SUMMARY

Among Swedish consumers and politicians there is a wish to increase the organic pig production. Therefore, an interdisciplinary research program in organic pig production was initiated with funding primarily from FORMAS and SLU. The project (EKOPIG) has been carried out involving all of SLU, and both piglet and growing-finishing pig production were studied. Part IV within EKOPIG was carried out at SLU-Alnarp, and focused on housing systems for organic slaughter pigs.

A building for organic growing-finishing production was constructed at JBT’s research farm for pig studies. The animal house had space for 128 growing-finishing pigs distributed in 8 pens of 16 pigs each. The pens were designed according to the regulations required by the EU and KRAV (with and without access to pasture). Pasture yards were established adjacent to the animal house.

The labour requirements for producing slaughter pigs were documented (Table 1). It was calculated to take 32.6 min to produce one slaughter pig during summer when the pig was housed in a pen with pasture access, and 25.6 min where there was no access to pasture. During the winter period, the labour requirement was 26.5 min per produced slaughter pig (Table 2).

The work stress in the experimental stable was investigated using the Borg CR-scale and the EWA method. The working conditions when cleaning the outside areas (Figures 1-5) were experienced as requiring a lot of effort (being very strenuous), especially during the winter period. Inside the stable, the lying areas were only cleaned when necessary (Figures 6 and 7). In addition, work operations such as cleaning the alleys (Figures 8 and 9), cleaning using high pressure washing systems (Figures 10 and 11), distribution of straw (Figures 12-15) and weighing the animals (Figures 16-18) were also studied.

The amount of stress experienced by different parts of the body when distributing straw was investigated using biometrical calculations. It was determined that the stress on the back/spine was three times higher when the straw was taken and lifted up from the distribution cart than when it was actually being distributed in the pen (Figures 14b and 15b).

An estimation of the physical effort needed for the various work operations is given in Figures 19 and 20 for the organic housing system in comparison to a conventional system. The physical effort was also estimated using a checklist provided by Prevent. These results are shown in Table 3. It was determined that it was mainly the work operations involving cleaning that required more effort in the organic pig housing system than in the conventional. Among other things, this was due to the areas to be cleaned being larger. Ventilation and air quality was experienced as being better in the organic stable, whereas personnel considered the climate in the conventional stable to be better.

In summary, the work efficiency in the animal house was considered to be good, with a labour requirement per produced slaughter pig being a third of that required for outside organic pig production using huts. The most “troubling” observation from the investigation of work stress was that cleaning the outside concrete areas not only
required more time but was also physically harder. The fundamental idea when the
stable was built was that the pigs should dung near the culvert when outside and then
the pigs themselves via their physical activity should “push” the dung down into the
culvert (the floor had a 10% slant – Straw-flow system). In practice, however, on many
occasions the pigs dunged on a much larger area when outside, and they were not
active enough to push the dung into the culvert.

There are practical solutions for improving this work operation. In Southern Europe
slatted floors are used on half of the outside concrete area. In Sweden, however, this
would result in the slats being frozen for a large part of the winter and thus their
draining effect would be lost during the winter period. A solution already used in most
of the organic pig herds in Sweden, is to scrape the outside concrete floor with a tractor
scraper/loader at least once a week. On the other hand, the pigs have to be locked
inside in order to scrape the floor clean and this will require large gates which must be
opened and closed. This in turn will require a not insignificant amount of work. The
concrete yards used with these solutions are often completely covered with a thick layer
of dung. This is not especially stimulating or hygienic for the pigs. In addition, these
large dirty areas promote a high emission of ammonia. It is a great challenge to design
an outside concrete yard for pigs which is stimulating for the animals and will result in
a low ammonia emission, better working environment and lower labour requirement! A
solution using a peat layer on a large part of the outside floor (also under a protective
roof) and a dung alley which can be scraped via machine could be one solution. More
studies are needed, however, to develop appropriate solutions to this problem.