 – 10 weeks)	0				☐	☐	☐
Grower (11 – 14 weeks)	0				☐	☐	☐
Finisher (15 + weeks)	0				☐	☐	☐
Gilts	70	4	Bloggs Pedigree Pig Co.	2	☐	☐	☑
Boars	6	3	Bloggs Pedigree Pig Co.	1	☐	☐	☑
Other(specify)_____	0				☐	☐	☐
_____	0				☐	☐	☐

PIG MOVEMENTS ONTO THE FARM IN THE LAST 12 MONTHS

Class of pig	Number received	Number of deliveries	Most recent source	Total number of sources	Transport used (tick)		
					Own	Haulier	Supplier
Sucking Piglets					☐	☐	☐
Weaners (3 – 10 weeks)*					☐	☐	☐
Growers (11 – 14 weeks)*					☐	☐	☐
Finishers (15 + weeks)*					☐	☐	☐
Gilts					☐	☐	☐
Boars					☐	☐	☐
Other(specify)_____					☐	☐	☐
_____					☐	☐	☐

** Or approximately 8-30kg for weaners, 30-50kg for growers and 50-80kg for finishers.*

4.2 Please complete the table below for all pigs that were **moved off** the farm in the **past 12 months**. Write 0 (zero) in those boxes that do not apply to your farm.

- Classes of pigs **moved off** (sucking piglets, weaners etc.)
- Approximate **total** number of pigs moved of each class
- Approximate **total** number of despatches of each class
- **Destination** of most recent batch (e.g. PiggiPackers Abattoir)
- **Total** number of destinations of each class of pig (e.g. if all pigs went to PiggiPackers, enter "**1**")
- **Transport** used – i.e. your own transport, commercial haulier or purchasers transport. If more than one transport was used for any class of pig, then tick **all appropriate** boxes

EXAMPLE

Class of pig	Number moved off	Number of batches	Destination of most recent batch	Total number of destinations	Transport used (tick)		
					Own	Haulier	Purchaser
Sucking Piglets	0				☐	☐	☐
Weaner (3 – 10 weeks)	0				☐	☐	☐
Grower (11 – 14 weeks)	0				☐	☐	☐
Finisher (15 + weeks)	4000	50	PiggiPackers Abattoir	1	☐	☐	☑
Casualty Pigs (any class)	0				☐	☐	☐
Cull sows	0				☐	☐	☐
Cull boars	0				☐	☐	☐
Other(specify)_____	0				☐	☐	☐
_____	0				☐	☐	☐

PIG MOVEMENTS OFF THE FARM IN THE LAST 12 MONTHS

Class of pig	Number moved off	Number of batches	Destination of most recent batch	Total number of destinations	Transport used (tick)		
					Own	Haulier	Purchaser
Sucking Piglets					☐	☐	☐
Weaners (3 – 10 weeks)*					☐	☐	☐
Growers (11 – 14 weeks)*					☐	☐	☐
Finishers (15 + weeks)*					☐	☐	☐
Casualty Pigs (any class)					☐	☐	☐
Cull sows					☐	☐	☐
Cull boars					☐	☐	☐
Other(specify)_____					☐	☐	☐
_____					☐	☐	☐

** Or approximately 8-30kg for weaners, 30-50kg for growers and 50-80kg for finishers.*

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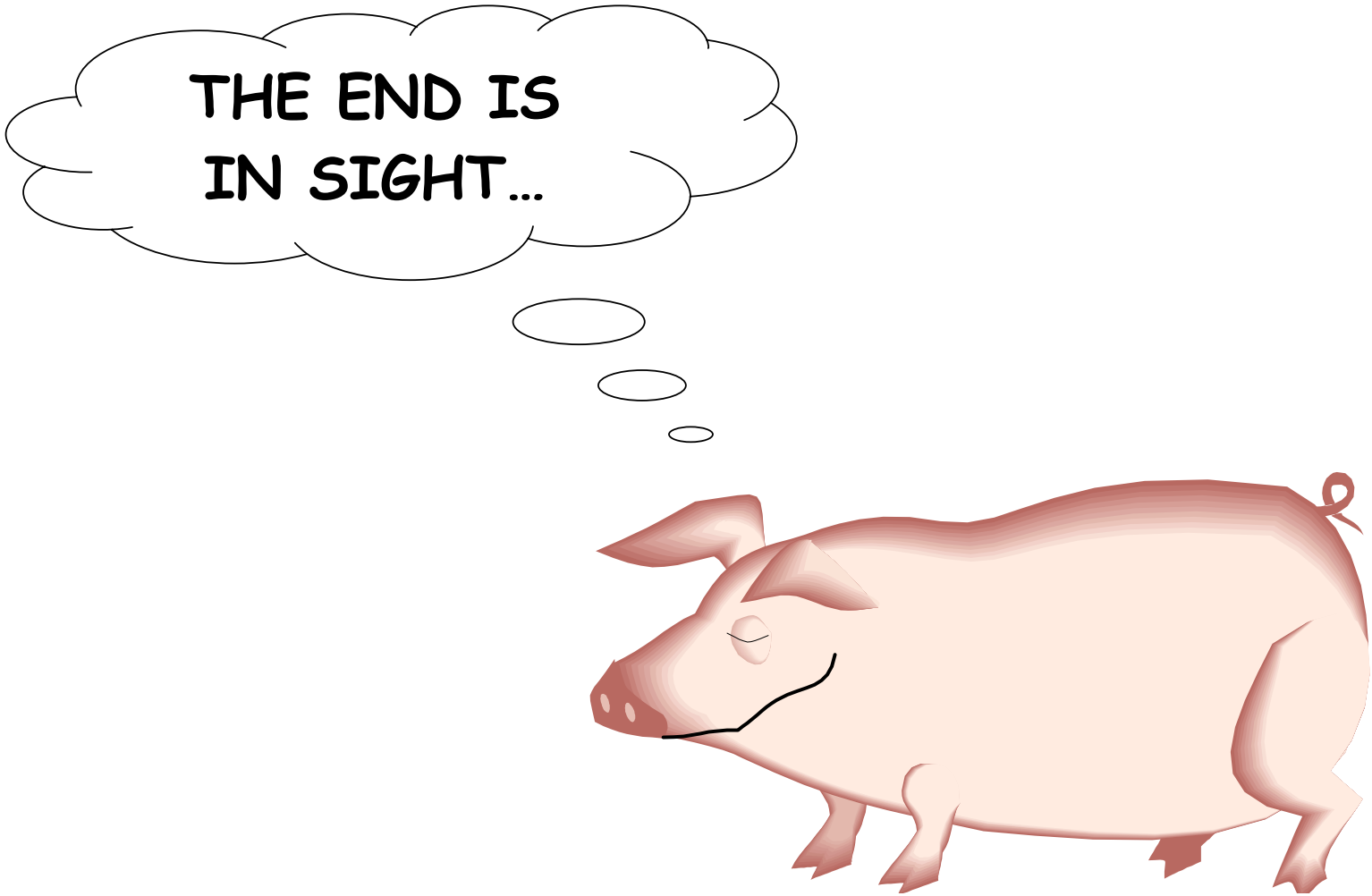
4.3 PIG MOVEMENTS WITHIN THE FARM

1) How is each class of pig moved from place to place on the farm?	On foot	Barrow or handcart	Trailer	Bucket or crate mounted on a tractor	Other *(specify)* _____	Other *(specify)* _____
Sucking Piglets	☐	☐	☐	☐	☐	☐
Weaners (3 – 10 weeks)*	☐	☐	☐	☐	☐	☐
Growers (11 – 14 weeks)*	☐	☐	☐	☐	☐	☐
Finishers (15 + weeks)*	☐	☐	☐	☐	☐	☐
Boars	☐	☐	☐	☐	☐	☐
Sows / Gilts	☐	☐	☐	☐	☐	☐
Other(specify)_____	☐	☐	☐	☐	☐	☐
_____	☐	☐	☐	☐	☐	☐
2) Is any of the equipment that is used for moving pigs also used for the following purposes?						
Moving feed		☐	☐	☐	☐	☐
Moving bedding		☐	☐	☐	☐	☐
Moving waste		☐	☐	☐	☐	☐
Other(specify)_____		☐	☐	☐	☐	☐
_____		☐	☐	☐	☐	☐

** Or approximately 8-30kg for weaners, 30-50kg for growers and 50-80kg for finishers.*

Please use the sheets at the end for any further responses


THE END IS
IN SIGHT…

SECTION 5: OTHER ANIMALS

5.1 During the past **7 days**, how many live rats have you seen on your farm? ☐

5.2 Which of the following statements best describes the situation with respect to **rats** on your farm **today**? *(tick only one)*

a) Major problem (frequently seen, causing damage and not under control) ☐
b) Minor problem (occasionally seen, causing some nuisance, control has some effect) ☐
c) Under control (seldom seen, minimal nuisance or damage, control is effective) ☐
d) No problem (not seen, no evidence of damage, control completely effective or not required) ☐
e) Not known ☐

5.3 Do you consider that **rats** have been a major problem on your farm at any time in the **past 12 months?** YES ☐ NO ☐ Not Known ☐

5.4 Which of the following statements best describes the situation with respect to **mice** on your farm **today**? *(tick only one)*

a) Major problem (frequently seen, causing damage and not under control) ☐
b) Minor problem (occasionally seen, causing some nuisance, control has some effect) ☐
c) Under control (seldom seen, minimal nuisance or damage, control is effective) ☐
d) No problem (not seen, no evidence of damage, control completely effective or not required) ☐
e) Not known ☐

5.5 Do you consider that **mice** have been a major problem on your farm at any time in the **past 12 months?** YES ☐ NO ☐ Not Known ☐

5.6 Do you conduct your own rodent control programme? YES ☐ NO ☐ Not Known ☐

5.7 Are you currently using a specialist rodent contractor? YES ☐ NO ☐ Not Known ☐

If NO, have you used a specialist rodent contractor at **any time** in the **past 12 months**? YES ☐ NO ☐ Not Known ☐

If YES, how often does the contractor visit the farm?

a) Daily ☐
b) At least once / week ☐
c) Less than once / week but at least once / fortnight ☐
d) Less than once / fortnight but at least once / month ☐
e) Less than once / month ☐
f) Not known ☐

5.8 How many baiting points do you and/or the contractor use? ☐ Not known ☐

5.9 How often is the bait replaced?

a) Daily ☐
b) At least once / week ☐
c) Less than once / week but at least once / fortnight ☐
d) Less than once / fortnight but at least once / month ☐
e) Less than once / month ☐
f) Not known ☐

5.10 How often is the bait removed by rodents?

a) Daily ☐
b) At least once / week ☐
c) Less than once / week but at least once / fortnight ☐
d) Less than once / fortnight but at least once / month ☐
e) Less than once / month ☐
f) Not known ☐

5.11 Please list any other means of rodent control used (e.g. traps, shooting, cats)

5.12 Please tick the boxes below which best describe the presence of wild birds on your farm (*tick all that apply*):

Bird Type	Numbers Seen					Seasons Seen				
	Large Numbers (100+ per day)	Moderate Numbers (20-99 per day)	Low Numbers (<20 per day)	None	Not Known	Winter	Spring	Summer	Autumn	Not Known
Starlings	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Gulls	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Crows, Rooks etc.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Pigeons, Doves etc.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Geese, Ducks etc.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other (specify) _____	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
_____	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
_____	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

5.13 During the **past 7 days**, have wild birds been in any of these areas?

Pig Buildings	YES ☐	NO ☐	Not Known ☐
Feed Stores	YES ☐	NO ☐	Not Known ☐
Bedding Stores	YES ☐	NO ☐	Not Known ☐

5.14 In the table below, please tick whether there have there been any other domestic animals, including pet or working dogs or cats, on the farm? Please tick both whether the species is present **today** and whether it was present during the **past 12 months.**

	Present in last 12 months	Present today
Poultry	☐	☐
Cattle	☐	☐
Horses	☐	☐
Sheep	☐	☐
Dog	☐	☐
Cat	☐	☐
Other (*specify)*_____	☐	☐
_____	☐	☐

5.15 During the **past 7 days,** have dogs or cats been in any of these areas?

Pig Buildings	YES ☐	NO ☐	Not Known ☐
Feed Stores	YES ☐	NO ☐	Not Known ☐
Bedding Stores	YES ☐	NO ☐	Not Known ☐

SECTION 6: FEED STORAGE AND HANDLING

6.1i How many bulk bins are there on your farm? If None, write '0' ☐

ii How many of these bins are open topped, sealed or covered? If None, write '0'

Open ☐ Sealed ☐ Covered ☐ Not Known ☐

6.2 How often do you clean out the bulk bins?

Every batch ☐ Every other batch ☐ Less frequently ☐ Never ☐

Other *(specify frequency)*_____ ☐ Not Applicable ☐

6.3 How do you clean bins? *(Tick all that apply)*

Dry clean *(e.g. hammer & brush)* ☐ Wash ☐ Scrub ☐ Fumigate ☐ Disinfect ☐

Other *(please specify)*_____ ☐ Not Applicable ☐

6.4 Is any bulk feed stored on the floor? YES ☐ NO ☐

If YES, is it in a building protected from the weather and animals? YES ☐ NO ☐

6.5 Do you store any bulk feed in trailers? YES ☐ NO ☐

If YES, are the trailers covered? YES ☐ NO ☐

6.6 Do you purchase any bagged feed for your pigs? YES ☐ NO ☐

If YES, indicate where bags are stored:

a) In a dedicated, closed building ☐

b) In a closed store within pig housing ☐

c) In pig accommodation but not in separate store ☐

d) In open sheds ☐

e) Other (please specify) _____ ☐

6.7 What equipment do you use for **handling feed** on the farm? For each item, please state whether it is used **exclusively** for handling feed and list any other uses, if applicable.

Equipment	Exclusively used for feed?		If NO, then list other uses:
Shovel	YES ☐	NO ☐	
Barrow	YES ☐	NO ☐	
Trailer	YES ☐	NO ☐	
Front loader	YES ☐	NO ☐	
Other equipment *(specify)*_____	YES ☐	NO ☐	
_____	YES ☐	NO ☐	
_____	YES ☐	NO ☐	
_____	YES ☐	NO ☐	

Please use the sheets at the end for any further responses

SECTION 7: PERFORMANCE INDICATORS

7.1 Please state the approximate number of pigs in each class on your unit today, and the number of pigs that have died during the past 4 weeks.

Class of Pig	Approximate number of pigs on the farm today	Number of pigs that died in the past 4 weeks
Sucking Piglets		
Weaners (3 – 10 weeks)*		
Growers (11 – 14 weeks)*		
Finishers (15 + weeks)*		
Boars		
Sows / Gilts		
Other(s) _____		
***(specify)* _____**		

** Or approximately 8-30kg for weaners, 30-50kg for growers and 50-80kg for finishers.*

7.2 Do you use a commercial pig recording scheme? YES ☐ NO ☐

If YES, then please write the name here: _____

and please give the date of the last report: / /

If YES, please provide either a copy of your most recent report or the original (which we will send back by return of post) and we will use that data to answer question **7.3**. Alternatively, please fill in the following question yourself.

7.3 Please complete the following table for the latest performance indicators for the farm

(Enter NOT RECORDED if performance indicator is not recorded)

Performance Indicators		
Pre-weaning mortality (%)		
Post-weaning mortality (%)		
Sow mortality (%)		
Daily Live Weight Gain (g/day)		
Feed Conversion Rate (kg LWG per kg feed)		
Age at slaughter (weeks)		
Weight out (kg) *Give either dead or live weight*	**Dead**	
	Live	

SECTION 8: SICK PENS and FALLEN STOCK

8.1 Do you have any dedicated pens for the exclusive use of animals that are ill, injured or otherwise in poor health, or do you use improvised arrangements when necessary?

Dedicated Pens ☐ Improvised Pens ☐ Not Known ☐ Not Applicable ☐

8.2 How many pigs are there in the sick pens today? ☐

8.3 Sick Pens:

a) Are sick pens in a separate building(s)?		YES ☐	NO ☐
b) Do sick pens drain into other areas holding pigs?		YES ☐	NO ☐
c) Do other areas holding pigs drain into sick pens?		YES ☐	NO ☐
d) Are sick pens:	fully slatted?	YES ☐	NO ☐
	partially slatted?	YES ☐	NO ☐
	solid floored?	YES ☐	NO ☐
e) Are there separate sick pens for different age groups?		YES ☐	NO ☐
f) Are there separate sick pens for each house?		YES ☐	NO ☐
g) Do you use dedicated cleaning out equipment for sick pens?		YES ☐	NO ☐
h) Are sick pens cleaned out and disinfected between batches of pigs?		YES ☐	NO ☐
i) Are sick pens continuously occupied?		YES ☐	NO ☐
j) Are pigs from sick pens mixed with other pigs on recovery?		YES ☐	NO ☐

8.4 How are dead pigs disposed of?

ON SITE: Burial ☐ Muck Heap ☐ Death Pit *(concrete lined fermentation chamber)* ☐ Incineration ☐

Other *(specify)* _____ ☐

OFF SITE: Name of Approved Contractor _____

Other disposal technique *(please specify)* _____

If BURIAL, how soon after death is a pig generally buried? <12 hours ☐ 12-24 hours ☐ 25-48 hours ☐ >48 hours ☐

What depth of earth covers the carcass? ☐ Inches/centimetres *(delete as applicable)*

SECTION 9: ADVICE

9.1 Who do you trust most to give you advice about *Salmonella* and pigs?
Please **rank** them from: 1 (most trusted) to
8 (least trusted)

	Rank
a) BBC Radio (e.g. Farming Today)	
b) Agricultural Press (e.g. Farmers Weekly)	
c) MLC (Meat & Livestock Commision)	
d) ADAS	
e) Your vet	
f) Other pig farmers	
g) Research Scientists (e.g. at universities)	
h) Defra	

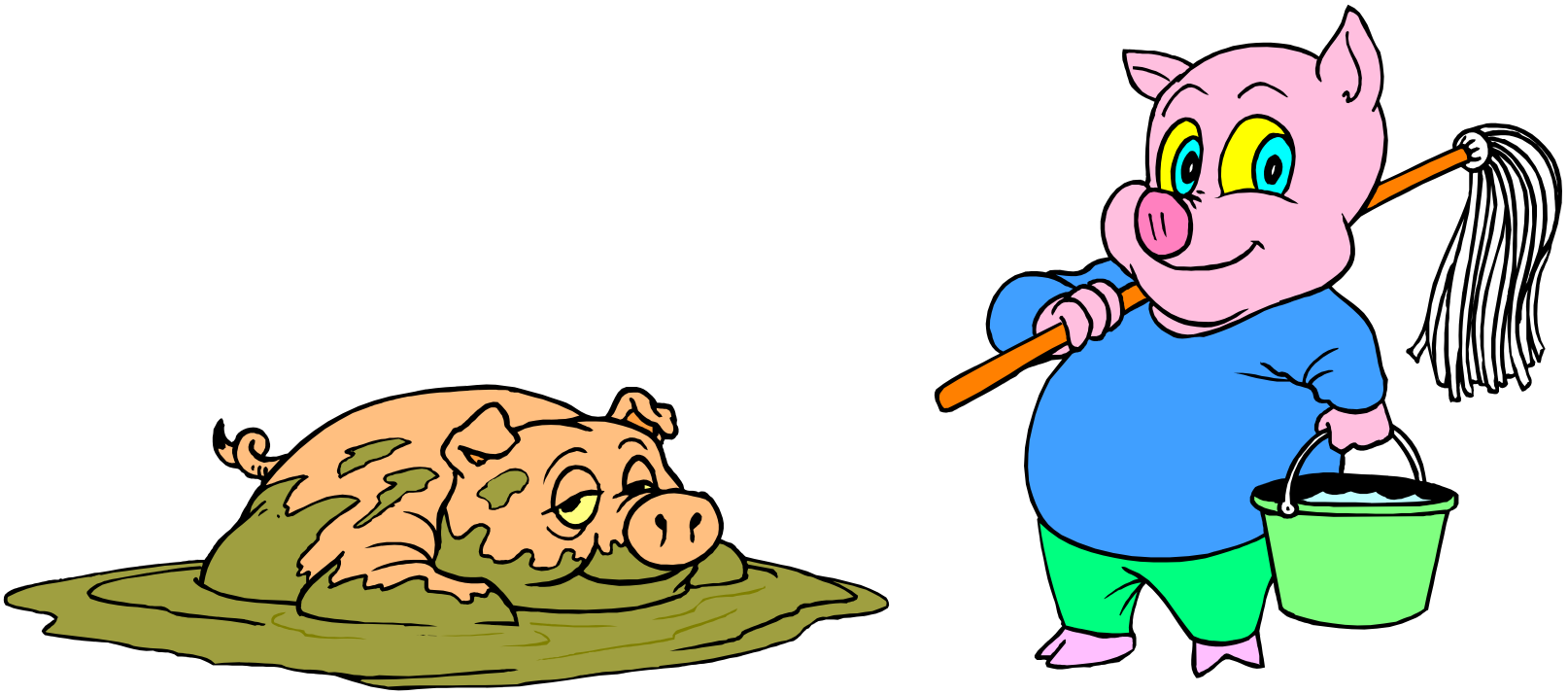
9.2 Please list any other sources of advice on *Salmonella* and pigs which you use

Thank you for taking the time to complete this questionnaire. Your answers will help us to improve our knowledge about *Salmonella* and pigs. We would value any additional opinions or comments that you would like to offer. Please write your remarks here.

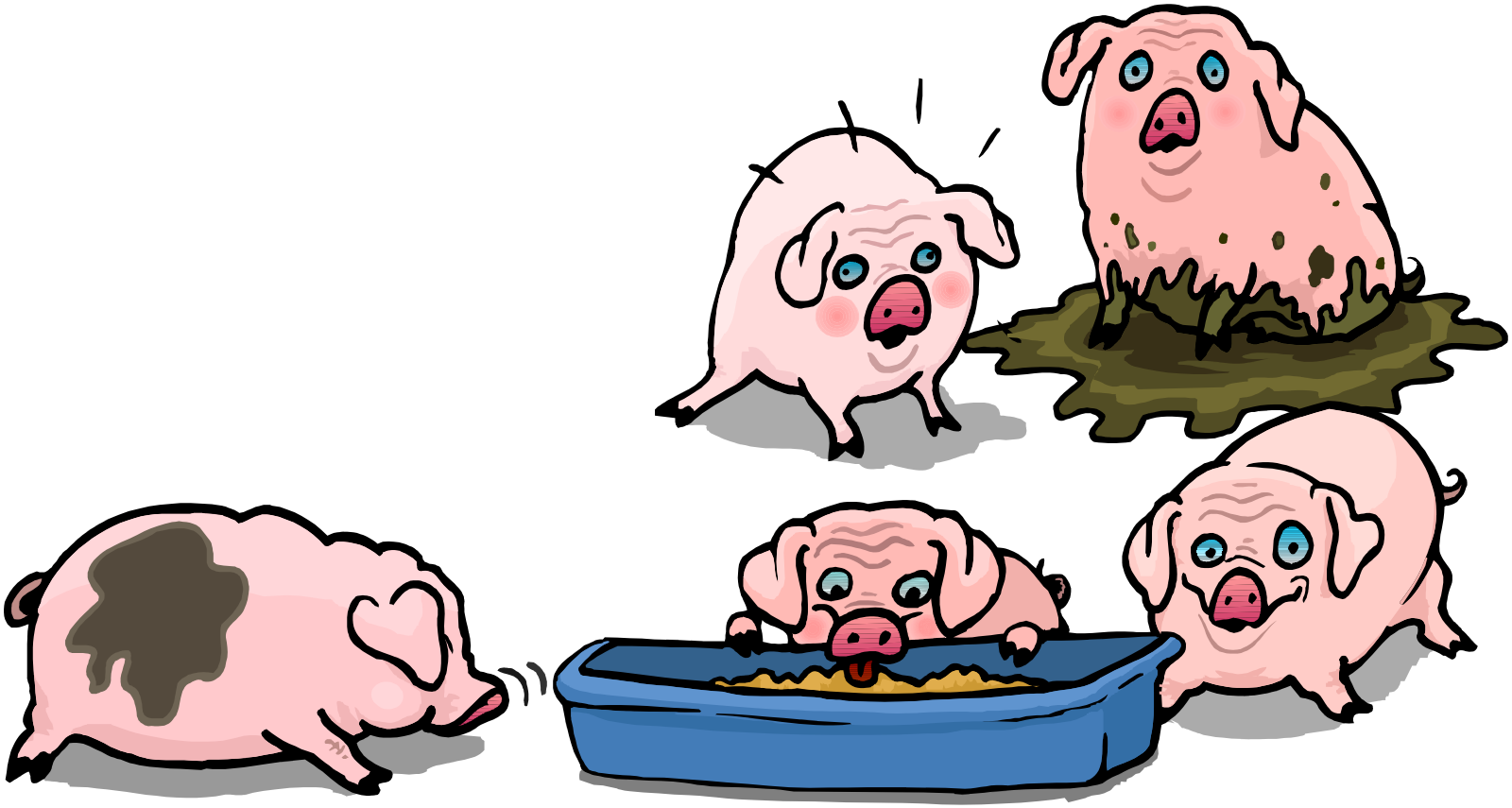
THANK YOU FOR COMPLETING THIS QUESTIONNAIRE!

Veterinary Laboratories Agency

Please read through the questionnaire to check for any errors, and to ensure that all questions have been answered.
Once complete, please return the questionnaire as soon as possible in the reply paid envelopes provided.
Please <u>do not</u> send any samples with the questionnaire.



Pig Salmonella - Feed Questions



Farm ID:

CPH Number: / /

Farm Owner

Name of Farm Manager/Foreman
(If NOT the owner)

Farm Address
(including County and Postcode)

If your pig enterprise operates from more than one site, then you should use the main postal address here

County:

Postcode:

Q1. Do you use a wet feeding system for any pigs on your farm?

If **NO**, go to question 2 on the next page

If **YES**: i) Do any pigs receive a fermented liquid feed? YES ☐ NO ☐

If Yes, what pH do you aim for? pH ____ DON'T KNOW ☐

and what methods do you use to achieve this pH?

- Heating liquids ☐
- Inoculations ☐
- Other (*specify*) …….. ☐
- Don't know ☐

ii) What weight range of pigs receive a fermented liquid feed? From ____ kg To ____ kg

iii) What weight range of pigs receive other wet feeds? From ____ kg To ____ kg
(use the back page if more space is needed)

iv) How often is the system completely emptied and cleaned?

	EMPTIED	CLEANED
every day	☐	☐
1-6 times per week	☐	☐
1-3 times per month	☐	☐
once every 2-3 months	☐	☐
once every 4-6 months	☐	☐
once every 7-12 months	☐	☐
less than once every 12 months	☐	☐
never	☐	☐

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v) How do you clean your wet feeding system?

Clean water flu	
Organic acid wash	☐
Disinfectant wash	☐
Other (*specify)* ……..…..	☐
Don't know	☐

Q2. Are any organic acid products administered to pigs in feed or water? YES ☐ NO ☐

If YES: i) Please specify which product(s) are used ……

……

ii) What weight range of pigs receives these products? From ☐ kg To ☐ kg

Q3. i) Does each building have a separate header tank for drinking water? YES ☐ NO ☐

ii) Are all header tanks covered? YES ☐ NO ☐

iii) How often is the drinking water system emptied and cleaned?

	EMPTIED	CLEANED
every day	☐	☐
1-6 times per week	☐	☐
1-3 times per month	☐	☐
once every 2-3 months	☐	☐
once every 4-6 months	☐	☐
once every 7-12 months	☐	☐
less than once every 12 months	☐	☐
never	☐	☐

iv) How do you clean your drinking water system?

Clean water ☐
Organic acid wash ☐
Disinfectant wash ☐
Other (*specify*) ……..….. ☐
Don't know ☐

v) Please list any <u>other</u> products which you add to the drinking water:

……
……
……

Q4. Do you produce any home mill & mix rations for pigs on your farm? YES ☐ NO ☐

If **NO**: skip to question 8 on page 8

If **YES**: i) What is the screen size used for milling your feed? …….. mm DON'T KNOW ☐

ii) Do you use any ingredients grown on your own farm? YES ☐ NO ☐

If YES: Please indicate which

Barley ☐
Wheat ☐
Peas ☐
Other …… ☐

Are the cereals produced under a Quality Assurance Scheme? YES ☐ NO ☐

Please give the name of the scheme ……

iii) Do you purchase any ingredients directly from the farm where they are grown? YES ☐ NO ☐

If YES: Please indicate which

Barley ☐
Wheat ☐
Peas ☐
Other …… ☐

Are the cereals produced under a Quality Assurance Scheme? YES ☐ NO ☐ DON'T KNOW ☐

Please give the name of the scheme …….. DON'T KNOW ☐

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iv) Are cereals that are home grown or brought directly to the farm treated with organic acids? YES ☐ NO ☐

If Yes, what type of product(s) do you use? ……

……

v) Do you purchase any ingredients from a feed merchant? YES ☐ NO ☐

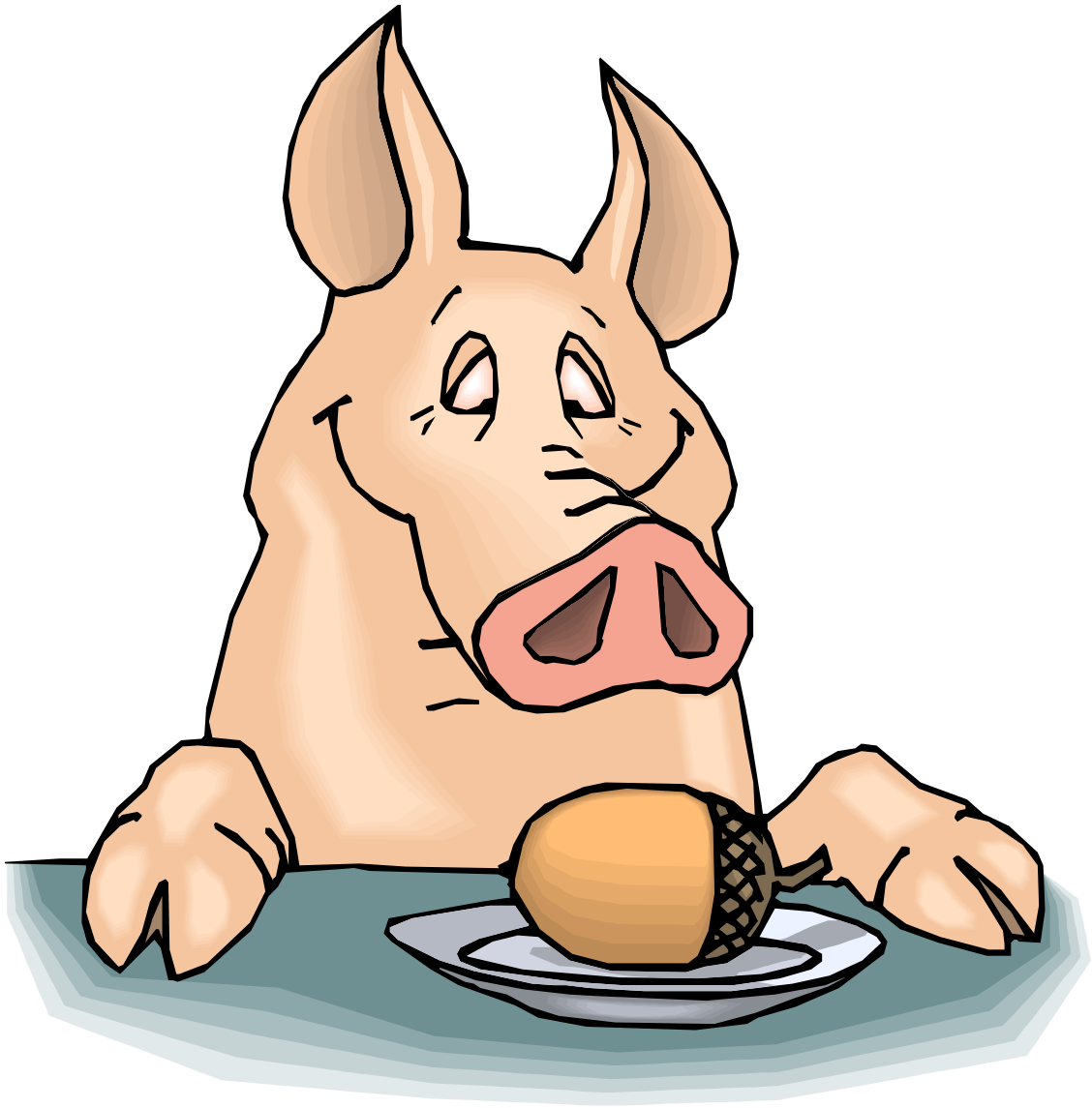
If YES: Please indicate which

Barley	☐
Wheat	☐
Extracted soya	☐
Full fat soya	☐
Vitamin/Mineral Mix	☐
Fishmeal	☐
Extracted rapeseed meal	☐
Crushed whole rape	☐
Peas	☐
Beans	☐
Purchased Protein Concentrates	☐
Other (specify) ……	☐

Table 1: Please TICK the appropriate boxes to show the ingredients used for home mill and mix d during the past 4 weeks

Feed Ingredient	Used? YES	Used? NO	Ingredient used in rations for: Boars	Pregnant sows	Lactating sows	Weaners (approx 8-30kg)*	Growers (approx 30-50kg)*	Finishers (approx 50-80kg)*	Other (*please specify*)
Barley	☐	☐	☐	☐	☐	☐	☐	☐	.....
Wheat	☐	☐	☐	☐	☐	☐	☐	☐	.....
Extracted soya	☐	☐	☐	☐	☐	☐	☐	☐	.....
Full fat soya	☐	☐	☐	☐	☐	☐	☐	☐	.....
Vitamin/ Mineral premix(es)	☐	☐	☐	☐	☐	☐	☐	☐	.....
Fishmeal	☐	☐	☐	☐	☐	☐	☐	☐	.....
Extracted rapeseed meal	☐	☐	☐	☐	☐	☐	☐	☐	.....
Crushed whole rape	☐	☐	☐	☐	☐	☐	☐	☐	.....
Peas	☐	☐	☐	☐	☐	☐	☐	☐	.....
Beans	☐	☐	☐	☐	☐	☐	☐	☐	.....
Biscuit waste	☐	☐	☐	☐	☐	☐	☐	☐	.....
Cereal waste	☐	☐	☐	☐	☐	☐	☐	☐	.....
Purchased Protein concentrates	☐	☐	☐	☐	☐	☐	☐	☐	.....
Dry milk products	☐	☐	☐	☐	☐	☐	☐	☐	.....
Other non-milk liquid co-products	☐	☐	☐	☐	☐	☐	☐	☐	.....
Wet milk co-products	☐	☐	☐	☐	☐	☐	☐	☐	.....
Other *(please list below)*									
.....	☐	☐	☐	☐	☐	☐	☐	☐	.....
.....	☐	☐	☐	☐	☐	☐	☐	☐	.....
.....	☐	☐	☐	☐	☐	☐	☐	☐	.....

* Or approximately 3-10 weeks for weaners, 11-14 weeks for growers, and 15+ weeks for finishers



Q5. If you use non-milk liquid co-products, please LIST all that you have used in the last 4 weeks:

.....

.....

.....

.....

.....

Q6. Do you use a probiotic or other feed additive in any of your home mill and mix feed(s)? YES ☐ NO ☐

If YES: what type do you use?

.....

.....

Q7. Do you hold a prescription for using an antibiotic or other medicine in your home mill & mix feed? YES ☐ NO ☐

If YES: please give the name of the medicine(s)

.....

.....

IF YOU HAVE SKIPPED THE HOME MILL & MIX QUESTIONS, PLEASE START AGAIN FROM HERE:

Q8. Have you used any purchased compound feeds for your pigs in the past 4 weeks? YES ☐ NO ☐

If YES: please complete Table 2 over the page

PTO

APPENDIX CS6

Name of Feed	Company	Mill *(if known)*	Delivered in	Fed	Description
e.g. Rearer 1	PiggiFood	SouthPork	Bulk ☐ Bag ☑	Wet ☐ Dry ☑	Nut/Roll ☐ Pellet ☑ Meal ☐ Other ....☐
			Bulk ☐ Bag ☐	Wet ☐ Dry ☐	Nut/Roll ☐ Pellet ☐ Meal ☐ Other ....☐
			Bulk ☐ Bag ☐	Wet ☐ Dry ☐	Nut/Roll ☐ Pellet ☐ Meal ☐ Other ....☐
			Bulk ☐ Bag ☐	Wet ☐ Dry ☐	Nut/Roll ☐ Pellet ☐ Meal ☐ Other ....☐
			Bulk ☐ Bag ☐	Wet ☐ Dry ☐	Nut/Roll ☐ Pellet ☐ Meal ☐ Other ....☐
			Bulk ☐ Bag ☐	Wet ☐ Dry ☐	Nut/Roll ☐ Pellet ☐ Meal ☐ Other ....☐
			Bulk ☐ Bag ☐	Wet ☐ Dry ☐	Nut/Roll ☐ Pellet ☐ Meal ☐ Other ....☐

Table 2: Please give details of any purchased compound feeds used in the past 4 weeks.

Method	Growth Promoter/ other feed additives	Prescribed r	from	to
Adlib ☑ Restricted ☐	Copper ☑ Flavomycin ☐ Maxus ☐ Salinomycin ☑ Probiotics ....☐ Other ....☐ Don't know ☐	Yes ☐ No ☑ Name(s)	20 kg	50 kg
Adlib ☐ Restricted ☐	Copper ☐ Flavomycin ☐ Maxus ☐ Salinomycin ☐ Probiotics ....☐ Other ....☐ Don't know ☐	Yes ☐ No ☐ Name(s)		
Adlib ☐ Restricted ☐	Copper ☐ Flavomycin ☐ Maxus ☐ Salinomycin ☐ Probiotics ....☐ Other ....☐ Don't know ☐	Yes ☐ No ☐ Name(s)		
Adlib ☐ Restricted ☐	Copper ☐ Flavomycin ☐ Maxus ☐ Salinomycin ☐ Probiotics ....☐ Other ....☐ Don't know ☐	Yes ☐ No ☐ Name(s)		
Adlib ☐ Restricted ☐	Copper ☐ Flavomycin ☐ Maxus ☐ Salinomycin ☐ Probiotics ....☐ Other ....☐ Don't know ☐	Yes ☐ No ☐ Name(s)		
Adlib ☐ Restricted ☐	Copper ☐ Flavomycin ☐ Maxus ☐ Salinomycin ☐ Probiotics ....☐ Other ....☐ Don't know ☐	Yes ☐ No ☐ Name(s)		
Adlib ☐ Restricted ☐	Copper ☐ Flavomycin ☐ Maxus ☐ Salinomycin ☐ Probiotics ....☐ Other ....☐ Don't know ☐	Yes ☐ No ☐ Name(s)		

↑ THIS WAY UP ↑ *(NB. space for more answers over ☞)* PTO

Name of Feed	Company	Mill *(if known)*	Delivered in	Fed	Description
			Bulk ☐ Bag ☐	Wet ☐ Dry ☐	Nut/Roll ☐ Pellet ☐ Meal ☐ Other ....☐
			Bulk ☐ Bag ☐	Wet ☐ Dry ☐	Nut/Roll ☐ Pellet ☐ Meal ☐ Other ....☐
			Bulk ☐ Bag ☐	Wet ☐ Dry ☐	Nut/Roll ☐ Pellet ☐ Meal ☐ Other ....☐
			Bulk ☐ Bag ☐	Wet ☐ Dry ☐	Nut/Roll ☐ Pellet ☐ Meal ☐ Other ....☐
			Bulk ☐ Bag ☐	Wet ☐ Dry ☐	Nut/Roll ☐ Pellet ☐ Meal ☐ Other ....☐
			Bulk ☐ Bag ☐	Wet ☐ Dry ☐	Nut/Roll ☐ Pellet ☐ Meal ☐ Other ....☐
			Bulk ☐ Bag ☐	Wet ☐ Dry ☐	Nut/Roll ☐ Pellet ☐ Meal ☐ Other ....☐

Table 2 *(continued)*:

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APPENDIX CS6

Method	Growth Promoter/ other feed additives	Prescribed	from	to
Adlib ☐ Restricted ☐	Copper ☐ Flavomycin ☐ Maxus ☐ Salinomycin ☐ Probiotics ………………………☐ Other ………………………………☐ Don't know ☐	Yes ☐ No ☐ Name(s) …………………………… ……………………………		
Adlib ☐ Restricted ☐	Copper ☐ Flavomycin ☐ Maxus ☐ Salinomycin ☐ Probiotics ………………………☐ Other ………………………………☐ Don't know ☐	Yes ☐ No ☐ Name(s) …………………………… ……………………………		
Adlib ☐ Restricted ☐	Copper ☐ Flavomycin ☐ Maxus ☐ Salinomycin ☐ Probiotics ………………………☐ Other ………………………………☐ Don't know ☐	Yes ☐ No ☐ Name(s) …………………………… ……………………………		
Adlib ☐ Restricted ☐	Copper ☐ Flavomycin ☐ Maxus ☐ Salinomycin ☐ Probiotics ………………………☐ Other ………………………………☐ Don't know ☐	Yes ☐ No ☐ Name(s) …………………………… ……………………………		
Adlib ☐ Restricted ☐	Copper ☐ Flavomycin ☐ Maxus ☐ Salinomycin ☐ Probiotics ………………………☐ Other ………………………………☐ Don't know ☐	Yes ☐ No ☐ Name(s) …………………………… ……………………………		
Adlib ☐ Restricted ☐	Copper ☐ Flavomycin ☐ Maxus ☐ Salinomycin ☐ Probiotics ………………………☐ Other ………………………………☐ Don't know ☐	Yes ☐ No ☐ Name(s) …………………………… ……………………………		
Adlib ☐ Restricted ☐	Copper ☐ Flavomycin ☐ Maxus ☐ Salinomycin ☐ Probiotics ………………………☐ Other ………………………………☐ Don't know ☐	Yes ☐ No ☐ Name(s) …………………………… ……………………………		

↑ THIS WAY UP ↑

PTO

FARMER NOTES: This page is for any comments you may wish

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE!

Veterinary Laboratories Agency

Please read through the questionnaire to check for any errors and to ensure that all questions have been answered. Once complete, please return the questionnaire as soon as possible in the reply paid envelopes provided. Please do not send the questionnaire in the same envelope as any samples.

If you have any questions, please get in touch with Alasdair Cook or Sandy Miller at VLA Weybridge

Alasdair Cook ☎ **01932 357977;** 💻 **a.j.cook@vla.defra.gsi.gov.uk**

Sandy Miller ☎ **01932 357623;** 💻 **a.miller@vla.defra.gsi.gov.uk**

Farm ID: _____

OZ0316: PIG SALMONELLA – VET QUESTIONNAIRE

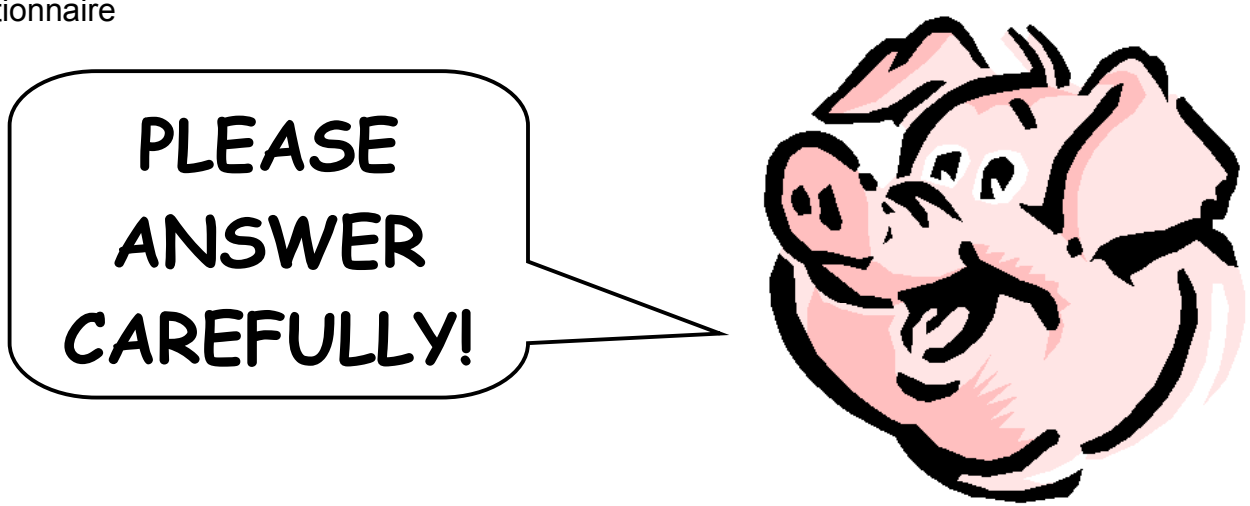
Please read the following notes before you answer the questions:

- Most questions can be answered by ticking a box ☑ or writing down a number
- Where a question relates to past events, this period is measured from the date on which you complete the questionnaire
  e.g. 'In the last 12 months' refers to 12 months from today
- There is only ONE answer for most questions, unless you are asked to tick every applicable box
- Please write any comments on the 'notes page' provided at the back
- If you have any questions, please get in touch with Alasdair Cook or Sandy Miller at VLA Weybridge

Alasdair Cook ☎ 01932 357977; 💻 a.j.cook@vla.defra.gsi.gov.uk

Sandy Miller ☎ 01932 357623; 💻 a.miller@vla.defra.gsi.gov.uk

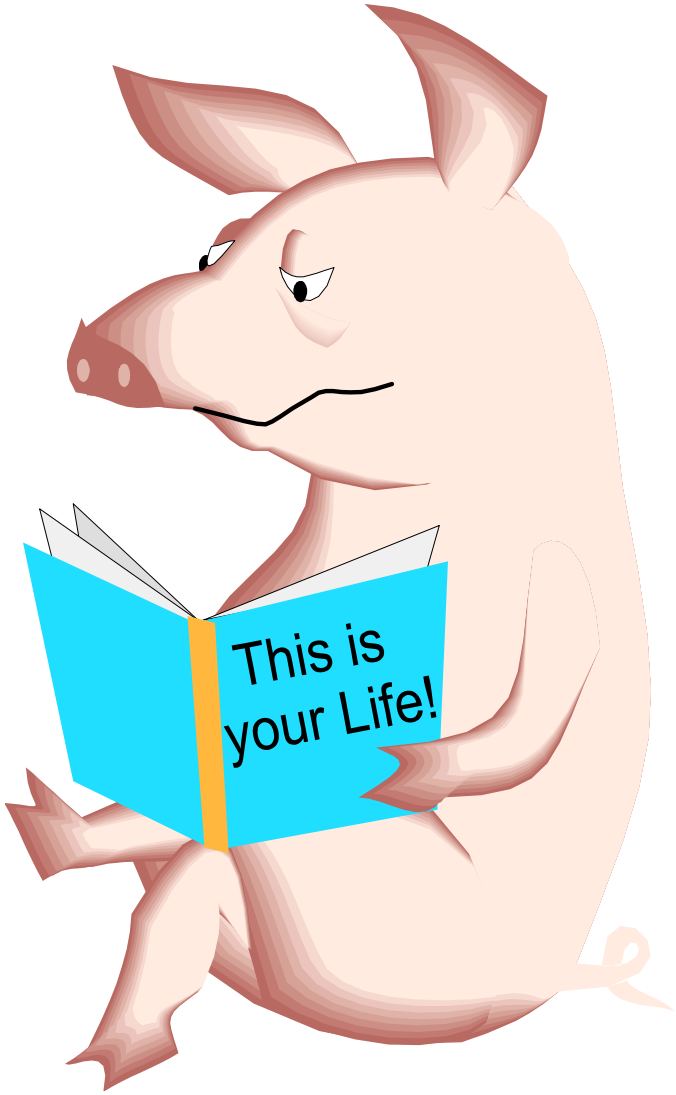
- Please look through your questionnaire to check for any missed questions, and return it in the reply-paid envelope provided.
- Please DO NOT send any samples with this questionnaire



Name of Veterinarian	
Name of Practice	
Practice Address *(including County and Postcode)*	**County:** **Postcode:**
Telephone Number	
Email Address ***(if available)***	

- **To the best of your knowledge, has your client used the services of any other veterinary practice (e.g. consultancy, new client) during the past 12 months?**

YES ☐ NO ☐ NOT KNOWN ☐


This is
your Life!

SECTION 1: DISEASES

Please indicate all of the diseases that have been identified in pigs on the farm during the **past 12 months**. Where signs of a clinical syndrome have been observed without a specific diagnosis (e.g. diarrhoea, cough), then tick the box for the appropriate organ system affected (e.g. for a cough without a specific diagnosis, tick 'Yes' next to 'Respiratory System')

1.1 What diseases have been identified in the herd **during the past 12 months** and how were they confirmed? (*Tick all that apply*)

Disease	Identified		Confirmation	
	Yes	No	Clinical	Lab
1. RESPIRATORY SYSTEM	☐	☐		
1.1 Atrophic rhinitis	☐	☐	☐	☐
1.2 Enzootic pneumonia	☐	☐	☐	☐
1.3 Pleuropneumonia	☐	☐	☐	☐
1.4 PRRS	☐	☐	☐	☐
1.5 Other *(specify)*_____	☐	☐	☐	☐
2. ENTERIC SYSTEM	☐	☐		
2.1 *E.coli* diarrhoea	☐	☐	☐	☐
2.2 Enteric salmonellosis	☐	☐	☐	☐
2.3 Swine dysentery	☐	☐	☐	☐
2.4 Proliferative enteropathy	☐	☐	☐	☐
2.5 Colitis	☐	☐	☐	☐
2.6 Bowel oedema	☐	☐	☐	☐
2.7 Rotavirus	☐	☐	☐	☐
2.8 Gastric ulceration	☐	☐	☐	☐
2.9 Rectal stricture	☐	☐	☐	☐
2.10 Roundworm infestation	☐	☐	☐	☐
2.11 Milkspot liver	☐	☐	☐	☐
2.12 Rectal prolapse	☐	☐	☐	☐
2.13 Other *(specify)*_____	☐	☐	☐	☐

1.1 Continued…

Disease	Identified		Confirmation	
	Yes	No	Clinical	Lab
3. SKIN	☐	☐		
3.1 Mange	☐	☐	☐	☐
3.2 Greasy pig disease	☐	☐	☐	☐
3.3 Swine pox	☐	☐	☐	☐
3.4 Other *(specify)*_____	☐	☐	☐	☐
4. NERVOUS SYSTEM	☐	☐		
4.1 Streptococcal meningitis	☐	☐	☐	☐
4.2 *Haemophilus* meningitis	☐	☐	☐	☐
4.3 Spinal abscess	☐	☐	☐	☐
4.4 Other *(specify)*_____	☐	☐	☐	☐
5. LOCOMOTOR SYSTEM	☐	☐		
5.1 Arthritis	☐	☐	☐	☐
5.2 Leg weakness	☐	☐	☐	☐
5.3 Bush foot/ foot abscess	☐	☐	☐	☐
5.4 Other *(specify)*_____	☐	☐	☐	☐
6. MISCELLANEOUS CONDITIONS	☐	☐		
6.1 “Sudden” death	☐	☐	☐	☐
6.2 PMWS/ PDNS complex	☐	☐	☐	☐
6.3 Sporadic PDNS	☐	☐	☐	☐
6.4 Porcine stress syndrome	☐	☐	☐	☐
6.5 Systemic salmonellosis	☐	☐	☐	☐
6.6 Tail biting	☐	☐	☐	☐
6.7 Other *(specify)*_____	☐	☐	☐	☐

Please use the sheets at the end for any further responses

SECTION 2: TREATMENTS

APPENDIX CS8

2.1 Vaccines: Please indicate all **vaccines and other immunological products** that you have supplied to, prescribed for, or used on pigs on this farm **during the past 12 months**

CODE	VACCINE	Tick
VCOL	Colisorb	☐
VGL6	Gletvax 6 Combined Porcine *E.coli* and *Cl.perfringens* Type B, C and D Vaccine	☐
VHPV	*Haemophilus parasuis* Vaccine	☐
VHEP	Heptavac	☐
VHYP	Hyoresp.	☐
VIPK	Ingelvac PRRS KV	☐
VIPR	Ingelvac PRRS	☐
VIMH	Ingelvac M Hyo	☐
VLBS	Lambisan (Native Lamb Dysentery, Struck and Pulpy Kidney Antiserum)	☐
VLBV	Lambivac	☐
VMOD	Mycoplasma One Dose Vaccine	☐
VMYS	Mypravac Suis	☐
VNCP	Neocolipor	☐
VNPA	Nobi-Porvac Aujeszky Live	☐
VPCV	Pig Coliform Vaccine	☐
VPSV	Pig *Staphylococcus* Vaccine	☐
VPAR	Porcilis AR T	☐
VPAD	Porcilis AR-T DF suspension for injection	☐
VPEY	Porcilis Ery	☐
VPEP	Porcilis Ery+Parvo	☐

CODE	VACCINE	Tick
VPP5	Porcilis Porcol 5	☐
VPPR	Porcilis PRRS	☐
VPGS	Progessis	☐
VSMY	Stellamune Mycoplasma	☐
VSTO	Stellamune Once	☐
VSAP	Suvaxyn APP	☐
VSAJ	Suxaxyn Aujeszky	☐
VSAW	Suvaxyn Aujeszky 783 + O/W	☐
VSEC	Suvaxyn *E.Coli* P4	☐
VSEY	Suvaxyn Erysipelas	☐
VSMP	Suvaxyn M.Hyo – Parasuis	☐
VSMH	Suvaxyn M.Hyo	☐
VSPV	Suvaxyn Parvo	☐
VSPE	Suvaxyn Parvo/E	☐
VSRD	Suvaxyn Respifend	☐
VTAB	Tetanus Antitoxin Behring	☐
VTTC	Tetanus Toxoid Concentrated	☐
	Other (*specify in table*)	
VVC1	_____	☐
VVC2	_____	☐
VVC3	_____	☐

2.2 Anti-Parasite treatments: Please indicate all **anti-parasite** treatments that you have supplied to, prescribed f farm **during the past 12 months**

CODE	ANTI-PARASITE TREATMENT	Tick
PALS	Alstomec	☐
PANI	Animec Injection	☐
PBYP	Bayverm Pellets 1.9%	☐
PBIM	Bimectin Injection	☐
PCUR	Curazole 5% w/w Powder	☐
PDEC	Dectomax Injection for Pigs	☐
PFLI	Flubenol Individual Treatment Pack	☐
PFLP	Flubenol Premix Pack	☐
PGWP	Granofen Wormer for Pigs	☐
PIVI	Ivomec Injection for Pigs	☐
PIVP	Ivomec Premix for Pigs	☐
PORD	Oramec Drench	☐
PP15	Panacur 1.5% Pellets	☐
PP4P	Panacur 4% Powder	☐
PPCS	Panomec Injection for Cattle, Sheep and Pigs	☐
PPRC	Porect	☐
PTKT	Taktic	☐
PTOP	Topline	☐
PVIS	Virbamec Injectible Solution for Cattle and Swine	☐
PZER	Zerofen 4% Powder	☐
PPT1	Other (please specify) _____	☐
PPT2	_____	☐
PPT3	_____	☐

2.3 Antimicrobial Injections: Please indicate all **antimicrobial injections** that you have supplied to, prescribed this farm **during the past 12 months**

APPENDIX CS8

CODE	ANTIMICROBIAL	Tick
AA10	Alamycin 10	☐
AADI	Advocin Injectable Solution	☐
AALL	Alamycin LA	☐
AAL3	Alamycin LA 300	☐
AAM3	Amfipen 30%	☐
AAML	Amfipen LA	☐
AANI	Amoxinsol 150 Injection	☐
AANL	Amoxinsol La	☐
AAXI	Amoxycare Injection	☐
AAXL	Amoxycare LA Injection	☐
AAPI	Amoxypen Injection	☐
AAPL	Amoxypen LA	☐
AAMI	Ampicare 15% Injection	☐
ABY5	Baytril 5% Injection	☐
ABY1	Baytril 10% Injection	☐
ABTX	Betamox	☐
ABTL	Betamox LA	☐
ABL2	Bilosin 200 Injection	☐
ABMI	Bimectin Injection	☐

CODE	ANTIMICROBIAL	Tick
ABXL	Bimoxyl LA	☐
ABG2	Borgal 24% Solution	☐
ACPG	Cephaguard	☐
ACPX	Ceporex Injection	☐
ACLL	Clamoxyl LA Long Acting Injection	☐
ACLR	Clamoxyl Ready to Use Injection	☐
ADLC	Delvoprim Coject	☐
ADPC	Depocillin	☐
ADPM	Depomycin Forte	☐
ADPF	Dipen Forte	☐
ADHC	Duphacillin	☐
ADY1	Duphacycline 100	☐
ADYL	Duphacycline LA	☐
ADYX	Duphacycline XL	☐
ADHX	Duphamox	☐
ADHL	Duphamox LA	☐
ADHF	Duphapen Fort	☐
ADPP	Duphapen	☐
ADPL	Duphapen LA	☐

2.3 Continued…

CODE	ANTIMICROBIAL	Tick
ADPS	Duphapen+Strep	☐
ADIS	Duphatrim IS	☐
ADLA	Duphatrim LA	☐
AECI	Econopen Injection	☐
AEMB	Embacillin	☐
AEML	Embacycline LA	☐
AEG5	Engemycin 5%	☐
AEGD	Engemycin 10% (DD)	☐
AEGF	Engemycin 10% Farm Pack	☐
AEGL	Engemycin LA	☐
AEXR	Excenel RTU	☐
AEXS	Excenel Sterile Powder	☐
AINT	Intradine	☐
ALEI	Lenticillin Injection	☐
ALSS	Lincocin Sterile Solution	☐
ALCJ	Lincoject	☐
AMB2	Marbocyl 2%	☐
AMB1	Marbocyl 10%	☐
AMY1	Mycen 10	☐

CODE	ANTIMICROBIAL	Tick
AMY2	Mycen 20 LA	☐
ANPN	Neopen	☐
ANRB	Norobrittin	☐
ANRC	Norocillin	☐
AND2	Norodine 24	☐
ANTL	Norotyl LA	☐
AOX5	Oxycare 5%	☐
AOX1	Oxycare 10%	☐
AOX2	Oxycare 20/La	☐
AOT1	Oxytetrin 10 DD	☐
AOT2	Oxytetrin 20 LA	☐
AOT5	Oxytetrin 5	☐
APAS	Pen & Strep	☐
APEN	Penacare	☐
AQ15	Qualamox 15	☐
AQLA	Qualamox LA	☐
ASTC	Streptacare	☐
ASTP	Streptopen Injection	☐
ASU3	Sulfoxine 333	☐

2.3 Continued…

CODE	ANTIMICROBIAL	Tick
ASYN	Synulox Ready-to-Use Injection	☐
ATQ1	Terramycin Q-100 Injectable Solution	☐
ATLA	Terramycin/LA Injectable Solution	☐
ATX1	Tetroxy 10% DD Injection	☐
ATX5	Tetroxy 5% Injection	☐
ATXL	Tetroxy LA	☐
ATIA	Tiamutin 200 Injection	☐
ATRI	Tribrissen Injection 48% Sulphadiazine and Trimethoprim Injection Bp(Vet)	☐
ATBI	Trimabac Injection 24%	☐
ATC2	Trimacare 24%	☐
ATCL	Trinacol Injection	☐
ATOL	Trioxyl La	☐
ATYA	Tylan 200 and Tylan 50	☐
ATYV	Tyluvet 20	☐
AULT	Ultrapen LA	☐

CODE	ANTIMICROBIAL	Tick
AVMI	Vidamox Injection	☐
AVML	Vidamox LA Injection	☐
AVCI	Vidocillin Injection	☐
AZ20	Zaquilan 20% Injection	☐
	Other (*specify in table*)	
AAM1	_____	☐
AAM2	_____	☐
AAM3	_____	☐

2.4 Other Antimicrobials: Please indicate all **other antimicrobials** that you have supplied to, prescribed for, or **during the past 12 months**

APPENDIX CS8

CODE	ANTIMICROBIAL	Tick
OALA	Alamycin Aerosol	☐
OAMX	Amoxinsol 50	☐
OAOD	Apralan Oral Doser	☐
AASP	Apralan Soluble Powder	☐
OAUS	Aureomycin Soluble Powder	☐
OATP	Aureomycin Topical Powder	☐
OBPD	Baytril Piglet Doser	☐
OC50	Chlorsol 50	☐
OCOM	Clamoxyl Oral Multidoser	☐
ODPS	Delvoprim Piglet Suspension	☐
ODPA	Duphacycline Aerosol	☐
ODUP	Duphatrim Piglet Suspension	☐
OEMA	Embacycline Aerosol	☐
OEGA	Engemycin Aerosol	☐
OLSP	Lincocin Soluble Powder	☐
ONSP	Neobiotic Soluble Powder 70%	☐
ONOP	Norodine Oral Piglet Suspension	☐
OOXA	Oxycare Aerosol	☐
OPEP	P.E.P. 2% Powder	☐

CODE	ANTIMICROBIAL	Tick
OSSH	Spectam Scour Halt	☐
OTCA	Tectin Aerosol	☐
OTS5	Terramycin Soluble Powder 5%	☐
OTS2	Terramycin Soluble Powder Concentrate 20%	☐
OTT8	Tetsol 800	☐
OTIA	Tiamutin 12.5% Solution	☐
OTYL	Tylan Soluble	☐
OTPS	Tribrissen Piglet Suspension Sulphadiazine and Trimethoprim Mixture Bp(Vet)	☐
OTRP	Trimedoxine Piglet Suspension	☐
	Other (*specify in table*)	
OAM1	_____	☐
OAM2	_____	☐
OAM3	_____	☐

2.5 In-feed medicines: Please indicate all **in-feed medicines** that you have supplied to, prescribed for, or used during the past 12 months

CODE	IN-FEED MEDICINE	Tick
FAG2	Apralan G200 Premix	☐
FA1G	Aurofac 100 Granular	☐
FAUR	Aurogran	☐
FA15	Aurogran 150	☐
FBC1	Bio-Cox 120G	☐
FCFG	Chlortet FG100	☐
FCHS	Cyfac HS Granular	☐
FEP1	Econor Premix 10%	☐
FF40	Flaveco 40	☐
FF80	Flavomycin 80	☐
FLIP	Lincocin Premix	☐
FLSP	Linco-Spectin Premix	☐
FMG2	Maxus G200	☐
FNYP	Neomycin Premix	☐
FPZP	Pigzin Premix	☐
FPOT	Potencil	☐
FPG1	Pulmotil G100 Premix	☐
FPG2	Pulmotil G200 Premix	☐
FSE1	Sal-Eco 120	☐
FSA1	Salocin 120	☐
FS5P	Stabox 5% Premix	☐
FSYF	Synutrim Fortesol	☐

CODE	IN-FEED MEDICINE	Tick
FSYG	Synutrim Granular	☐
FTT1	Tetramin 100 Powder	☐
FTT2	Tetramin 200 Powder	☐
FTS8	Tetsol 800	☐
FT12	Tiamutin 12.5% Solution	☐
FT2P	Tiamutin 2% Premix	☐
FT2I	Tiamutin 200 Injection	☐
FT25	Tiamutin 25% Premix	☐
FT80	Tiamutin 80% Premix	☐
FTD1	Trimediazine 15	☐
FTDB	Trimediazine BMP	☐
FTG1	Tylan G100	☐
FTG2	Tylan G20	☐
FTGP	Tylan G250 Premix	☐
FTG5	Tylan G50 Premix	☐
FTYG	Tylasul G50	☐
FUNP	Uniprim 150 Powder	☐
FUNS	Uniprim 150 S	☐
	Other (*specify in table*)	
FIF1	_____	☐
FIF2	_____	☐
FIF3	_____	☐

2.6 Other treatments: Please indicate all **other treatments** that you have supplied to, prescribed for, or used on **the past 12 months** including anything not already ticked in the previous tables

CODE	OTHER TREATMENTS	Tick
TA4B	Anivit 4BC Injection	☐
TBSI	Bisolvon Injection	☐
TBSP	Bisolvon Powder	☐
TCMV	Combivit	☐
TDLZ	Dalmazin	☐
TDXD	Dexadreson	☐
TDXF	Dexafort	☐
TD4V	Dunlops 4bc Vitamin	☐
TDAF	Duphafral Ade Forte	☐
TDM9	Duphafral Multivitamin 9	☐
TDLY	Duphalyte	☐
TDYS	Dystosel	☐
TEFF	Effydral	☐
TENZ	Enzaprost -t	☐
TFRX	Ferrofax 20%	☐
TFS6	Fostim 6000	☐
TGPS	Gleptosil	☐
THYP	Hyposton	☐
TIFP	Iliren For Pigs	☐
TIMP	Imposil	☐
TINT	Intravit 12	☐
TIOA	Ion Aid	☐
TIOY	Ionalyte	☐
TKET	Ketofen 10%	☐
TLCD	Lectade	☐
TLEO	Leodex 20%	☐
TLFA	Life Aid	☐
TLAP	Life Aid P	☐

CODE	OTHER TREATMENTS	Tick
TLAI	Lignocaine And Adrenaline Injection	☐
TLS1	Linco Spectin 100 Soluble Powder	☐
TLLA	Liquid Life Aid	☐
TLTL	Lutalyse	☐
TMVI	Multivitamin Injection	☐
TMIA	Multivitamin Injection (Arnolds)	☐
TOXS	Oxytocin S	☐
TOXL	Oxytocin Leo	☐
TPSF	Pfizer Scour Formula	☐
TPG6	PG 600	☐
TPLN	Planate	☐
TPMI	PMSG Intervet	☐
TPRV	Prosolvin	☐
TPRP	Prostapar	☐
TRGP	Regumate Porcine	☐
TSDX	Scordex	☐
TSTR	Stresnil	☐
TTOL	Tolfine	☐
TVCI	Vitatrace Injection	☐
TVNI	Vitenium Injection	☐
TVIT	Vitesel	☐
TVOR	Voren Suspension	☐
	Other (*specify in table*)	
TOT1	_____	☐
TOT2	_____	☐
TOT3	_____	☐
TOT4	_____	☐
TOT5	_____	☐

SECTION 3: FLUOROQUINOLONE USE

Aliquots of faecal material will be used to isolate bacteria and test them for sensitivity to fluoroquinolone antibiotics as part of another VLA study. Please complete the table below in addition to Section 2.

3.1 When, if ever, was the **last** time any of the following antibiotics (fluoroquinolones) were used on/supplied for pigs on this farm?
(tick ONE box for each product for the most recent use)

a) Baytril (5% or 10% injection)	Within the last year ☐	1 to 2 years ago ☐	Over 2 years ago ☐	Never used ☐
b) Baytril (piglet doser)	Within the last year ☐	1 to 2 years ago ☐	Over 2 years ago ☐	Never used ☐
c) Marbocyl (2% or 10% injection)	Within the last year ☐	1 to 2 years ago ☐	Over 2 years ago ☐	Never used ☐
d) Advocin (injectable solution)	Within the last year ☐	1 to 2 years ago ☐	Over 2 years ago ☐	Never used ☐

3.2 If any of the above were used/supplied/prescribed **within the last 12 months**, please give details of the disease problems for which they were prescribed, the amount supplied and the type of pigs treated

Name of medicine	Disease problem for which prescribed	Amount supplied (number bottles)	Type of pig treated (tick box if treated)
Baytril (5% injection)			piglet ☐ grower ☐ replacement gilt ☐ weaner ☐ finisher ☐ sow/boar ☐
Baytril (10% injection)			piglet ☐ grower ☐ replacement gilt ☐ weaner ☐ finisher ☐ sow/boar ☐
Baytril (piglet doser)			piglet ☐ grower ☐ replacement gilt ☐ weaner ☐ finisher ☐ sow/boar ☐
Marbocyl (2% injection)			piglet ☐ grower ☐ replacement gilt ☐ weaner ☐ finisher ☐ sow/boar ☐
Marbocyl (10% injection)			piglet ☐ grower ☐ replacement gilt ☐ weaner ☐ finisher ☐ sow/boar ☐
Advocin (injectable solution)			piglet ☐ grower ☐ replacement gilt ☐ weaner ☐ finisher ☐ sow/boar ☐

SECTION 4: GENERAL QUESTIONS

4.1 How many times have you visited the farm **during the past 12 months?**

- 12 or more times ☐
- 4-11 times ☐
- 2-3 times ☐
- Once ☐
- Never ☐
- Not Known ☐

4.2 Using the General House Keeping Score descriptions provided on the following page, which category best describes this pig farm?

1	2	3	4
☐	☐	☐	☐

CATEGORY 1	CATEGORY 2
Good, well-maintained, modern buildings/structures. Hard standing perimeter and service roads to most if not all areas. Feed vehicles discharge and services accessible from perimeter. Fenced perimeter. Unit well signed. Weed growth controlled and managed in all areas. Good drainage: no "ponding". Clear access to all areas. Storage areas tidy. No excessive accumulations of muck. No accumulation of scrap equipment, or materials. Good evidence of regular housekeeping action in all areas of the site. Few if any fabric repairs required. Excellent facilities for staff-toilets and canteen area.	Sound buildings or structures – some maintenance may be required to fabric in some area. Some hard standing areas, but may have unlaid roadways and access to certain parts. Perimeter defined but not necessarily fenced entirely. Some weed growth evident around perimeter but controlled around buildings used for feed or pigs. Evidence of management of waste but there may be a need for action in the forthcoming 3 months. Evidence of pest control scheme/system which is effective. Basic staff facilities i.e. toilets and meal arrangements.
CATEGORY 3	**CATEGORY 4**
Older premises where there is a need for essential fabric repairs in several areas. Some buildings (in use) needing structural repairs, e.g. broken doors, windows, roof repairs required. Little definition to perimeter with poorly maintained service roads. Some evidence of pest activity. Control measures agreed, investigated, or in place but in need of improvement. Accumulation of scrap and/or redundant equipment which compromise the ability to control pests. Weed control is required to prevent growth up to and around buildings where pigs are housed or feedstuffs are stored. Very basic staff facilities.	Buildings in poor state of repair. Several items requiring major renovation/repair work to structure. Generally old premises with no obvious investment/maintenance over many years. Perimeter control poor. Accumulation of muck or general equipment in the pig environment or around the pig buildings and feed stores. Evidence of obvious pest activity, e.g. mice, flies, rats or birds. Poor housekeeping in feed stores, evidence of careless feed spillage. Poor pest proofing to areas where pigs are kept. Waste control poor – significant accumulation of waste, dung, muck. Feedstuffs exposed to serious opportunities for contamination. Inadequate facilities for staff.

VET NOTES:

This page is for any comments you may wish to add.

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE!

Veterinary Laboratories Agency

Please read through the questionnaire to check for any errors and to ensure that all questions have been answered.
Once complete, please return the questionnaire as soon as possible in the reply paid envelope provided.
Please <u>do not</u> send the questionnaire in the same envelope as the faecal samples.

Farm Code XXX

APPENDIX PI3

Farm Name Xxxxxxxxxx Xxxxxxxxx Xxx

Name of Person Completing Sheet……..

OZ0316 : SALMONELLA STUDY RECORDING SHEET

	Was this work done by a contractor or yourself?	Building 1			Building 2			Building 3			Building 4			Building 5		
1. Date last pigs removed from previous batch (e.g.14/04)		/			/			/			/			/		
2. CLEANING PIG HOUSES: (Answer Yes or No and give the **date completed**)		**Yes**	**No**	**Date**	**Yes**	**No**	**Date**	**Yes**	**No**	**Date**	**Yes**	**No**	**Date**	**Yes**	**No**	**Date**
Was the muck heap moved?	Contractor ☐ Self ☐	☐	☐	/	☐	☐	/	☐	☐	/	☐	☐	/	☐	☐	/
Was the muck heap area disinfected?	Contractor ☐ Self ☐	☐	☐	/	☐	☐	/	☐	☐	/	☐	☐	/	☐	☐	/
Were the feed hoppers emptied?	Contractor ☐ Self ☐	☐	☐	/	☐	☐	/	☐	☐	/	☐	☐	/	☐	☐	/
Was the solid waste cleaned out of the feed hoppers?	Contractor ☐ Self ☐	☐	☐	/	☐	☐	/	☐	☐	/	☐	☐	/	☐	☐	/
Did you pressure wash the: - feed hoppers?	Contractor ☐ Self ☐	☐	☐	/	☐	☐	/	☐	☐	/	☐	☐	/	☐	☐	/
- walls/partitions/passageways/other surfaces?	Contractor ☐ Self ☐	☐	☐	/	☐	☐	/	☐	☐	/	☐	☐	/	☐	☐	/
If YES, did you use HOT or COLD water?		HOT ☐ COLD ☐			HOT ☐ COLD ☐			HOT ☐ COLD ☐			HOT ☐ COLD ☐			HOT ☐ COLD ☐		
Was DETERGENT used in the pressure washer?		YES ☐ NO ☐			YES ☐ NO ☐			YES ☐ NO ☐			YES ☐ NO ☐			YES ☐ NO ☐		
Please give the NAME? (e.g. HD3)																
VOLUME (of concentrate)		*ml*			*ml*			*ml*			*ml*			*ml*		
CONCENTRATION (e.g. 1:160)		:			:			:			:			:		
Were the walls/partitions/passageways/other surfaces disinfected?	Contractor ☐ Self ☐	☐	☐	/	☐	☐	/	☐	☐	/	☐	☐	/	☐	☐	/
If YES, give the NAME (e.g. Farm Fluid S)																
VOLUME (of concentrate)		*ml*			*ml*			*ml*			*ml*			*ml*		
CONCENTRATION (e.g. 1:50)		:			:			:			:			:		
Was the building left to dry?		YES ☐ NO ☐			YES ☐ NO ☐			YES ☐ NO ☐			YES ☐ NO ☐			YES ☐ NO ☐		
3. Date first pig from new batch entered building:		/			/			/			/			/		

APPENDIX PI3

4. RODENT CONTROL

- How often do you use a specialist rodent control contractor? Always ☐ Usually ☐ Sometimes ☐ Never
- If contractor used, give their name (……) and send their last report with this form. *We will copy this, and send it back by return of post.*
- When did you last review your rodent control programme? Give date ……/……
- What do you (or the contractor) use? Bait ☐ Traps ☐ Other (please specify)……. ☐
- Please fill in any relevant sections of the following table:

	BAIT	TRAPS
Name (e.g. TOMCAT, ZP Pellets, traditional/electric rat or mouse traps)		
Frequency of Checking and Changing (days)	Checking: …..….days Changing: …..….days	Checking: …..….days Changing: …..….days
How many bait points/traps do you have: i) in pig buildings?		
ii) elsewhere?		

5. EQUIPMENT CLEANING: Please complete the following table concerning the cleaning of equipment on your farm:

Equipment	Was this cleaned with a bucket and brush?			Was this item pressure washed?			Did you use HOT or COLD water?		Did you use Detergent?		Did you use Disinfectant?		Was this work done by a contractor or yourself?	
	Yes	No	Date	Yes	No	Date	Hot	Cold	Yes	No	Yes	No	Contractor	Self
Tractor	☐	☐	/	☐	☐	/	☐	☐	☐	☐	☐	☐	☐	☐
Scraper	☐	☐	/	☐	☐	/	☐	☐	☐	☐	☐	☐	☐	☐
Small equipment (e.g. brushes, shovels, buckets)	☐	☐	/	☐	☐	/	☐	☐	☐	☐	☐	☐	☐	☐
Other (specify) …….	☐	☐	/	☐	☐	/	☐	☐	☐	☐	☐	☐	☐	☐

Please give details of any detergent or disinfectant used for equipment cleaning:

	Bucket & Brush: Detergent	**Bucket & Brush: Disinfectant**	**Power Washer: Detergent**	**Power Washer: Disinfectant**
NAME (e.g. HD3, Farm Fluid S)				
VOLUME (of concentrate)	*ml*	*ml*	*ml*	*ml*
CONCENTRATION (e.g. 1:160, 1:50)	:	:	:	:

6. What hygiene facilities are provided for staff? (*please tick all that apply*) Wash Basin ☐ Toilet ☐ Hand Sanitiser/Bactericidal Soap ☐ Shower/Bath ☐ Hand Towel ☐ Warm air dryer ☐ Paper towels ☐ Clean bucket ☐ Soap ☐ Other (specify)……..……☐

7. Are site-dedicated boots and protective clothing provided for use by staff and/or visitors? Overalls: Staff ☐ Visitors ☐ Boots: Staff ☐ Visitors ☐

- THANK YOU : PLEASE RETURN THIS FORM IMMEDIATELY IN THE PRE-PAID ENVELOPE PROVIDED -

THINK CLEAN – ACT CLEAN

This study is being run by the Veterinary Laboratories Agency (VLA) and is funded by Defra. We have used current expert opinion to develop a hygiene and biosecurity programme that we think will reduce the level of *Salmonella* infection in finisher pigs. We will test this programme by comparing two groups of farms in an intervention study. One group of farms, the **comparison** group, will follow their usual practices. The second group of farms, the **intervention** group, will follow the new programme. Farms will be placed in these groups at random. We will take identical samples from all of the farms in both groups and these will be tested for *Salmonella*. At the end of the study, we will find out how effective the programme has been. We will also collect information about the costs and benefits of the programme.

Veterinary Laboratories Agency

SAMPLES

Up to 30 swab samples will be collected from pen dunging areas as follows:

WHEN	SAMPLES TAKEN BY:
1. Before the last pigs of the current batch are sent to slaughter.	VLA staff
2. After you have carried out the cleaning procedures, and before the study batch arrives.	VLA staff – we will mark the pens to make it easier to remember
3. From the pigs transport as they arrive (2 samples only per lorry).	You
4. Within 3 days of the unit being filled with pigs.	You
5. Every four weeks after this, until the study batch leaves.	You
6. A set of samples, collected within 7 days before the first pigs are sent for slaughter.	You
7. The last set of samples should be taken just before the last pigs are sent to the abattoir	You

A full sampling kit containing swabs, jars, and a reply-paid label will be sent to you each time you are asked to take samples.

HOW TO SAMPLE

1. At the pen side put on two pairs of gloves on top of each other. Change the second pair for a new pair of gloves for each sample.
2. Find a safe clean place to rest the box of jars – it may be helpful to carry a stool with you for this.
3. Tear off the adhesive label and stick it firmly on the side of the sample jar.
4. Enter the pen or yard taking care not to tread on the area that is to be sampled.
5. Unscrew the jar lid, remove the swab and pass the swab through the top 2 inches of the pooled faeces in the main dunging areas of the pen or yard, swabbing over a 2 metre zigzag path so that all sides of the swab except for the point where the swab is held are well coated with faeces.
6. Carefully return the swab to the labelled sample jar so that the outside of the jar remains as clean as possible, and replace the lid securely.
7. Replace the jar in the box. Remove gloves and discard. Proceed to next sample site and follow instructions 1-7.
8. When all samples have been taken seal each tray of jars inside two of the polythene bags provided and replace the trays in the box. The paperwork should also be enclosed in the provided sealed polythene bag.
9. Seal box and take to post office on the day that they are collected. Use reply-paid label to post the box of samples to:

Dr Rob Davies, FES, VLA Weybridge, Addlestone, SURREY KT15 3NB

Meat juice samples

In addition, we will collect forty neck muscle samples when the pigs are in the abattoir to test for *Salmonella* antibodies, as in the ZAP scheme. We will organise the sampling and will ask you to let us know the date when the study pigs are leaving the farm and which abattoir(s) are being supplied.

Information

During the study, we will collect information about your farm and the pigs ourselves during visits and will ask you to fill out short weekly forms. We will keep these to a minimum. All of the information that you provide will be kept confidential – no one else will see it. We will present statistical summaries for all of the farms in each group. For example, we will report the average, maximum and minimum levels of *Salmonella* infection that we find – but we will not identify any farm by name or address.

Reports

No published report that we produce will ever mention your name or your address. When the study is finished we will send a summary of results to everyone who has helped us. We will also present a report to Defra and we expect to publish the results in scientific and agricultural journals. Finally, we will present our findings to suitable scientific and farmers meetings.

Thank you for helping us with this study and don't hesitate to get in touch if you have more questions or need any help.

Elizabeth Marier: 01932 357 618
email: e.marier@vla.defra.gsi.gov.uk

or

Sandy Miller: 01932 357 623
email: a.miller@vla.defra.gsi.gov.uk

INTERVENTION GROUP

Think Clean – Act Clean: Salmonella control for finisher farms

Dear Sir or Madam,

You have been randomly selected to be in the **intervention** group. This means we would like you to do some additional cleaning and follow the hygiene and biosecurity plan outlined in the following pages. We realise that you are already very busy and that we are asking you to do extra work but please follow the programme to the best of your ability. The greatest benefits are expected from following all of the steps in this programme. However we know that this is not possible on every farm , so it is essential that you let us know what you actually do by completing our forms carefully. At the end of the study, we will be able to analyse Salmonella levels according to the number of farmers who completed each part of the programme.

A member of the VLA team will have already visited your farm to take the first set of samples. When we return for the second visit we will take more samples and explain in more detail what we would like you to do. This will also be a good opportunity to ask us any questions you might have about the study. We believe that following these measures will reduce *Salmonella* levels on your farm so please read the following information carefully.

At any time, please do not hesitate to call us if you have any questions or problems carrying out the additional measures we ask.

Elizabeth Marier: 01932 357 618
email: e.marier@vla.defra.gsi.gov.uk

or

Sandy Miller: 01932 357 623
email: a.miller@vla.defra.gsi.gov.uk

Hygiene & Biosecurity Programme for Intervention farms

Here are the steps to follow:

At the end, you will also find information about the use of disinfectants during the programme.

Note that we will give advice about all aspects of this programme when visiting to take samples.

This programme begins when the last pig has left the site

Cleaning pig houses – between batches

A list of suitable disinfectants and their concentrations is given on page 16 - it is very important that enough disinfectant is used at all stages and left to dry on surfaces – not rinsed away. Disinfection will be more effective on clean surface. Make sure that all disinfectant is made up fresh just before use and the highest recommended concentration (e.g. Defra TB order rate) is accurately measured. Do not guess or rely on metering devices.

Cleaning outside the building and the surrounding areas

TASKS	Tick when done
1. All muck heaps should be moved away from pig housing.	
2. Check that waste from muck heaps does not leak into pig, feed or bedding areas; or areas where tractors, people or pigs pass through.	
3. The area should be cleaned and disinfected after the muck heap has been moved.	
4. Empty bins for dead stock and foot dip and clean them	

Cleaning inside the building

TASKS	Tick when done
1. Remove all manure, bedding and waste from the building	
2. Remove portable equipment from the building for cleaning and disinfecting	
3. Remove feed residues, drain water bowls and clean behind flap, float	
4. Power wash the building. Surfaces should be free of pig manure and other organic matter as these can inactivate disinfectants	
5. Let dry completely (at least 12 hours)	
6. Apply disinfectant on all surfaces and let it dry (at least 48 hours) – see guidance on disinfection	
7. Passageways, floors, walls, equipment, loading areas, hoppers, bowls, all surfaces including undersides should be cleaned and disinfected.	
8. Do not rinse after disinfecting feeders and drinkers but if disinfectant pools in feeders or drinker bowls, mop out before pigs are placed.	
9. If the building is left empty for a long period (more than two weeks), check for recontamination by rodents and other pests. If necessary, repeat disinfection of contaminated areas.	

Think clean – act clean

APPENDIX NI1

Cleaning equipment – between batches

TASKS	Tick when done
1. Use a pressure washer to clean the tractor, scraper blade and other large pieces of equipment e.g. trailers, weighers etc.	
2. Clean all smaller pieces of equipment – e.g. pig boards, brushes, shovels, buckets, stepladders, toolboxes, slap marker, waterproof overalls, aprons – using disinfectant applied by immersion or with a brush	
3. Disinfect all cleaned equipment. For larger pieces of equipment, this may be applied using a pressure washer.	
4. Allow all cleaned and disinfected equipment to dry before use.	
5. Complete the cleaning and disinfection of your equipment before the first pig is delivered to the site.	
6. **Very important** – Clear feed from the previous batch immediately and set up baits in pig areas while unit depopulated	

Other cleaning – between batches

TASKS	Tick when done
1. Clear site of overgrown vegetation, rubbish or unnecessary equipment, especially near pig buildings	
2. Clean and disinfect all areas of the unit which pigs are moved through. This includes loading ramps, races, weigh pens, holding pens, weighers, corridors between pens, barriers, hurdles, and gates etc.	

Cleaning Equipment – during production

TASKS	Tick when done
1. At least once each week, pressure wash the scraper blade and tractor tyres and then disinfect.	
2. Clean shovels, brushes or other equipment used to clean pig pens regularly using disinfectant.	
3. If any equipment (e.g. tractor and trailer) is moved off the farm, then it should be cleaned and disinfected when returned to the pig unit.	
4. If any equipment (e.g. bucket loaders, scoops, trailers etc) that is used to handle pig feed is used for any other purpose, it should be thoroughly cleaned and disinfected before it is in contact with feed again.	

Rodent Control

Rats, and especially mice, can leave millions of Salmonella *bacteria in each dropping. One highly infected dropping in a feeder or drinker can undo the whole of the control programme so please take rodent control seriously.*

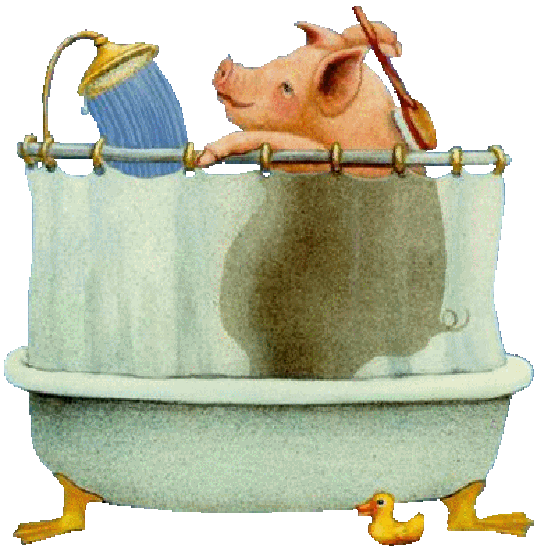
TASKS	Tick when done
1. Check thoroughly for any evidence of rodent activity (sightings especially at night, droppings, chewing damage, footprints in dust, urine pillars and grease marks on ledges, disturbed bait), and review your rodent control program adding new bait points. Include bait points around the outside of houses and the perimeter of the unit. If there is a large rodent population use traps and rodenticide tubes, as well as bait and consider additional water bait when site is empty.	
2. Bait should be checked and replaced at least weekly and more often if required. Use a good quality bait of the right kind for the right pest (mice or rats), and keep it free of dust.	
3. If you carry out your own rodent control, then consider what you are doing and look for possible improvements.	
4. Ensure that spilled feed is always promptly cleared up	
5. **Very important** – Clear feed from the previous batch immediately and set up baits in pig areas while unit depopulated	

Biosecurity Measures

These are *in addition* to any which you normally carry out

1. Boot dips

TASKS	Tick when done
1. Provide a boot dip (containing a phenolic disinfectant at its maximum recommended concentration, see page 16 for more details), and a boot brush at the entry to every building and at every entrance to the pig unit. Boot dips should be large enough to hold at least one large boot and should contain enough disinfectant to cover the whole foot to over the ankle when immersed. Make sure that boot dips are in covered areas if this is possible to prevent them from being diluted by heavy rain or replace dip if it has become diluted.	
2. Use the brush and boot dip to remove visible muck from boots every time you enter and leave the site, and every time that you enter and leave a building.	
3. Empty the bootdips and replenish them when visibly soiled, but at least once every week. If the site is muddy it may be worth having separate boot washes to use before dipping boots in disinfectant.	



2. Personal hygiene

TASKS	Tick when done
1. All staff and visitors must wear clean overalls and boots that are kept in a clean changing area on the pig unit.	
2. Do not use any of the farm protective clothing on any other site.	
3. Boil wash all overalls in a washing machine at least once every week.	
4. Any other protective clothing (e.g. aprons/waterproofs) worn onsite should also be thoroughly cleaned weekly.	
5. Please leave a container of the alcohol based hand sanitizer provided* next to the bootdip at each building entrance, and use it every time you enter and leave a building.	
6. Wash your hands thoroughly and use the alcohol based hand sanitizer as necessary during the working day, for example as you: • arrive on the pig unit • complete any task that involves handling pigs • complete any task that has possible contact with pig dung • are going to eat, drink or smoke • leave the unit	
7. If you visit any other livestock unit, take a shower and change all of your outer clothes before you return to the pig unit.	
8. If your farm has more than one livestock enterprise, then you should wear separate protective clothing for the pig enterprise.	

3. Pig movements

TASKS	Tick when done
1. The unit should ideally be stocked with pigs from a single source. If this is not possible, all pigs in each row of pens must come from one source, and overall from as few sources as possible.	
2. Clear any areas which pigs walk through of puddles or muck.	
3. Do not mix pigs (e.g. when the first batch has been sent to slaughter), except if they are moved into a sick pen.	
4. Do not move pigs from one pen to another during the study.	
5. All pigs on the site should be sent to slaughter within one week or within as short a period of time as possible.	
6. If all pigs within one pen are not sent to slaughter at the same time, remainders should not be mixed with other pigs from different pens.	
7. If groups of pigs are ever split they must not be remixed later on.	

4. Sick pens

TASKS	Tick when done
1. Sick pens should, if possible, be in a separate building. If this is not possible, then ensure that sick pens are placed at the end of a row so that dung etc is not pushed into contact with other pigs.	
2. Place boot dips and a hand sanitizer outside the sick pen, and use before and after entering.	
3. The sick pen should be the last pen visited for routine tasks, such as cleaning or feeding.	
4. Pigs that are moved into a sick pen must not be returned to another pen. If they recover, they must remain in the sick pen or a convalescence pen until they are sent to slaughter.	
5. The smell of dead pigs attracts farm pests, so carcasses should be disposed of as quickly as possible and there should be no seepage from holding areas.	
6. Sick pens, and any bins or holding areas used for dead pigs, should be cleaned and disinfected whenever they are emptied and at the start of the between batch cleaning programme.	

5. Visitors – and other animals!

TASKS	Tick when done
1. No unnecessary visitors should visit the unit.	
2. Visitors should not enter any building containing pigs unless it is essential.	
3. Visitors should not enter any pen containing pigs unless it is essential.	
4. Every visitor must wear clean boots and overalls, provided by the unit. VLA can provide disposable boiler suits and overboots if required.	
5. Do not allow any domestic animals (including dogs & cats) to enter pig accommodation or feed or bedding stores.	
6. Ensure that wild birds do not have access to pig housing, or feed or beddings stores.	

6. Feed and water

TASKS	Tick when done
1. All feed stores and feed hoppers should be covered.	
2. All header tanks should have a solid cover.	

DISINFECTANTS

These sheets give advice on a number of disinfectants that we recommend for use in this study. You do not have to use these disinfectants but to help you we have provided guidelines for the correct concentrations and volumes for use at each stage.

The following disinfectants are recommended for use during this study:

Intensive disinfection of pig areas & equipment:

- **Macroline 500** @ 1:103 (Phenolic)
- **Longlife 250S*** @ 1:80 (High boiling point tar acid)
- **Farm Fluid** @ 1:100 (High boiling point tar acid)
- **Sorgene 5** @ 1:75 (Peroxygen)
- **Hyperox** @ 1:100 (Peroxygen)

Small equipment- protective clothing (e.g. aprons and waterproofs) wash off after a minimum of 1h contact, especially the phenolics

Bootdips

- **Longlife 250S*** @ 1:80 (High boiling point tar acid)
- **Farm Fluid S** @ 1:100 (High boiling point tar acid)

Water flush system

- **Hyperox** @ 1:500 (Peroxygen)
- **Sorgene 5** @ 1:400 (Peroxygen)
- **Virkon S** @ 1:200 (Peroxygen)

***Most highly recommended*

Disinfectants should be made up fresh before each job and at the highest recommended concentration. It is important that enough disinfectant is used at each stage. The following sheets give advice on making up the disinfectants and we suggest you pin these up in a suitable place where staff will have access to them.

Veterinary Laboratories Agency

CLEANING OF PIG AREAS AND EQUIPMENT

Disinfectant should be used to saturation point on dry surfaces. **Bowls and nipples should be cleaned with full strength disinfectant but do not leave pools of disinfectant in drinkers or feeders when new pigs are introduced – mop them up if present.** Aim to use approximately 300ml of made up disinfectant solution for every square meter of floor space, including corridors and passageways.

This table gives the volume of water and volume of disinfectant needed to make up the correct recommended concentration for use in this study:

		DISINFECTANT USED				
		Longlife 250S (high boiling point tar acid)	**FarmFluid S (high boiling point tar acid)**	**Sorgene 5 (Peroxygen)**	**Hyperox (Peroxygen)**	**Macroline 500 (Phenolic)**
Recommended dilution:		**1:80**	**1:100**	**1:75**	**1:100**	**1:103**
		Volume of disinfectant required:				
Volume of water:	**1L**	12ml **(1)**	10ml	15ml	10ml	10ml
	5L	62ml	50ml	70ml	50ml	50ml
	20L	250ml	200ml	14L	200ml	200ml
	50L	625ml	500ml	27L	500ml	500ml
	100L	12.5 Litres	1 Litre	67L	1L	1L

(1) Example: In one litre of water, you need to add 12 ml of disinfectant.

Think clean – act clean

BOOT DIPS

Boot dips should be situated at all main farm/site entrances and at the entrance to every house. Ensure they are protected from rain and that all staff use them.

Boot dips should be replaced **at least once a week** or more often if they become soiled.

A good sized boot dip should hold approx 2 buckets or 30 litres of diluted disinfectant. Boot dips should be large enough for a man to stand with one foot submerged above the ankle. Using too little boot dip or not changing it frequently enough will reduce its effectiveness. For best results keep a stiff brush beside each boot dip and remove as much organic matter as possible from the boots (remembering to pay particular attention to the sole) before dipping.

This table gives the volume of water and volume of disinfectant needed to make up the correct recommended concentration for use in this study:

		DISINFECTANT USED	
		Longlife 250S (high boiling point tar acid)	**Farm Fluid S (high boiling point tar acid)**
Recommended dilution:		**1:80**	**1:100**
		Volume of disinfectant required	
Volume of water:	**1L**	12ml	10ml
	10L	125ml	100ml
	15L	188ml	150ml
	30L	375ml	300ml

Average bucket = 3gal, 15L

WATER FLUSH SYSTEM

DRAIN HEADER TANK AND WATER LINES AND REPLACE WATER WITH WELL MIXED DISINFECTANT AS SPECIFIED BELOW. Leave disinfectant for at least 1h and flush through with clean water.

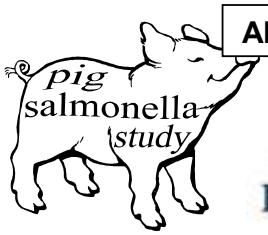
This table gives the volume of water and volume/weight of disinfectant needed to make up the correct recommended concentration for use in this study:

		DISINFECTANT USED		
		Virkon S (Peroxygen)	**Sorgene 5 (Peroxygen)**	**Hyperox (Peroxygen)**
Recommended dilution:		**1:200**	**1:400**	**1:500**
		Amount of disinfectant required:		
Litres of water to be sanitised:	**100L**	500g	250ml	200ml
	250L	1.25Kg	625ml	500ml
	500L	2.5Kg	1250ml	1L
	1000L	5Kg	2.5L	2L

PLEASE WRITE DATE OF REPORT ON FORM

APPENDIX NI5

Weekly Farm Report



Veterinary Laboratories Agency

FARM ID:
Date:

*Please complete this form at the **end** of every week and post back to the VLA using the pre-paid envelopes provided.* ***Please answer for the past week only*****.**

A. General

1) Have any visitors been on the farm? Yes ☐ No ☐

If Yes, did they wear their own protective clothing or did you supply it? Own ☐ Supplied ☐

If Yes, did they enter buildings containing pigs Yes ☐ No ☐

2) Have any farm staff, visited any livestock farms in the past week? If yes, how many times?

	Pig	Cattle	Poultry	Sheep	Other
	☐	☐	☐	☐	☐
How many times?	……..	……..	……..	……..	……..

3) How many pigs have died in the last week? ……

B. Cleaning equipment during production

4) Have you cleaned & disinfected:

a) Scraper Cleaned ☐ Disinfected ☐ Neither ☐

b) Tractor tyres Cleaned ☐ Disinfected ☐ Neither ☐

5) Other larger equipment e.g. tractors, scrapers, trailers, weighers

Cleaned ☐ Disinfected ☐ Neither ☐

6) Cleaned & disinfected smaller equipment e.g. pig boards, brushes, shovels, buckets, stepladders, toolboxes, slap marker? Cleaned ☐ Disinfected ☐ Neither ☐

7) Has any equipment been off the farm in the last week? Yes ☐ No ☐

If yes, did you clean and disinfect it on return? Cleaned ☐ Disinfected ☐ Neither ☐

8) Please estimate how much time was spent cleaning equipment in the last week:

Hours spent cleaning and disinfecting equipment	Was this more or less time than normal? (Circle as appropriate)	If not same, how many hours do they normally spend?
	More Less Same	
	More Less Same	
	More Less Same	

If the cleaning is done by a contractor, what is the hourly rate? _____
(or what was the total cost?)

C. Rodent control

9) Have you checked rodent baits? Yes ☐ No ☐

Have you replenished rodent baits? Yes ☐ No ☐

10) Have you seen any evidence of rodents on your farm? Yes ☐ No ☐

11) Please estimate how much time was spent on rodent control in the last week:

Hours spent controlling rodents	Was this more or less time than normal? (Circle as appropriate)	If not same, how many hours do they normally spend?
	More Less Same	
	More Less Same	
	More Less Same	

D. Biosecurity measures

	ALL	SOME	NONE
12) Have you emptied and changed boot dips?	☐	☐	☐
13) Have you washed staff overalls?	☐	☐	☐
14) Washed/cleaned other protective clothing (aprons, waterproofs):	☐	☐	☐
15) Did staff clean their hands before entering pig buildings?	☐	☐	☐

16) Please estimate how much time was spent on biosecurity measures in the last week:

Hours spent on biosecurity	Was this more or less time than normal? (Circle as appropriate)	If not same, how many hours do they normally spend?
	More Less Same	
	More Less Same	
	More Less Same	

COMMENTS: Please write any events or other information that you think might be important for us.

_____

_____

_____

_____

_____

_____

THANK YOU!