Агротехническая и экономическая эффективность мульчирующей обработки почвы под пшеницу озимую по чистому пару / **А.И. Цилюрик, А.И. Горбатенко, В.Н. Судак, И.И. Гасанова, В.П. Шапка, А.А. Кулик** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 5–11.

В условиях северной Степи при выращивании пшеницы озимой по чистому кукурузному пару обоснована целесообразность применения мелкой мульчирующей обработки почвы (дисковая, плоскорезная), которая на органо-минеральном фоне (послеуборочные остатки + $N_{60}P_{30}K_{30}$) по эффективности превосходит зяблевую вспашку (дополнительное накопление влаги составляет 89–143 м^3/га, урожайность зерна – 5,52–5,60 т/га, экономия горючего – 22–29 л/га, рентабельность – 110–123 %). Установлено, что лучшие предпосылки для получения высокобелкового зерна пшеницы озимой в годы, когда весенне-летняя вегетация растений происходит при достаточных исходных запасах продуктивной влаги в слое 0–150 см, теплой и умеренно влажной погоде в фазу налива и до конца восковой спелости зерна.

Ключевые слова: пар, пшеница озимая, способы обработки почвы, послеуборочные остатки, минеральные удобрения, урожайность и качество зерна, экономическая эффективность.

Крупяные свойства зерна различных сортов и линий пшеницы спельта / **Г.Н. Господаренко, А.Т. Мартынюк, В.В. Любич, И.О. Полянецкая** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 12–16.

Приведены результаты изучения обмолота зерна, пленчатость, выход крупяных продуктов, содержание эндосперма в зерновке разных сортов и линий пшеницы спельта. Содержание пленок в зерне пшеницы изменяется в широком диапазоне – от 30,4 до 64,8 %. Установлено, что самым высоким зарегистрирован выход крупы из пшеницы спельта № 1, который существенно изменяется в зависимости от сорта и линии; из зерна сортов Шведская 1, Заря Украины и Schwabenkorn (88,3–89,8 %); из зерна линий Р 3, LPP 1304, LPP 3122/2, LPP 3117, LPP 3373, полученных гибридизацией *Tr. aestivum* / *Tr. Spelta* (87,3–90,4 %). Выход плющеной крупы подобный выходу целой крупы. Выход дробленых круп низкий. Выявлено, что на выход крупяных продуктов влияет содержание эндосперма в зерновке.

Ключевые слова: пшеница спельта, крупяные продукты, содержание пленок.

Гейсун А.А. Влияние Гумилида на накопление гуминовых веществ в биогумусе / **А.А. Гейсун, Л.М. Степченко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 17–20.

Приведены результаты 6-месячных исследований влияния Гумилида на накопление гуминовых веществ в биогумусе в процессе вермикультивирования. Установлено, что при использовании Гумилида в составе питательного субстрата на основе ферментированных навоза крупного рогатого скота и подсолнечной лузги наблюдается накопление водо- и щёлочерастворимых гуминовых веществ в биогумусе, качество которых в конце исследования увеличивается соответственно на 20,7 % ($p<0,05$) и 15,1 % ($p<0,01$) относительно контроля.

Ключевые слова: биогумус, вермикультивирование, гуминовые вещества, Гумилид, pH, гумификация, щелочная экстракция.

Положенец В.М. Моделирование сроков сезонного появления альтернариоза картофеля в Полесье Украины / **В.М. Положенец, Л.В. Немерицкая, И.А. Журавская** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 21–23.

Утверждается, что основными предикторами, которые необходимо использовать при моделировании сроков сезонного появления альтернариоза картофеля, являются: минимальная температура зимой на поверхности почвы, количество осадков, среднесуточная температура и влажность воздуха в июне. Разработаны математические модели, которые связывают сроки появления альтернариоза с каждым из предикторов. Объединение результатов моделирования по всем предикторам позволяет уменьшить ошибку прогноза.

Ключевые слова: картофель, альтернариоз, моделирование, ограничение развития, Полесье Украины.

Доля М.М. Особенности биологии основных видов вредителей сорго при современных системах земледелия в Лесостепи Украины / **М.М. Доля, Е.А. Иванова** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 24–30.

Приведены данные современной структуры ентомокомплекса сорго в регионе исследований. Обнаружены доминирующие и наиболее вредные насекомые – фитофаги сорго. Установлено влияние погодно-климатических условий на формирование основных популяций вредных видов насекомых. Впервые разработаны модели прогноза численности отдельных видов вредителей сорго в Лесостепи Украины.

Ключевые слова: сорго зерновое, вредители сорго, фитофаги, тля, стеблевой кукурузный мотылек, подгрызающие совки, структура ентомокомплекса, прогнозирование математическое.

Гамаюнова В.В. Урожайность и качество семян рапса озимого в зависимости от обработки почвы, срока и способа сева в условиях Лесостепи Украины / **В.В. Гамаюнова, И.М. Гаро** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 31–36.

Приведены результаты исследований влияния основной обработки почвы, способа и срока сева рапса озимого на его семенную продуктивность. Определено, что наиболее эффективно сев проводить в I декаде сентября с шириной междурядий 15 см; урожайность семян при этом существенно возрастает. Факторы обработки – вспашка на 25–27 см или дискование на 12–14 см – на уровень урожайности влияют значительно слабее. Исследуемые факторы сказываются на основных показателях качества семян – содержании жира, протеина и их условном сборе с гектара.

Ключевые слова: рапс озимый, урожайность семян, обработка почвы, срок и способ посева, качество семян, условия вегетационного периода.

Прус Л.И. Формирование площади листовой поверхности и продуктивности сортов сои в зависимости от инокуляции, сидерации и опрыскивания посевов / **Л.И. Прус** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 37–41.

Изучено влияние комплекса факторов на формирование площади листовой поверхности и продуктивность сортов сои. Выявлены композиции, позволяющие ускорить рост и развитие растений, увеличить площадь листовой поверхности, повысить продуктивность и качество сои. Показано, что инокуляция семян штаммами 634б, 614А, опрыскивание посевов Хетомиком на фоне заделки сидерального удобрения способствовали увеличению площади листовой поверхности растений сои.

Ключевые слова: соя, инокуляция семян, сидеральные удобрения, площадь листовой поверхности, микробиологические препараты, производительность, качество.

Григоришин Е.В. Целостность растительных организмов в различных условиях предпосевной обработки семян на примере эхинацеи бледной / **Е.В. Григоришин** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 42–48.

Количественно оценена вариабельность целостности системы координационных связей организменного уровня эхинацеи бледной вследствие влияния предпосевной обработки семян различными стимуляторами. Показано, что интеграцию растений можно охарактеризовать средствами факторного анализа, она является очень чувствительной к воздействию экологических факторов, в том числе и средств предпосевной обработки семян. Установлено, что под воздействием подавляющего большинства исследованных вариантов внутренняя структура координационных связей морфофункциональных признаков эхинацеи бледной описывается размером растений, количеством осевых модулей, фотосинтетическим и репродуктивным потенциалом. Внешние экологические факторы, например обработка семян стимуляторами, могут приводить к незначительным перестройкам интеграционной структуры. Обработка гуматом не влияет на характер корреляции главных компонент и манифестных переменных. Наиболее сложная трансформация наблюдается в случае применения наномикса и его смеси с гуматом.

Ключевые слова: эхинацея бледная, организм, целостность, анализ главных компонент, стимуляторы.

Гаврюшенко А.А. Обоснование динамики содержания калия различных конструкций техноземов при длительном сельскохозяйственном использовании в условиях Никопольского марганцеворудного бассейна / **А.А. Гаврюшенко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 49–52.

Приведены результаты детального изучения и обоснования динамики содержания калия в различных конструкциях техноземов при длительном сельскохозяйственном освоении и использовании в условиях техногенных ландшафтов Никопольского марганцеворудного бассейна. Показано, что содержание калия определяется не только свойствами почвенно-поглотительного комплекса, но и дифференциацией гидрологического режима, сменой периодов “увлажнение–высыхание”, “промерзание–оттаивание” в условиях техногенеза. Распределение обменного калия по профилю различных едафических конструкций техноземов определяется содержанием и составом первичных и вторичных минералов, гранулометрическим составом, а также характером течения почвообразовательного процесса.

Ключевые слова: рекультивация, техноземы, горные породы, эдафические свойства, динамика содержания калия.

АННОТАЦИИ. КЛЮЧЕВЫЕ СЛОВА. БИБЛИОГРАФИЯ

Дементьева О.И. Экономическая эффективность выращивания кукурузы и риса в зависимости от качества поливной воды в условиях Степи / **О.И. Дементьева** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 53–59.

Установлено, что совокупное действие плодородия почвы, климатических условий и мелиоранта (фосфогипс – 2 т/га) при использовании агрессивной воды II класса позволили получить урожайность зерна среднепоздних гибридов кукурузы (13,15–13,64 т/га) на уровне урожайности зерна, выращенного в условиях Асканийской сельскохозяйственной опытной станции (13,14–13,50 т/га), где источником орошения была днепровская вода I класса качества. Показана возможность использования для орошения в чеках Института риса НААН дренажно-сбросных стоков путем смешивания их (25 %) с днепровской водой (75 %).

Ключевые слова: качество поливной воды, дренажно-сбросные стоки, урожайность зерна, экономическая эффективность, стоимость выращенного зерна, чистая прибыль, себестоимость зерна, уровень рентабельности.

Оптимайз как средство повышения производительности сои и плодородия почвы / **В.В. Лихочвор, А.В. Панасюк, Р.Н. Панасюк, В.Н. Щербачук** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 60–62.

Изложены результаты исследований по изучению влияния предпосевной инокуляции семян препаратом Оптимайз на особенности формирования симбиотического аппарата растений сои сорта Устья и урожайность культуры. Показано, что исследуемый агроприём на посевах сои (особенно на почве, где культуру продолжительное время не выращивали) обеспечивает формирование максимальных показателей симбиотической продуктивности, а также получение высокой урожайности на уровне 2,53 т/га, что выше на 0,46 т/га, чем в контроле (без инокуляции), и на 0,28 т/га в сравнении с вариантом, где вносили рекомендуемую норму.

Ключевые слова: урожайность, соя, инокуляция, симбиотическая продуктивность, площадь листовой поверхности, чистая продуктивность фотосинтеза, фотосинтетический потенциал, масса сухого вещества, белок, жир.

Шатковский А.П. Диагностика поливов свеклы сахарной по методу “Penman–Monteith” в условиях капельного орошения Степи Украины / **А.П. Шатковский, А.В. Журавлев** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 63–69.

На основе использования современного инструментария (интернет-метеостанции iMetos®, станции влажности почвы iMETOS® SM/ECHO/TNS/ECOD2), определено эталонное водопотребление ЕТо, расчетное и фактическое значение суммарного водопотребления ЕТс свеклы сахарной. проведено корректирование коэффициента культуры Кс по фазам развития растений с использованием отклонений от стандартных условий. Установлено, что значения фактического коэффициента культуры Кс для условий капельного орошения Степи Украины отличаются от стандартного Кс-FAO: на начальной и конечной стадиях развития растений свеклы сахарной Кс-FAO завышает фактическое значение ЕТс соответственно на 22–35 и 57–70 %, а в середине вегетационного периода, напротив – занижает на 8–10 %. Учитывая четкую корреляцию Кс-FAO и Кс (факт.), для определения фактического суммарного водопотребления ЕТс растений свеклы сахарной рекомендовано использовать скорректированные значения Кс (пр.).

Ключевые слова: суммарное водопотребление, коэффициент культуры, оросительная норма, капельное орошение, метод “Penman–Monteith”, свекла сахарная.

Ткачук А.В. Оценка влияния климатических условий на производительность люцерны в северной Степи Украины / **А.В. Ткачук, В.Ю. Запорожченко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 70–73.

С использованием метеорологических факторов сделан расчет биоклиматического потенциала, который является одним из самых универсальных и удобных комплексных показателей в оценке условий выращивания сельскохозяйственных культур. Расчет биоклиматического потенциала, по данным ГМС Апостолово Днепропетровской области, под посевами люцерны произведен за 1967–1987 гг. Влияние климатических условий на продуктивность люцерны подтверждается тесной связью с биоклиматическим потенциалом. По полученной зависимости можно оценить и запрограммировать урожайность люцерны.

Ключевые слова: метеорологические факторы, люцерна, биоклиматический потенциал, продуктивность агроценоза, урожайность, влагообеспеченность.

Борисюк Б.В. Влияние структуры травосмеси на агрохимические показатели рекультивированных почв после добывания ильменитовых руд / **Б.В. Борисюк, В.В. Швец, О.Б. Борисюк** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 74–78.

Приведены результаты исследования эффективности биологического этапа рекультивации земель по агрохимическим показателям залуженной почвы после извлечения ильменитовых руд в Полесье Украины. Оценено влияние структуры травосмесей и методов сева на показатели содержания гумуса, легкогидролизуемого азота, обменного калия, подвижного фосфора, pH, гидролитической кислотности, суммы обменных основ. Определена зависимость ряда агрохимических показателей от почвоулучшающих методов технического этапа рекультивации земель. Оценка динамики показателей почвенного плодородия приведена в соответствии с показателями дерново-подзолистой почвы, обозначенными в ДСТУ 4362-2004.
Ключевые слова: травосмесь, агроценоз, рекультивированная почва, агрохимические показатели, сумма обменных основ, гидролитическая кислотность, азот, фосфор, калий, гумус, контроль,, дерново-подзолистая почва.

Мильчевский В.Д. Результаты скрещивания цигайских овец с породой ромни-марш / **В.Д. Мильчевский** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 79–82.
Исследовано скрещивание цигайских маток с баранами породы ромни-марш в условиях южных сухих степей. Установлено, что помесное потомство достоверно уступает чистопородным сверстникам по продуктивности и жизнеспособности. Предложено при скрещивании более тщательно выбирать породы и основное внимание уделять работе с каждым отдельным животным, а не только с названиями пород. Отбор животных в опыт производить только методом случайной выборки, уделять повышенное внимание жизнеспособности помесного потомства.
Ключевые слова: порода, скрещивание, овцы, природные зоны, цигай, ромни-марш, отбор, оценка животных.

Перекрестова А.В. Реализация генетического потенциала молочной продуктивности чистопородными и помесными коровами / **А.В. Перекрестова** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 83–88.
Исследована реализация продуктивных качеств чистопородных швицких первотелок и помесей первого поколения от скрещивания украинской черно-рябой и красно-рябой молочных пород со швицкими быками на протяжении всего лактационного периода. Установлено, что помесные первотелки F1½УЧеРМ×½Ш за первый лактационный период секретировали 7901,3 кг молока, тогда как от коров F1½УЧоРМ×½Ш получено на 4,45 % больше (P<0,001). Существенно выше соответственно на 14,38 и 10,39 % был уровень продуктивности у чистопородных швицких первотелок, которые производили за лактационный период на 13,57 % больше молочного белка, чем первотелки F1½УЧоРМ×½Ш. Показано, что среднесуточные удои у первородящих разных генотипов растут с первого лактационного месяца и максимального значения достигают на четвертом.
Ключевые слова: коровы, генотип, помеси, лактация, удой, продукция молочного жира и белка.

Косенко С.Ю. Анализ динамики резвостных показателей лошадей орловской рысистой породы в условиях филиала “Одесский ипподром” ГП “Коневодство Украины” / **С.Ю. Косенко, А.В. Романенко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 89–94.
Установлено, что за последние три года в класс 2.10 и резвее вошли две головы трехлетнего и две – четырехлетнего возраста; лучшую резвость на дистанцію 1600 метров показала кобыла Канада Дубровского конного завода. Согласно данным архива ипподрома, за 2006–2016 гг. лошадьми орловской рысистой породы установлено13 рекордов, то есть 56,5 % от общего количества, из которых 6 (46,2 %) принадлежат лошадям Запорожского конного завода. Среди победителей приза Барса с 1950 по 2016 год доля лошадей класса 2.05 и резвее составляет лишь 2 головы (3,1 %). Датируются эти показатели 1988 и 1989 годами. Доля лошадей класса 2.10 и резвее – 30 голов (47,6 %), из них за последние 10 лет выявлено 7 голов. Доля кобыл среди победителей приза Барса – 25,3 %. Средняя резвость победителей составляет 2 мин 11,4 с за весь период.
Ключевые слова: ипподром, лошади, орловская рысистая порода, испытания, резвость, рекорды, конные заводы, призы.

Китаева А.П. Развитие новорожденных ягнят цигайской породы в зависимости от генотипа отцов / **А.П. Китаева, И.С. Слюсаренко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 95–98.
Представлены результаты изучения развития новорожденных ягнят, полученных от использования баранов-производителей пород гиссарская, мериноландшафт на матках цигайской породы. Установлено, что ягнята рождались здоровыми, жизнеспособными, с хорошо развитым шерстным покровом. Обе породы дали крупное потомство как среди баранчиков, так и среди ярок, особенно это

заметно на ягнятах, рожденных в числе одиночек. Среди двойнят тенденция к превосходству по живой массе сохранялась у потомков баранов гиссарской породы.
Ключевые слова: овцы, живая масса, порода, ягнята, баранчики, ярки, стати тела.

Продуктивные качества и гематологические показатели овцематок асканийской породы при оптимизации уровня протеина и энергии в рационе / **Г.М. Седило, С.А. Вовк, М.А. Петришин, М.М. Хомик, Н.М. Карапата** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 99–102.
Приведены результаты исследований гематологических показателей, молочной продуктивности овцематок асканийской мясошерстной породы и интенсивности роста приплода при оптимизации уровня протеина и энергии в их рационах. Установлено, что использование в рационе лактирующих овцематок асканийской мясо-шерстной породы в зоне предгорья Карпат в стойловый период комбикорма, корректируемого по уровню протеина и энергии путем введения в его состав зерна местных культур с высоким содержанием белка, обеспечивает надлежащие кондиции тела и молочную продуктивность маток, оптимизирует у них гематологические показатели, повышает среднесуточные привесы подсосных ягнят на 6,7–13,9 %.
Ключевые слова: овцематки, ягнята, кормление, протеин, энергия, производительность, показатели крови.

Оценка продуктивных признаков овец романовской породы / **В.П. Ткачук, И.В. Ковальчук, А.Л. Шуляр, А.Л. Шуляр** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 103–106.
Изложены результаты оценки овец романовской породы по продуктивным признакам в условиях конкретного хозяйства полесской зоны Украины. Обсуждаются показатели воспроизводства овец (срок плодоношения, выход молодняка на 100 овцематок, частота рождения ягнят-одиночек, двойнят и большего количества ягнят), показатели живой массы взрослого поголовья и молодняка овец, динамику абсолютных и среднесуточных приростов ягнят. Проведена экономическая оценка результатов опыта, которая свидетельствует о целесообразности использования овец романовской породы для производства баранины.
Ключевые слова: овцы, романовская порода, показатели воспроизводства, живая масса, абсолютный прирост, среднесуточный прирост, настриг шерсти.

Тенденции развития селекционно-племенной работы в овцеводстве / **В.С. Топиха, Г.И. Калиниченко, Е.И. Петрова, В.А. Кириченко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 107–110.
Обсуждаются тенденции развития селекционно-племенной работы в отрасли отечественного овцеводства в усовершенствовании и создании новых пород и внутрипородных типов овец разного направления продуктивности. Определены основные этапы оценки их продуктивности. Приведена оценка селекционных признаков овец отечественной селекции, а именно: таврийского типа асканийской тонкорунной породы и асканийской каракульской породы на основе традиционной селекции и с использованием иммуногенетических маркеров. Показано, что оценку животных необходимо проводить как по фенотипическим признакам, так и с использованием достижений биологических наук, связанных с иммуногенетическими исследованиями.
Ключевые слова: овцы, селекционные признаки, комплексная оценка, антиген, иммуногенетика, маркер.

Щербина Е.В. Эффективность дифференцированного содержания птицы в условиях Юга Украины / **Е.В. Щербина** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 111–117.
Обсуждаются методы оценки и отбора в период формирования высокопродуктивных стад птицы яичных кроссов; результаты исследований, проведенных на птице кросса Иза браун, рассортированной на классы по живой массе, длине плюсны и размещенной на разных ярусах содержания клеточных батарей. Установлено, что ярус содержания неоднозначно влияет на уровень яйценоскости птицы. В классах распределения M^-M^- и M^-M^+ преимущество имели несушки верхнего яруса. Высокий уровень продуктивности наблюдался у несушек нижних ярусов классов распределения M^+M^- и M^+M^+. Показано преимущество содержания птицы яичного направления продуктивности в равновесных группировках с учетом яруса содержания.
Ключевые слова: кросс, морфологические признаки, белок, желток, скорлупа, коэффициент корреляции.

Руденко О.П. Гематологические показатели карповых и сазана под влиянием витаминно-минеральной добавки / **О.П. Руденко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 118–121.
Приведены данные гематологических и морфологических исследований у карпа рамча-

того, карпа чешуйчатого и сазана под влиянием жирорастворимых витаминов и микроэлементов Цинка, Йода и Селена в составе биологически активной добавки к рациону. Констатировано, что скармливание добавки повышает в крови карповых рыб уровень гемоглобина, увеличивает количество эритроцитов, сегментоядерных нейтрофилов и моноцитов, уменьшает количество лейкоцитов и лимфоцитов. Изменения наиболее выражены в крови сазанов, чем у рамчатых карпов. В частности, концентрация гемоглобина в крови сазанов была на 7,5 % ($p < 0,05$) выше, а количество лейкоцитов на 5,4 % ($p < 0,05$) меньше относительно контроля. Результаты свидетельствуют о положительном влиянии витаминно-минеральной добавки на кислородно-транспортную и иммунную функции крови у рыб, особенно у сазанов.
Ключевые слова: карп рамчатый, сазан, кровь, гематологические показатели, лейкоциты, гемоглобин, эритроциты.

Тарасенко М.В. Упрощенная методика определения типа высшей нервной деятельности лошадей / **М.В. Тарасенко, Н.П. Петрушко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 122–126.
Предложена методика постановки и проведения опыта по определению типа высшей нервной деятельности и силы нервной системы лошадей, основанная на выработке у лошади двигательно-пищевого условного рефлекса на кормушку с кормом. Изложена комплексная система анализа результатов, полученных в ходе эксперимента. Методика позволяет значительно сократить затраты времени на определение типа высшей нервной деятельности животного, а также практически упростить проведение опыта и анализ, полученных в ходе эксперимента результатов, не снижая их объективность.
Ключевые слова: лошадь, методика, тип высшей нервной деятельности, внешний раздражитель, двигательно-пищевой условный рефлекс.

Бучко О.М. Свободнорадикальные процессы в организме поросят при действии комплекса биологически активных добавок / **О.М. Бучко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 1(43). – С. 127–.
Исследовалось влияние муравьиной кислоты и биологически активной кормовой добавки Гумилид на показатели свободнорадикальных процессов и системы антиоксидантной защиты организма поросят во время отъема от свиноматок. Установлено, что комплекс органической кислоты и гуминовой добавки снижает концентрацию продуктов оксидативного стресса и активирует глутатионовое звено антиоксидантной системы, что вызывает повышение адаптационного потенциала и угнетает действие стрессовых факторов на организм животных в один из наиболее критических периодов онтогенеза.
Ключевые слова: поросята, антиоксидантная система, “Гумилид”, муравьиная кислота, постнатальная адаптация, отъем, свободнорадикальные процессы.

Agrotechnical and economic effectiveness of mulch tillage for growing winter wheat following complete fallow (p. 5–11)

A. Tsilyurik, A. Gorbatenko, V. Sudak, I. Gasanova, V. Shapka, A. Kulyk
Dnipropetrovsk State Agrarian and Economyc University, Ukraine
Institute of Agriculture of the steppe zone NAAS of Ukraine, Dnipropetrovs'k

In connection with climate warming, changes in environmental and economic priorities of management and agriculture biologization Steppe there is an urgent need to improve the technology of tillage systems and fertilizer for winter wheat by saving energy, additional accumulation of moisture, increasing the yield and grain quality.

According to studies minimum tillage mulching process fallow promotes additional accumulation of productive moisture in the soil compared to the control (plowing 25–27 cm) in the amount of 89–143 m³/ha and ensure the restoration of its reserves in the spring tillering wheat plants (203–207 mm, 85 or 86 % of the field capacity limit, the layer of 0–150 cm).

It is proved that the level of productivity of winter wheat mulching and tillage (disking – 5,17–5,60 t/ha, moldboard less – 5,04–5,52 t/ha) is not inferior to deep plowing (5,24–5,50 t/ha) in the plowing, thus we get good fuel economy (22–29 l/ha) and high profitability.

It was found that the best prerequisites for producing high–protein grain winter wheat took place in the years when the spring–summer vegetation plant was at a sufficient initial stocks of productive moisture in the layer 0–150 cm, warm and moderately humid weather during the period from the start of loading until the end of wax ripeness grains (2011 and 2014 years). Improving the quality of basic production parameters in dry years (2012), is due to the formation of small grains, that is, at a lower full–scale mass is proportional to the increase in the share of protein in relation to carbohydrates (starch).

In terms of increasing the productivity of wheat on fallow and produce an annual food grain high quality mulch agricultural background, the advantage is the system of fertilizers, which provides for the use of all by–products to the predecessor (maize), as well as making $P_{30}K_{30}$ before sowing and N_{60} at the beginning of booting plants that during moldboard plowing generate additional grain of 0,26 t/ha, disking – 0,43 moldboard less – 0,48 t/ha.

Keywords: fallow, winter wheat, tillage methods, post-harvest residues, fertilizers, grain yield and quality, economic efficiency.

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Cereal properties of different variety and strain of spelt wheat (p. 12–16)

H. Hospodarenko, A. Martyniuk, V. Liubych, I. Polyanetska
Uman National University of Horticulture, Ukraine

The results of the study on grain threshing, husk content, yield of cereal production, en-

dosperm content in the caryopsis of different varieties and strains of spelt wheat are given. Cereal properties of spelt wheat vary depending on the variety and strain. Spelt wheat grain can be chaffy (Zoria Ukrainy variety and NAK 22/12 strain), not chaffy (Shvedska 1 variety, LPP 3117, P 3 and LPP 1221 strains) and half chaffy of other varieties. The husk content of spelt wheat grain varies in a wide range, from 30,4 to 64,8 %. This figure of most studied strains is much higher than the check variant (Zoria Ukrainy variety) which varies from 49,6 to 64,8 %. The husk content of Schwabenkorn variety and TV 1100 strain is 43.7 %, so the difference is not significant with the check variant (HIP_{05} = 2,3). This figure of NAK34/12–2 and NAK 22/12 strains and NSS 6/01 variety varies from 30,4 to 39,8 % which is significantly lower than the check variant.

It is found that spelt wheat No. 1 has the highest yield that varies considerably depending on the variety and strain. Thus, the highest yield of this cereal is obtained from Shvedska 1, Zoria Ukrainy and Schwabenkorn varieties, from 88,3 to 89,8 %. Grain of P 3, LPP 1304, LPP 3122/2, LPP 3117 and LPP 3373 strains obtained by hybridization of Tr. aestivum/ Tr. spelta is characterized by the highest output, from 87,3 to 90,4 %. This figure of other strains varies from 83,7 to 86,2 %. Introgressive strains NAK 22/12 and TV 1100 have the yield of 89,7 and 90,2 % whole grains, while grain of NAK34/12–2 strain has a significantly lower yield of cereals (84,5 %). The tendency of rolled cereal yield is similar to the tendency of whole cereal yield, the indicator of which varies from 81,0 to 87,3 %. The yield of milled cereals is the lowest which varies from 77,6 to 79,5 %. It should be noted that the highest yield of milled cereals No. 2 is 50,4–51,3 %, the lowest yield of milled cereals No. 1 is 9,2–10,4 %, speaking about milled cereals.

It is determined that the endosperm content in the caryopsis influences the yield of cereal products. It is shown that grain of Shvedska 1, Zoria Ukrainy and Schwabenkorn varieties, P 3, LPP 1304, LPP 3122/2, LPP 3117 and LPP 3373 strains has the best cereal properties concerning the yield of cereal products.

Keywords: spelt wheat, cereal products, husk content.

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The influence of humilid on the accumulation of humin substances in biogumus (p. 17–20)

A. Geysun, L. Stepchenko
Dnipropetrovsk State Agrarian and Economyc University, Ukraine

The article includes the results of the investigation of the influence of biologically active additive Humilid on the accumulation of humic substances in biohumus. The aim of the work is to study the influence of Humilid in the nutrient substrate on the accumulation of humic substances in biohumus in the process of vermiculturing. The investigation was carried out in conditions of the vermifarm LLC Natural Biotechnologies which is situated in Zaporozhye Ukraine and is a producer of biohumus, a liquid humic substance and biomass of vermiculture. Biohumus was used as an object of investigation. The nutrient substrate was a mixture of fermented manure of cattle and sunflower husks. Burts from the substrate were populated with vermiculture. The room was kept at a temperature of 21–24 ºC and substrate humidity in the range of 65–78 %, which corresponds to the technological conditions of cultivation. The experimental beads differed from the control ones by the presence in them of the biologically active additive Humilid [TC U 15.7-00493675-004: 2009] in the amount of 15 mg/kg of nutrient substrate, which was applied once a month. Within 6 months of vermicultutring, at intervals of 45 days, point samples of biohumus were selected from which an average sample was prepared. In the prepared samples, the amount of humic substances and pH was determined. Statistical calculations are performed using the Microsoft Excel editor.

One of the indicators of the quality of biohumus is the presence of humic substances in it, which are easily extracted by water, and more complex ones, which form stable complexes and are dissolved in alkalis.
It was established that within 6 months in the process of vermiculturing in the vermicompost of control and experimental variants accumulation of humic substances occurred. Using the application of Humilid by the end of the investigation, a more active accumulation of water-soluble humic substances is observed at 20,7 % ($p<0,05$) and more complex, in the biohumus of the experimental group by 15,1 % ($p<0,01$) as to control.
Adding Humilide to the nutrient substrate does not affect significantly the pH change in the vermicompost as to the control.

Keywords: biohumus, vermiculturing, humic substances, Humilide, pH, humification, alkaline extraction.

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Modeling of potato early blight timing of seasonal occurrence in Ukraine’s Polissya (p. 21–23)

V. Polozhenets, L. Nemeritska, I. Zhuravska
National University of Life and Environmental Sciences of Ukraine
Zhytomyr National Agroecological University, Ukraine

The aim of the research is to solve the problem of forecasting the timing of seasonal occurrence potato early blight in terms Ukraine’s Polissya. The main predictors that should be considered when predicting the timing of seasonal occurrence potato early blight are: minimum temperature in winter in the ground; the average temperature in june; average humidity in june; amount of rain in june. To analyze the relationships between the timing of seasonal occurrence potato early blight and factors that affect it built the appropriate image depending on what. Mathematical models which bind the timing of seasonal occurrence of potato early blight to each of predictors are developed. Each of the four dependences in terms of prediction has no obvious advantages as points distributed relatively dotted curves around with the same disorder. In this case, to determine the projected timing of seasonal occurrence early blight with the minimum error is reasonable to use all the available statistics that make the averaging of the appearance date, obtained under each function. The association of results of modeling is made to on by it all, that allows to decrease the error of prognosis.

Keywords: potato, early blight, modeling, development restriction, Ukraine’s Polissya.

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Features of Biology of main sorghum pests in the modern farming systems in forest-steppe of Ukraine (p. 24–30)

M. Dolya, K. Ivanova
The National University of Life and Environmental Sciences of Ukraine

In this article represented the structure of sorghum's entomological complex in the research region. Identified the dominant and most harmful pests. Discovered climate factors that aid in pest invasions are mostly temperature related and include increasing average temperatures, warmer winter minimum temperatures, changes in precipitation patterns, and water shortages. For the first time developed the forecast model of pests on sorghum to Forest-steppe. Also presents data on the intensity of development, reproduction and distribution of main pests, as their harmfulness largely depend on complex factors of the environment. The most significant are the agro-climatic factors and the impact of various preventive and special methods of sorghum pests management.
The article presents results of biology and reproduction of sorghum's major pests, also represented examples of harmfulness and crop losses from damages. There are examples of main factors that limit the harmful pests such as the resistance of sorghum hybrids. In resistant sorghum hybrids and varieties insects have caused less damage. The selection of resistant plants is the most reasonable and environmentally friendly way to control pests on sorghum fields.
The research demonstrates the importance of developing environmentally oriented methods of pests control with assessment of the main features of these pests that are based on knowledge of their biology under different weather fluctuations.

Keywords: grain sorghum, sorghum pests, phytophagous, aphids, European corn borer, cutworms, entomological complex, pest forecasting.

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Yield and quality of winter rapeseed seeds, depending on the processing of soils, the time and method of sowing in the Forest-Steppe of Ukraine (p. 31–36)

V. Gamayunova, I. Garo
Mykolaiv National
Agrarian University, Ukraine

The results of research conducted in 2012–2015 are presented. On ordinary black soil in the forest-steppe of Ukraine. The influence of the main soil treatment, the method and the time of winter rapeseed sowing on its seed productivity was studied. It was found that the most effective sowing is to be carried out in the first decade of September with a row spacing of 15 cm, while the yield of seeds is substantially increased. Factors of soil cultivation – plowing at 25–27 cm or disking at 12–14 cm at the level of yields are significantly weaker. Advantage is plowing, however, in a favorable year for moistening, the difference in yield levels for both soil treatment methods studied has not been established. The investigated factors affect the main indicators of seed quality – the content of fat and protein and their conditional collection per hectare. The greatest amount of fat in the rapeseed seeds of winter crops accumulates along the background of plowing. The studied factors did not significantly influence the protein content. The maximum conditional yield of fat (1,97 t/ha) and protein (1,05 t/ha) was determined at sowing in the 1st of September in the usual rowing method for plowing.

Keywords: winter rapeseed, seed yield, soil cultivation, term and method of sowing, quality of seeds, conditions of vegetation period.

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Formation of leaf surface and productivity soybean varieties on usage of inoculation, green manure and spraying of crops (p. 37–41)

L. Prus
Podolsky State
Agrarian Technical University, Ukraine

Purpose. The aim is to justify development and agro-technical measures varietal soybean growing technology areas in Western Lisostepu. **Methods** – laboratory and statistical analyzes. **Results.** Studied the effect of factors on the formation of leaf surface and productivity of soybean varieties. Discovered compositions give an opportunity to accelerate the growth and development of plants, increase the area of leaf surface, improve productivity and product quality.
Our research showed that the productivity of soybean seeds depended on the variety, the year growing and the factors and variations in the experiment.
The highest yield soybean seeds received, on average for 2011–2015, by sort Georgiana – 3,04, Angelica – 2,86, Ksenia – 2,94 and Legend – 2,81 tonna/hectare. For example, productivity of of soybean seeds sort Ksenia under control without fertilizers without inoculation and without spraying was 2,55 tonna/hectare, while the version with green fertilizer, it has increased up 2,77 tonna/hectare. Spraying of crops by Hetomik boosted the yield to 2,68 tonna/hectare. The use of green fertilizer, seed inoculation strain M-8 has provided yield 2,86, strain 614A – 2,86 tonna/hectare, with seed inoculation strain 634b on the background making green manure obtained the highest yield – 2,89 tonna/hectare.

Conclusion. Inoculation of seed by strains 634b, 614A, spraying of crops wiht Hetomik against the background of making green manure contributed to the increase of leaf surface soybean plants.

Keywords: soybean, seed inoculation, green fertilizers, leaf surface area, microbiological preparations, productivity, quality.

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The integrity of plant organisms under different conditions preplant seed treatment for example Echinacea pallida (p. 42–48)

E. Grigorishyn
Poltava State Agrarian Academy, Ukraine

The paper quantified variability coordination bonds system integrity organismic level owing to the influence of Echinacea pallida preplant seed treatment various stimuli. It has been shown that the integration of the plants can be characterized by means of factor analysis (or principal component analysis) and is very sensitive to the effects of environmental factors, including means of preplant seed treatment. It is possible to distinguish the level of integration and integration structure of plants. It was found that under the influence of the vast majority of the studied variants of the internal structure of coordination bonds of morphological and functional features of Echinacea pallida is described by four main aspects: plant size, number of axis modules, of which it is composed, photosynthetic potential, reproductive potential. The level of integration Echinacea pallida remains practically invariant under application of various methods preplant seed treatment. Lability integration structure is a mechanism for achieving stability morphofunctional organismic systems under the influence of external environmental factors. External influences, such as seed treatment stimulants can lead to minor surgery integration structure. Because treatment does not change the character of humate correlation principal components and manifest variables. The most challenging transformation seen with Nanomiks and mixtures Nanomiks and humate.

Keywords: Echinacea pallida, body integrity, principal component analysis, stimulants.

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Basis of dynamics potassium of the technozems for a long agricultural use in the conditions of the Nikopol manganese ore basin (p. 49–52)

A. Gavryushenko
Dnipropetrovsk State Agrarian and Economyc University, Ukraine

It's proved that the content of potassium undergoes a constant change under the influence of physical, chemical and biological processes in conditions of technogenesis. The source of potassium in the soil and rocks are feldspars (orthoclase) and hydromica. Stocks of potassium significantly reduced in those rocks, where mineralogical composition represented by a mixture hydromica, polyhorskit and minerals kaolinite group.
Thus, the distribution of exchangeable potassium along the profile of various designs of technozems is determined by the content and composition of primary and secondary minerals, the granulometric composition, and also the soil-forming process. An increase in the content of exchangeable potassium indicates the inevitability of the evolution from the zero-moment of their formation during agricultural use in the conditions of the Nikopol manganese ore basin. Increase in potassium in the upper connected, probably with his biological accumulation and high in organic matter.
In models drawn less loam, reddish-brown clay and loam, gray-green clay potassium for long–term use increased throughout the profile. The highest rates were observed in the layer of 0–40 cm in the lower layers of data are respectively smaller. Compared with the original content of potassium increase on average by technozems models (layer in the 0–20 cm): less loam + 4,32; reddish-brown clay and loam + 18,81; gray-green clay + 4,02; layer of black rich soil + 6,81 mg/100 g. The results indicate that the content of potassium and dynamics affecting the accumulation of organic matter, mineralogical and grain size, pH of soil solution (in our case, from 7,6 to 8,3).

Keywords: mountain-technological reclamation, technozems, overburden, edaphic properties, dynamics of potassium.

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Economic efficiency of cultivation of maize and rice, depending on the quality of irrigated water in the Steppe (p. 53–59)

O. Demetyeva
Institute of Agroecology and Environmental Management of NAAS, Ukraine

The question of efficiency of maize hybrids growing of different maturity groups on the dark chestnut soils of the Institute of irrigated agriculture and the Askaniya agricultural experimental station NAAS by irrigation of different quality water was examined. In terms of Rice Research Institute has been studied the possibility of using for irrigation the drainage waste effluents by mixing them with the Dnieper water (Dnieper water – 75 % + drainage waste effluents – 25 %)

As a result of laboratory tests the agromeliorative estimate of four types of studied irrigated water indicated the need for continuous monitoring of the quality of irrigated water of the Ingulets irrigated system. According to researches some water indicators are approached or exceeded the maximum permissible concentration, so with the need we had to use meliorants. Other three studied types of water were suitable for irrigation of crops. However, the combined effect of soil fertility, climatic conditions and the meliorant (phosphogypsum – 2 t/ha) using aggressive water of the Ingulets have yielded the medium grain yield of maize hybrids (13,15–13,64 t/ha) at the level of crop capacity obtained in terms of the Askaniya agricultural experimental station (13,14–13,50 t/ha), which has been irrigated by the Dnieper water of the I class of availability.

The grain yield of rice depended on the irrigated water quality and varieties of crops. Mixed water has reduced the rice grain yield of the early ripening varieties of only 4,45–5,43 %. Reducing of the grain yield of the middle ripening varieties using mixed water was alike.

The economic efficiency of cultivation of maize in both studied farms has depended on the irrigated water quality, maturity group hybrids, weather conditions and soil fertility. On the irrigated lands of the Askaniya agricultural experimental station the net income in all the investigated hybrids was higher than on the lands of the Institute of irrigated agriculture, the level of profitability was also higher,but the cost price of 1 ton of grain, on the contrary, lower. The cost of cultivation of rice by moistening backgrounds were close. The additional costs of growing of early ripening varieties in the conditions of mixed water compared with the Dnieper irrigated water have been only 99, while middle ripening varieties – 146 UAH/ha. The multi-vector effect from the water resources protection of the Black sea region by reducing the drainage waste effluents into the Black sea bays could not be overestimated.

Keywords: the quality of irrigated water, drainage waste effluents, the grain yield, economic efficiency, the net income, the cost of grain, the cost price of grain, the level of profitability.

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Optimize as a way of increasing soybean productivity and soil fertility (p. 60–62)

V. Lykhovor, O. Panasyuk, R. Panasyuk, V. Shcherbachuk
Lviv national agrarian university,Ukraine

The results of reserches of influence presowing inoculation of seeds by Optimayz preparation on formation of peculiarities of symbiotic plant apparatus of soya variety Ustya and yield capacity of crop. It is established that the first nodules appeared in the third leaf stage of crop. The smallest number of nodules was noted on the control variant (without inoculation). In the phase of budding the total number and number of active nodules was 2,7 and 2,1 pcs/plant. In the phase of ful flowering, the number nodules

both general and active was the highest and amounted to 3.5 and 4,6 pcs/plant, and then it gradually decreased to the phase of full ripeness to 2,4 and 1,3 pcs/plant. On the variant where recommended rate of preparation (2,8 l/t), in the phase of budding the total number and number of active nodules was 8,4 and 5,8 pcs/plant. In the phase of full flowering the number of nodules both general and active was the highest and amounted 12,9 and 10,4 pcs/plant in the phase of full ripeness – to 6,2 and 3,2 psc/plant.

Using the inoculant Optimayz in the rate of 3,5 i/t, caused the increase as the total number as active nodules in the phase of budding to 21,5 and 18,9 pcs/plant, in the phase of full flowering up to 29,7 and 20,2 pcs/plant and in the phase of full ripeness up to 16,3 and 7,6 pcs/plant. This action on soy sowigs (especially on soils, where the crop for a long time not cutlivated) provides the formation of maximum indices of photosynthetic productivity (area of leaf surface, photosynthetic potential, net productivity, of photosynthesis, mass of dry matter), and obtaining the highest, yield of soy variety Ustya at the level, of 2,53 t/ha, it is higher by 0,46 t/ha comparing with control (without inoculation) and by 0,28 t/ha comparing with the variant where recommended rate was applied. It is obtained that bresowing inoculation affects on quality indices of grain – during inoculants uscuge, the protein contents in grain compared with control (34,1 %), was increased and amounted 35,9 % (Optimyze, 2,8 l/ha) and 36,5 % (Optimyze, 3,5 l/ha).

Keywords: yield capacity, soya, inoculation, symbiotic productivity, area of leaf surface, net productivity, of photosynthesis, photosynthetic potential, mass of dry matter, protein, oil.

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Diagnostic of sugar beet's irrigation by the method of "Penman–Monteith" in the conditions of a drip irrigation of the Steppe of Ukraine (p. 63–69)

A. Shatkovs'ky, O. Zhuravlev
Institute of Water Problems and Land Reclamation NAAS of Ukraine.

The aim of the research is a determination of features and adaptation of calculation method for determining of total evaporation "Penman–Monteith" to the conditions of a drip irrigation of the Steppe of Ukraine (on the example of sugar beet). For achievement of this goal during the 2013–2015years were conducted field experimental studies on the areas of Brylivske research field IWPaLR NAAS (Oleshkivs'ki district, Kherson region).

Using the modern tools (internet weather stations iMetos®, soil moisture stations iMetos®SM/ECHO/TNS/ECOD2) determined the benchmark ETo, calculated and actual values of total evaporation ETc. According to the results of field experiments was carried out an adjustment of culture coefficient Kc according to phases of sugar beet plants development using the deviations from standard conditions.

Determined that the values of the actual coefficient of culture Kc (fact.), for sugar beet in the conditions of drip irrigation of Ukraine Steppe, differs from a standard Kc-FAO. At the initial and pre-final stages of the sugar beet plants development Kc-FAO overestimates the actual value from 20–35 to 57–70 %, and in the middle of the season, on the contrary – underestimates on 8–10 %. This, in turn, leads in fact to conduction of three additional waterings at the beginning and at the end of vegetation period of sugar beet and to the soil moisture deficits in the critical period of plants development.

Taking into account the clear correlation of Kc-FAO and Kc (fact.) to measure the actual evapotranspiration of sugar beet plants we recommend the use corrected values of Kc (kor.).

Keywords: evapotranspiration, coefficient of culture, irrigation rate, drip irrigation, method of "Penman–Monteith", sugar beet.

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The evaluation of the influence of climatic conditions on the productivity of alfalfa in the northern steppe of Ukraine (p. 70–73)

A. Tkachuk, V. Zaporozhchenko
Dnipropetrovsk State Agrarian and Economyc University, Ukraine

With the use of meteorological factors, the bioclimatic potential is calculated, which is one of the most universal and convenient complex index in the evaluation of conditions for growing crops. Calculation of the bioclimatic potential, according to the HMS Apostolovo of the Dnepropetrovsk region, under the crops of alfalfa was produced in 1967–1987. The influence of climatic conditions on the productivity of alfalfa is confirmed by a close correlation with the bioclimatic potential. According to the obtained dependence, the yield of alfalfa can be evaluated and programmed.
The calculated data show that the yield increase, depending on the bioclimatic potential, is different. A significant increase in yield is observed with an increase in moisture supply up to 50%. With a further increase in moisture availability, the yield increase is insignificant. This may show the economic to no purpose of additional irrigation.
Decadal distribution of the bioclimatic potential showed a colossal influence of climatic factors, and especially rains. Thus, at the beginning of the growing season due to precipitation, an increase in the bioclimatic potential is observed. Closer to the middle of the vegetation this increase stops due to a decrease in the amount of precipitated rains and an increase in air temperatures.
During irrigation, the bioclimatic potential coefficient is increased. According to the obtained dependence, the predicted yield increase, as a result, will be about 64%.

Keywords: meteorological factors, alfalfa, bioclimatic potential, productivity of agrocenosis, yield, moisture supply.

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The impact of grass mixtures structure on agrochemical indices of reclaimed soil after ilmenite ores extraction (p. 74–78)

B. Borysiuk, V. Shvets, O. Borysiuk
Zhytomyr National
Agroecological University, Ukraine

The effectiveness of remediation of agricultural direction is determined by soil restoration processes that affect on dimension of agrochemical indicators. Herbaceous cultures are not demanding to soil fertility, but their agrocenosis, used as pasture, promote reclamation effect on the first phase of agricultural direction.
Dimensions of sum of absorbed bases on experiment variations due to ilmenite ore deoxidization and limestone materials addition significantly differ from ISO 4362-2004 values.
Indicator of hydrolytic acidity was higher in areas of reclaimed land with implemented grass mixture: red clover, perennial ryegrass, Dactylis glomerata, fescue (0,20–0,29 mg-eq / 100 g). On alternative variants of the same experiment it was 0,23 mg-eq / 100 g. This dimension largely was determined by the influence of calcareous materials. It was noted a trend of more active organic matter accumulation in soil under alternative grass mixtures structures. Thus, 1, 3, 4 variants increased the organic matter content from 0,27 % to 0,35 % over 0,02 % in variant 2 and control. According to such grass mixture structure: Festuca arundinacea, Bromus inermis, Dactylis glomerata, red clover the index of humus content in sodpodzolic soil reached the lowest values – 0,6–0,8 % that defined in ISO 4362-2004. According to this version of grass mixture structure on variants with direct seeding method also recorded a higher level of mobile phosphorus mobilization – 99–100 mg/kg.
The positive growth trend in soil exchangeable potassium content is typical for all investigated variants, but the level its provision is far from natural soil content that definite by ISO 4362-2004. The growth of nitrogen content in reclaimed soil notes on all herbaceous agrocenoses. Particularly active natural process of nitrogen content reproduction from 12,6 in 2015 to 28 mg/kg in 2016 seeing on variant 4: Aquatic usual, Dactylis glomerata, red clover (randomly seeding). One of the factors that determine the growth of this indicator is growth rate of total microbial biomass which shows increasing organic matter concentration in soil of microbial origin – 467,85 mkg of carbon in g of soil.

Keywords: grass mixtures, agrocenosis, reclaimed soil, agrochemical indicators, sum of absorbed bases, hydrolytic acidity, nitrogen, phosphorus, potassium, humus, control, soddy-podzolic soil.

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Some results of crossing the breed of tsigai sheep with the romney-march breed (p. 79–82)

V. Milchevskiy
All-Russian Research
Institute of Animal Husbandry, Russia

The results of the combination of rams Romney-march with the tsigai breed in conditions of dry steppes are studied. It has been established that purebred offspring are significantly superior to hybrid peers in terms of productivity and viability. The results of this variant of crossing are compared with similar crossings in other natural zones. At a random sample in the experiment, 300 lambs of the qigai breed and 300 hybrid lambs of the qigai x romnimirsch. Experienced sheep were kept in the same conditions. At an annual age, males of qigai lambs were heavier than their peers by 0,5 kg, the female lambs were heavier than hybrids by 0,1 kg. Hybrid sheep were more diverse than purebred animals along the length and thickness of wool fibers, leaving these limits above the permissible limits of semi-fine wool. Among them was 2 % with fine wool and 1% with wool, close to the non-uniform. All the gypsy sheep were only with a half-thin wool. Particularly impressive is the fact that the expected impact of imported breed on the growth rate of young lambs, which is very important for the production of quality young lamb meat, did not happen. On the contrary, the early maturity of the lambs fell sharply. Hybrid males aged 2 months were lighter by 0,8 kg. The female hybrids were 2 kg lighter than the qigai. In addition to lagging behind in productivity, crossed lambs lagged behind in viability, which is very important for the harsh conditions of dry steppes and semi-deserts, where the main sheep population is concentrated in the Caspian, Priazov and Black Sea regions. The proportion of sheep that were rejected during bonitoirovanie because of underdevelopment in hybrid males was more by 8 %, in hybrid females by 15 %. It is recommended, when crosses, to choose more carefully the breeds of animals, the main focus is to work with each individual animal, and not only with the names of breeds of animals. The combinations of animal breeds are almost inexhaustible. It is recommended to draw conclusions about crosses only on the basis of experiments in which the hybrids and purebred sheep are kept only under the same conditions.To recruit them into the experience is necessary only by random sampling.When evaluating the results of crossing, it is necessary to pay increased attention to the viability of the hybrid progeny.

Keywords: breed, crossing, sheep, natural areas, tsigai, romni-march, selection, assessment of animals.

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Realization of the genetic potential of milk production of purebred and crossbred cows (p. 83–88)

A. Perekrestova
"Milk Production Complex
"Ekaterinoslavsky", Ukraine

The article presents the research materials on the implementation of the productive qualities of purebred first-heifers of Schwyz breed and first-generation hybrids from crossing Ukrainian black-white and red-white dairy breeds with Schwyz bulls throughout the all lactation period. It was established that the hybrid first-heifers F_1½UKRM×½Sh for the entire first lactation period, secreted 7901,3 kg of milk, whereas from the cows F_1½UChRM×½Sh, 8269,2 kg of milk were obtained, which is more by 4,45 % (P<0,001). A substantially higher level of productivity in purebred Schwyz first-heifers, which a milk yield of 9228,5 kg, that is, more than 14,38 and 10,39 % of hybrid first-heifers cows, respectively (P <0,001). From the Schwyz cows received for all lactation 9438,1 kg of milk in terms of 4 %, which is more than the physical weight by 2,22 % (P<0,01).
It is proved that the average daily milk yield in first-heifers of different genotypes grows from

the first lactation month and the maximum value is reached on the fourth. Moreover, the highest growth rate of milk yields is observed in young cows, provided low yield on the first month of lactation. Beginning with the fifth month of lactation in cows of different genotypes, the curve of milk yields has a smoothly declining character.

From Schwyz cows was obtained an average of 383,1 kg of milk fat production, whereas from the hybrids F_1½UChRM×½Sh only 315,6 kg, which is less by 21,39 % (P<0,001). The lowest indicator of production of milk fat in hybrid first-heifers F_1½UKRM×½Sh and is 284,2 kg, which is inferior to the value of purebred first-heifers of Schwyz by 34,80 % (P<0,001).

The Schwyz first-heifers produced 318,8 kg of milk protein for the entire lactation period. At the same time, this production in the first-heifers F_1½UChRM×½Sh is 280,7 kg, which is less by 13,57 % (P <0,01). The relatively low indicator of milk protein production has hybrid F1½UKRM×½Sh, from which only 258,9 kg was obtained, which is lower than the value of the Schwyz first-heifers for 23,14 % (P<0,001).

Keywords: cows, genotype, hybrids, lactation, milk yield, production of milk fat and protein.

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An analysis of the dynamics of the speeding performance of horses of Orlov trotting breed in the conditions of the branch "Odessa Hippodrome" of SE "Horse Breeding of Ukraine" (p. 89–94)

S. Kosenko, A. Romanenko
Odessa State
Agrarian University, Ukraine, Ukraine

The article studies and analyzes dynamics of the speed of horses of Orlov trotting breed, which were tested at the Odessa Hippodrome. According to the data of the primary zootechnical register, it is established that over the past three years two classes of three-year-olds and two-four-year-olds entered class 2.10 faster. The best speed at a distance of 1600 meters was shown by the Canadian Dubrovsky stud farm. According to the archive of the racecourse, for the period 2006–2016, horses of Orlov trotting breed had set 13 records, that is, 56,5 % of the total; from which 6 (46,2 %) belong to the horses of the Zaporozhye stud farm. The record of the Barsa prize is 2.04,8 minutes, with the Potok stallion (Cubic-Planida) of the Altai stud farm, which was established in 1989. The best figure among horses of Ukrainian breeding – 2.06,5 – belongs to the stallion Ubranets (Fortepiano-Upakovka), the winner of the Barsa prize in 2007.

Among the winners of the Barsa prize for the period from 1950 to 2016, the proportion of horses class 2.05 and faster is only 2 heads (3,1 %), and these dates back to 1988 and 1989. The proportion of horses of class 2.10 and faster – 30 heads (47,6 %), among them for the last 10 years is 7 heads. The proportion of mares among the winners of the Barsa prize is 25,3 %. The average speed of the winners is 2.11,4 minutes, with the entire period. However, most records for horses four years and older have not been updated since the new century. This is explained by the complex conditions of the existence of state stud farms, which do not allow paying full attention to the education of valuable older breeds, so horses of this group are not tested at the racecourse. In addition, among the horse owners there is a tendency for early implementation of young stallions that have not undergone racecourse trials, which is negatively reflected in the rates of Orlov horses' speed.

Keywords: racecourse, horses, Orlov trotting breed, tests, speed, records, stud farms, prizes.

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Development of newborn lambs of the Tsigay breed, depending on the genotype of the fathers (p. 95–98)

A. Kitaeva, I. Slyusarenko
Odessa State Agrarian University, Ukraine

We studied the development of newborn lambs of the Tsigay breed, depending on the genotype of the fathers. As fathers there were two sheep-producers of gissar breed and breeds of merinolandshaft. It was found that the sheep of these breeds, when used on ewes of Tsigay breed, give healthy, viable offspring that has well-developed all the statues of the body and the living mass, which on the average is 3,7–4,1 kg in ewes and in buck lambs 4,0–4,3 kg with a fluctuation from 3,5 to 5,5 kg.
At the present stage of development of the sheep industry, wool, as raw materials, has lost its attractiveness, which leads to negative consequences in fine-fleeced and semi-fine-wool sheep breeding. Production of mutton and lamb meat grows more and more widely.
The main source of production of dietary meat of sheep all over the world is semi-fine-grain meat-wool sheep breeding from which not only meat but also high-quality crossbred wool is obtained. One way to increase the productivity of lamb is to keep lambs and their target growing, because only healthy, viable animals can have high productivity and fully realize their genetic potential.
In connection with this, the aim of our work was to study the development of newborn lambs obtained from the use of rams of different breed (gissar, merinolandshaft) on Tsigay ewes.
To do this, in the obtained offspring such indicators as the viability and general condition of the body visually, the living mass in individuals and twins, the exterior were studied by taking measurements.
As a result of the conducted work it was established that the lambs were born healthy, viable with a well developed fur coat. Live weight of lambs at birth is an integral indicator of the growth and development of lambs in the embryonic period.
In our studies, the sheep of both breeds produced large offspring both among the buck lambs and ewes. Especially it is visible at the lambs born in number of singles.
The live weight of lambs born in the number of twins did not have a significant and reliable difference in the offspring of the sheep of both breeds. However, the tendency to excellence persisted in the descendants of the sheep of the gissar breed.
In the offspring of the rams of both breeds, the biological feature of the superiority of the buck lambs over the ewes in the living mass was preserved.
The conducted measurements of body articles of newborn lambs testify to the well developed peripheral part of the skeleton. Lambs were born high-legged, narrow-bodied with a slightly elongated body, which is typical for the ex-terrier of newborn lambs of most breeds of sheep. However, tendencies to a preponderance of the body measurements were observed in the offspring of the gissar rams in comparison with the descendants of the merino-landshaft breed.

Keywords: sheep, live weight, breed, lamb, ewes, buck lambs, body statues.

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Productive performance and hematological parameters of ewes askania breed in the optimization of protein level and energy in the diet (p. 99–102)

G. Sedilo, S. Vovk, M. Petryshyn, M. Khomyk, N. Karapata
Institute of agriculture of Carpathian region NAAS, Ukraine

The results of investigations of hematological parameters and milk production of ewes ascanian meat-wool breed and the growth rate of their offspring while optimizing the level of protein and energy in their diets in zone of the Carpathian foothills. The study was conducted on two groups of lactating ewes – analogues Ascanian meat and wool breed with crossbred wool (10 animals in each), were held separately with ensuring proper levels and feeding during stall period. The duration of the experiment 90 days. The diet lactating ewes from the control group during the period of the experiment consisted of 1,6 kg of hay meadow, 0,5 kg of whole grain oats and 0,5 kg standart feeding of feed K80-6-89. Sheep of the experimental group during lactatig period received standart feeding, in which part of the grain base was replaced with pea bran, rapeseed and linseed meal. The nutritional value of control and experimental groups diets differed just slightly. In the control group diet contained 21,7 MJ of exchange energy, 187 g of digestible protein, 2,29 kg of dry matter, while the experimental group diet consisted of 22,1 MJ of exchange energy, 189 g of digestible protein and 2,26 kg of dry matter respectively. One kilogram of dry matter control and experimental groups to the diet of animals contained 9,5 and 9,8 MJ of exchange energy respectively.
It is established, that the use in the diet of lactating ewes of askanian meat-wool breed in the foothills of the Carpathians in the stall period of feed, adjust the level of protein and energy by introducing in its composition of the local grain crops with high protein content, provides the proper condition of body, milk production of ewes, optimizes they hematologic parameters, and increases average daily weight gain of the suckling lambs 6,7–13,9 per cent.

Keywords: ewes, lambs, feed, protein, energy, performance, blood parameters.

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Estimation of productive traits of sheep of romaniv breed (p. 103–106)

V. Tkachuk, I. Kovalchuk, A. Shulyar, A. Shulyar
Zhytomyr National Agroecological University, Ukraine

In the scientific literature there is not enough information about the productive characteristics of sheep of Romaniv breed in Polissya region. Therefore, assessment of productive features of sheep of Romaniv breed in terms of Limited Liability Company (LLC) “Agrocultura-Polissya” of Ovruch district of Zhitomir region was the purpose of our research.
The results of the estimation of the productive characteristics of sheep of Romaniv breed in a specific farm of Polissya zone of Ukraine (LLC “Agricultura-Polissya”) was made. Reproduction parameters of sheep of Romaniv breed (fruiting

period, the lambs crep per 100 ewes, frequency of occurrence of singles, twins and more lambs), traits of live weight of adult animals and young animals, dynamics of absolute increase of live weight and dynamics of average daily gain of lamb was studied.
Sheep of Romaniv breed in terms of "Agricultura-Polissya" were characterized by performance characteristics specific to the said breed.
It was established that the reproduction parameters of sheep of Romaniv breed were in within of biological norms.
The value of the live weight of animals of different age and gender of Romaniv sheep breed was investigated. In this farm live weight of rams was averaged 72,4 kg, ewes – 48,5 kg, lambs – 2,9.
The rate of increase in live weight of animals determined by the absolute and by the relative growth rates of weight for the day, month, year. For all intervals considered the largest absolute increase of live weight of lambs received for the period of 4–7 months.
In this farm sheep sheared was twice a year – in autumn and spring. On average, wool clip of rams of Romaniv sheep breed accounted 2,5 kg, ewes – 1,3 kg.
An economic evaluation of the results of the experiment was made, which demonstrates the feasibility of using Romanov sheep breeds for mutton production in this farm.
Considering that sheep of Romaniv breed can receive five different products: meat, sheepskins, leather with sheepskins, leather and milk, so in terms of "Agricultura-Polissya" should diversify product range of Romaniv sheep, because it will ensure the success sheep breeding by changing demand for different products of sheep on the market.

Keywords: sheep, Romaniv breed, traits of reproductive capacity, live weight, the absolute increase of live weight, average daily gain, wool clip.

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Developing tendencies of selection work in sheep breeding (p. 107–110)

V. Topiha, G. Kalinichenko, O. Petrova, V. Kirichenko
Mykolayiv National Agrarian University, Ukraine

The article presents tendencies in the development of selection and breeding work in the sector of the national sheep breeding. During many years scientists of livestock production institute in steppe areas of "Askania Nova" carry out the selection and breeding work for the improvement and creation new breeds and intra-breed types of sheep in different directions of productivity: fine-wool, semi-fine-wool, rough wool, striped-dairy sheep and others.
For many years in the selection system and breeding work with species, evaluation and selection of animals for numerous indicators of productivity was mainly carried out by phenotypic signs using population genetics and only in the last decade it started to be supplemented with achievements of biological sciences which are connected with immunogenetics researches.
The work reveals main evaluation stages of productivity of fine-wool sheep and striped-dairy sheep. The assessment of selection characteristics of national sheep breed is given, namely: Taurian type of ascanian fine-wool breed and ascanian Karakul breed on the basis of traditional selection and with the use of immunogenetics markers. As a result of their appraisal and evaluation the following was established. There were such indicators of productivity of Taurian ewe type of ascanian fine-wool breed in a section of farms: the live weight of ewes at the age of three reaches 53,47–57,48 kg, pure fiber is 2,84–3,61 kg; the wool length is 9,69–11,3 cm. The average level of this indicator in

ewes is 8,9–10,73 cm, fertilization of females is 74,5–83 %, the yield of lambs is 104,5–124, 8 heads.
The total number of Karakul sheep is about 4 thousand heads, including 114 rams with a live weight 76,5–83,5kg, ewes are 2516 heads, 52,0–54,8 kg. The main livestock is grown in the breeding factory "Marceevo" in Kherson region. In a breeding herd a part of rams is 85,7 %, ewes – 69,5 %, elite and the first class is 100 which is 78 %; actual multiplicity is 151,9 which is 173,4 %. Newborn lambs have basically a medium size curl, thick, silky and shiny coat. The average output of striped type is 67,7 %. The lamb coats in Ukraine meet the requirements of the standard for pure-bred Karakul.
Our research has found a corresponding relationship between lambs which are divided into classes and molecular-genetic markers. It is established that 29,43 % of elite animals had phenogroup Bb (B – blood group system), and among the first-class lambs the number of animals with this phenotype increased to 36,04 %, the second class – up to 39,28 per cent. In its turn, pheno-variant Bbe was found in 36, 69 % of elite animals, while among lambs of the first and second classes of such animals it was 9,94 % less. The given results show the effectiveness of the use of immunogenetics markers for improving the efficiency of selection and breeding work in sheep-breeding. Therefore, the evaluation of animals should be carried out both by the phenotypic characteristics and the use of achievements in biological sciences related to immunogenetics researches.

Keywords: sheep, breeding characteristics, integrated assessment, antigen, immunogenetics, marker.

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Efficiency Differential keeping birds in Southern Ukraine (p. 111–117)

O. Shcherbyna
Kherson State
Agricultural University, Ukraine

The thesis is devoted to the improvement of methods of evaluation and selection under conditions of forming highly productive flocks of egg-cross poultry.
The in article presents the results of research conducted on the poultry of Isa Brown cross sorted out into classes and placed on different tiers of cage range maintenance.
It is found that the maintenance tier influences the level of eggs laying capacity in different ways. In the distribution classes M^-M^- and M^-M^+ layers of the upper tier are at an advantage (327,7 and 326,0 to 320,9–323,1 and 324 eggs of the middle and lower tiers respectively).
In the distribution classes M^+M^- and M^+M^+ a high level of performance is observed with hens kept in the lower tiers of cage range (326,9 and 323,5 eggs respectively to 322,8; 324,7 and 320,6 eggs, upper and middle tiers respectively).
Comparing to unsorted poultry, the improvement of methods of evaluation and poultry breeding in the groupings with equal weight has enabled to raise the productivity in the researched groups of hens sorted out according to their live weight into classes M^- and M^+ and according to metatarsus length into classes M^- and M^+ , or to get additionally the 1,0–3,0 UAH output from each hen. At an average price of 8,7 eggs for 17,1 UAH the value of extra output (calculation for 1 layer) is

equal to 3,3 and 15,6 UAH according to the distribution class.
The results of our research indicate the superiority of keeping the egg laying poultry in the groupings with equal weight taking into account the maintenance tier.

Keywords: Cross biochemical parameters, morphological features, protein, yolk, shell, the correlation coefficient.

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Hematological parameters necked carp and carp under vitamin and mineral supplements (p. 118–121)

O. Rudenko
Institute of animal biology NAAS, Ukraine

Nowadays the quantitative needs of fat-soluble vitamins, and especially micronutrients Zinc, Iodine and Selenium, as well as their influence on hematological parameters in fish studied only in some species. Considerable interest has the studies of hematology profile in carp fish, particularly necked carp, scaly carp and carp, which is one of the original forms to create carp Lyubinskiy type and is used for carp-carp hybrids.
The data of hematological and morphological studies in nacked carp and carp under action of fat-soluble vitamins and minerals Zinc, Iodine and Selenium in the composition of dietary supplement to their diet are presented in the article.
Experiments conducted on two groups of fish (wild carp and necked carp) age of two years, which by principle analogues were divided into two control and two experimental groups of 10 individuals in each. Fish kept in special trays under conditions of continuous closed system of water circulation. Fishes of control groups within 30 days were fed with granulated feed. Individual research groups were fed with a similar feed additives drug “Tryvit” in calculating the amount of 2,500 IU of vitamin A, 3333 IU of vitamin D3, vitamin E 1,7 mg and 5 mg/kg of potassium iodide, 40 mg/kg zinc sulphate and 0,3 mg/kg sodium selenite per kg of feed.
The material for the study was blood a month after the fish feeding investigated mineral-vitamin complex. In blood samples were tested for hemoglobin, counted the number of red blood cells and hematocrit value and blood indices calculated according to generally accepted methods.
Stated, that in case of feeding the carp with a specified additives increased a blood hemoglobin level in the fish, number of red blood cells, segmented neutrophils and monocytes and decreased the number of white blood cells and lymphocytes. It should be noted that these changes were more remarkable in the blood of carp, carp than nacked. In particular, the concentration of hemoglobin in the blood of carp was 7,5 % ($p < 0,05$) higher number of leukocytes and 5,4 % ($p < 0,05$) compared to controls. This data suggests a positive effect of vitamin and mineral supplements for an oxygen transport and blood immune function in fish, and especially in carp.

Keywords: necked carp, carp, blood, hematological indices, leukocytes, hemoglobin, red blood cells.

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Simplified method ology of the determination of horses higher nervous activity type (p. 122–126)

M. Tarasenko, M. Petrushko
Kharkiv State
Zooveterenary Academy, Ukraine

The methodology of the organization and carrying out the test on the determination of higher nervous activity type and force of the nervous system of horses based on the development in a horse of motive-food conditioned reflex on a feeder with a feed has been described, and also the complex system of analysis of the results got during the experiment has been expounded in the article. According to the proposed methodology the experiment is carrying out during three days. In the first day the conditioned reflex of going to the right feeder with a feed is development in a horse. On the second day it is made the single and double "alteration" of the conditionally-reflex stereotype, twice changing a feeding trough with a feed and empty feeder. On the third day the stability of the conditioned reflex is tested by the action of one strong external irritant (a cloth of the red color, stretched between two racks, vertically mounted on the ground). The conclusion about the higher nervous activity type is made on the basis of speed of the formation, "alteration" and stability to the external irritants of the motive-food conditioned reflex of a horse, which is development on a feeding trough with a feed.
The proposed methodology can be used for the determination of higher nervous activity type of the breeding, sport, workers and customary horses at the age from two years. This methodology allows considerably reduce the time spending on the determination of higher nervous activity type, and also practically simplify carrying out the test and analysis of the results got during the experiment, not reducing their objectivity.

Keywords: horse, methodology, higher nervous activity type, external irritant, motive-food conditioned reflex.

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Free radical processes in the piglet's organism under a complex of biologically active supplements (p. 127–130)

O. Buchko
Institute of animal biology NAAN, Ukraine

The article is devoted to problem improving adaptive capacity of young highly productive

animals under intensive technologies during one of the critical periods of their development through biologically active substances. For this purpose, the effect of formic acid and dietary feed supplement Humilid on the free radical processes and antioxidant defense system of the piglet's organism during the first 40 days from the birth was studied. It was found that the addition of a complex supplement to the standard ration for a month from 10- to 40-day age (18 days before and 12 days after weaning from sows) is accompanied by reducing the concentration of oxidative stress products and activation of glutathione chain of antioxidant defense system in animals blood. A reduction of the content of TBA-active products, lipid hydroperoxides and carbonyl groups of proteins in the animals of the experimental group was observed. It was also revealed the increase of activities of glutathioneperoxidase, glutathionereductase and glutathione content in these piglets compared with control. Therefore, combined action of organic acid and Humic supplement positively affected on the antioxidant activity in the blood of animals in the most critical period – 20 days old from the birth and 2 days after weaning from sows (30 days old from the birth). It was concluded that the complex of bioactive feed supplement Humilid and formic acid can add to the standard diet of piglets to activate their adaptive capacity and reduce stress factors in animals in one of the most critical periods of their ontogenesis.

Keywords: piglets, antioxidant system, "Humilid", formic acid, postnatal adaptation, weaning, free radical processes.

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