Современное состояние плодородия черноземных почв и пути повышения продуктивности сельскохозяйственных культур / **А.С. Кобец, Ю.И. Грицан, С.М. Крамарев, А.А. Мицик** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 5–11.

В последние десятилетия продукция растениеводства формируется главным образом на остаточных запасах элементов питания и минерализации гумуса. Такая ситуация вызвана уменьшением объемов внесения удобрений, нарушением севооборотов и насыщением их пропашными культурами, в частности подсолнечником. Эти и другие факторы способствуют распространению и развитию эрозии, дегумификации, агрохимической и агрофизической деградации с потерей агрономически ценной структуры, ухудшают физические и водные свойства черноземных почв. Внесение несбалансированных удобрений, преимущественно азотных минеральных, ведет к выщелачиванию оснований, обеднению почвенного поглотительного комплекса и снижению его буферной способности. В наиболее плодородных почвах – черноземах – повышается гидролитическая кислотность, что указывает на потенциальную опасность дальнейшей деградации этих почв. Одним из путей решения проблемы восстановления утраченного плодородия черноземных почв является внедрение в производство современных технологий выращивания сельскохозяйственных культур с минимализацией обработки почвы и элементами биологизации земледелия.

Ключевые слова: почва, плодородие, деградация, современные технологии, агрохимические показатели, урожай, качество продукции.

Бортник Т.П. Изучение доз внесения сапропелевого стимулятора роста при выращивании картофеля / **Т.П. Бортник, А.Н. Бортник, А.Г. Сергушко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 12–15.

Приведены результаты исследования влияния внекорневой подкормки сапропелевого гумата на биометрические показатели роста и развития растений, а также на урожай клубней картофеля. Установлено, что наиболее эффективным является применение препарата в концентрациях 0,005 и 0,00001 % в фазах появления 5–7 листьев и бутонизации растений. Соблюдение данных рекомендаций использования гуминового препарата “Сапрогум” обеспечивает увеличение площади листовой поверхности на 7,2–8,0 тыс. м^2/га и высоты растений на 9,5–10,0 см, что способствует получению высоких урожаев культуры на уровне 280,3–285,6 ц/га.

Ключевые слова: гуминовые препараты, биометрические показатели, картофель, концентрация, стимулятор роста растений, урожай, фотосинтез.

Панцырева А.В. Влияние элементов технологии выращивания на индивидуальную продуктивность растений люпина белого / **Панцырева А.В**. // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 16–19.

Приведены результаты влияния предпосевной обработки семян, внекорневых подкормок и сортов растений люпина белого на показатели индивидуальной продуктивности в условиях правобережной Лесостепи Украины. Установлена специфика индивидуальной продуктивности сортов люпина белого Вересневый и Макаровский. Показано положительное влияние применения при предпосевной обработке семян бактериального препарата Ризогумин и стимулятора роста Эмистим С в сочетании с двумя внекорневыми подкормками Эмистим С на показатели индивидуальной продуктивности.

Ключевые слова: люпин белый, индивидуальная продуктивность, предпосевная обработка семян, внекорневые подкормки.

Прокопчук В.М. Особенности формирования газонных культурфитоценозов на территории винницкого национального аграрного университета / **В.М. Прокопчук, А.В. Панцырева** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 20–22.

На основе проведенных учетов и наблюдений установлены состав газонных травосмесей, качественное состояние и плотность газона на территории ВНАУ. Отражена хозяйственная и экобиологическая структура газонов. Приведены особенности формирования газонных культурфитоценозов на основе анализа качественного состояния существующего травостоя. Установлено процентное соотношение качественного состава газонов. Теоретически обоснованы агротехнические меры по уходу за газонными культурфитоценозами на объекте исследования. Приведен сводный баланс площадей газонов по качественному состоянию, что дает возможность обоснованно подойти к планированию агротехнических мероприятий.

Ключевые слова: газонные культурфитоценозы, система ухода, качественное состояние, плотность.

Горовая А.И. Восстановление гумусного состояния и природного плодородия дегра-

дированных черноземов с помощью вермикомпоста как органического удобрения / **А.И. Горовая, Т.В. Скворцова, С.М. Лисицкая** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 23–28.
Представлены результаты экспериментальных исследований микробиологических и агрохимических свойств образцов вермикомпоста, полученного на основе куриного помета, и обоснована целесообразность его использования как современного органического удобрения в целях улучшения гумусного состояния и повышения естественного плодородия деградированных черноземов Украины. Вермикомпост содержит хорошо сбалансированный набор макро- и микроэлементов питания растений, а также физиологически активные вещества – гуматы натрия и калия. Элементы питания находятся в обменной органической форме, надежно защищены от вымывания, обладают пролонгированным действием. Внесение вермикомпоста в почву при правильной агротехнике способствует восстановлению нормальной почвенной микрофлоры, повышает общее содержание гумуса в почве, позволяет замедлить процесс минерализации растительных остатков в пахотном горизонте почвы. Экологическим преимуществом использования вермикомпоста является также его гигиеническая безопасность.
Ключевые слова: вермикомпост, биогумус, гумификация, минерализация органических веществ, гуминовые соединения, деградированные черноземы, почвенная микрофлора, природное плодородие.

Карпенко В.П. Особенности развития эколого-трофических групп микроорганизмов ризосферы сои при использовании гербицида Фабиан, регулятора роста растений Регоплант и микробиологического препарата Ризобофит / **В.П. Карпенко, Ю.И. Ивасюк, З.М. Грицаенко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 29–33.
Установлено, что при интегрированном применении предпосевной обработки семян смесью Ризобофита (100 мл/т) и Регопланта (250 мл/т) с последующим повсходовым внесением композиции гербицида Фабиан (90–110 г/га) и Регопланта (50 мл/т) развитие и функционирование эколого-трофических групп микроорганизмов ризосферы сои значительно активизируются и по показателям превышают контроль. Получены данные о росте численности аммонифицирующих микроорганизмов ризосферы сои при действии исследуемых препаратов, которые свидетельствуют об активизации процессов трансформации органического вещества в доступные для питания растений азотные формы. В тесном взаимодействии с аммонифицирующими микроорганизмами в ризосфере растений находятся нитрификаторы, превращающие аммонийные формы углеродных соединений в нитраты.
Ключевые слова: эколого-трофические группы микроорганизмов, ризосфера сои, гербицид, регулятор роста растений, микробиологический препарат.

Влияние комплекса микробных препаратов на микробоценоз ризосферы льна масличного / **Т.Н. Мельничук, А.Ю. Еговцева, А.А. Гонгало, Э.Р. Абдурашитова, С.Ф. Абдурашитов, К.Г. Женченко, Н.В. Алексеенко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 34–36.
Приведены данные исследования влияния инокуляции семян комплексом микробных препаратов на численность микроорганизмов основных эколого-трофических групп ризосферы льна масличного при выращивании в условиях чернозема южного Степи Крыма. Показано, что микробные препараты способствуют увеличению численности микроорганизмов большинства эколого-трофических групп ризосферы льна и улучшению развития растений.
Ключевые слова: ризосфера, лен масличный, численность микроорганизмов.

Карпенко В.П. Интенсивность дыхания растений гречихи под действием биологических препаратов / **В.П. Карпенко, Р.М. Притуляк, А.А. Даценко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 37–40.
Отражены результаты исследований по изучению действия различных норм бактериального препарата Диазобактерин (150, 175, 200 мл) и способов применения регулятора роста растений Радостим (обработка семян перед посевом – 250 мл/т, опрыскивание посевов – 50 мл/га) на интенсивность дыхания растений гречихи. Установлено, что применение различных норм бактериального препарата Диазобактерин, как отдельно, так и совместно с регулятором роста растений Радостим для обработки семян, а также внесение Радостима на фоне обработки семян Диазобактерином и Радостимом способствуют росту интенсивности дыхания растений гречихи на 23–27 %.
Ключевые слова: гречиха, интенсивность дыхания, микробиологический препарат, регулятор роста растений.

Волощук М.Д. Эрозионная деградация черноземов юго-западной части Украины и Рес-

публики Молдова / **М.Д. Волощук** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 41–51.
Обобщены многогранные экспериментальные материалы и данные литературных источников о влиянии эрозионных процессов на деградацию почв. Разработана методика учета почвы и картографирования микроложбин, определены четыре категории деформации склонов, предложены мероприятия, уменьшающие эрозионные процессы. Среди мероприятий, восстанавливающих плодородие и охрану эродированных земель, – реплантация. К ее технологическим элементам относятся регулирование поверхностного стока на склонах; планирование их поверхности, вспашка или глубокое рыхление; селективное нанесения гумусовых слоев с запашкой; обработка и сев многолетних трав. Внедрены типовые схемы-модели освоения овражно-балочных земель.
Ключевые слова: эрозия почв, виды эрозии, показатели эродированных земель, меры по восстановлению их плодородия.

Иванов И.А. Оценка фенотипической консолидации технологических показателей первотелок голштинской и украинских черно-пестрой и красно-пестрой молочных пород / **И.А. Иванов** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 52–55.
Утверждается, что лучшими по большинству морфо-функциональных показателей вымени оказались животные украинской красно-пестрой молочной породы, а по его длине, расстоянию между передними дойками и интенсивности молокоотдачи – первотелки украинской черно-пестрой молочной породы. Самую высокую фенотипическую консолидацию показали все исследуемые породы по промеру обхват вымени ($К_1$ = 0,44–0,56; $К_2$ = 0,44–0,58). Все остальные морфо-функциональные показатели вымени характеризовались либо отрицательной, либо низкой положительной степенью консолидации. А это свидетельствует об отсутствии селекционной роботы по исследуемым признакам в стаде, кроме обхвата вымени.
Ключевые слова: фенотипическая консолидация, морфо-функциональные показатели вымени, голштинская порода, украинская черно-пестрая молочная порода, украинская красно-пестрая молочная порода.

Влияние антропогенного фактора на содержание подвижных форм фосфора в черноземах обыкновенных и финансовый механизм его повышения / **С.М. Крамарев, В.Т. Пашова, А.А. Мыцык, К.А. Хорошун, А.С. Крамарев, О.И. Лысенко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 56–67.
Проанализированы содержание подвижных форм фосфора и процессы его трансформации в различных генетических горизонтах черноземов обыкновенных тяжелосуглинистых, которые длительное время находились в сельскохозяйственном использовании, под влиянием длительного воздействия на них антропогенных факторов. На пашне показано снижение уровня обеспеченности почвы подвижными формами фосфора, особенно в верхних слоях. Предложены пути повышения фосфатного питания растений сельскохозяйственных культур до оптимального уровня.
Ключевые слова: почвы, удобрения, валовые, подвижные формы фосфора, плодородие.

Крамарев С.М. Продуктивность кукурузы в севооборотах коротких ротаций с соей в условиях северной Степи Украины / **С.М. Крамарев, С.Ф. Артеменко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 68–71.
В стационарном полевом опыте показана возможность увеличения продуктивности кукурузы в разных севооборотах коротких ротаций с соей на фонах с двумя способами основной обработки почвы и с внесением рекомендованных и рассчитанных на основе данных почвенной диагностики норм минеральных удобрений. Установлена целесообразность использования сои в качестве предшественника зерновой кукурузы в севооборотах коротких ротаций. Зерновая продуктивность кукурузы, высеянной после предшественника ячменя ярового, была значительно ниже, чем после сои, используемой в качестве предшественника. Для сохранения положительного баланса питательных веществ рекомендуется рассчитывать дозы внесения удобрений под запланированный урожай кукурузы с использованием данных почвенной диагностики.
Ключевые слова: соя, кукуруза, удобрения, основная обработка почвы, севообороты коротких ротаций.

Крамарев С.М. Влияние инокуляции семян сои бактериальными препаратами на продуктивность её агроценозов в условиях северной части степной зоны Украины / **С.М. Крамарев, С.Ф. Артеменко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 72–75.
Обсуждается влияние микробных препаратов на почвенные микробные ценозы и микрофлору ризосферы. Выяснена роль микроорганизмов в микробно-растительных

системах. Изучена эффективность и оценены перспективные штаммы клубеньковых бактерий сои, установлен их азотфиксирующий потенциал. В посевах с обработкой семян штаммами 46 и 626а количество клубеньков на одном растении увеличивается в 3,3 раза, а их масса – в два. Предпосевная инокуляция семян сои азотфиксирующими штаммами клубеньковых бактерий Х9, 626а, 46 обеспечила лучшие условия для азотфиксации и очень высокую семенную продуктивность культуры. Лучшими штаммами для инокуляции семян сои сорта Аметист были Х9, 626а и 46. Приведены результаты практического применения микробных препаратов в современных технологиях выращивания сои.
Ключевые слова: микробные препараты, соя, ризосфера, почвенные микроорганизмы.

Крамарева Ю.С. Эколого-гигиеническая характеристика и агрохимические свойства органо-минеральных удобрений, полученных на основе осадков сточных вод / **Ю.С. Крамарева** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 76–81.
Проведена сравнительная оценка физико-химических и токсикологических свойств осадков городских сточных вод станций аэрации г. Днепр и органо-минеральных удобрений, полученных на их основе после извлечения из них тяжелых металлов. Предложен оптимальный состав органо-минеральных удобрений и усовершенствована технология их производства в промышленных условиях. Полученные органо-минеральные удобрения обладают пролонгированным действием и имеют неоспоримые преимущества в сравнении со стандартными туками, внесенными в эквивалентной дозе. Их преимущества четко проявляются в засушливые годы. Применение органо-минеральных удобрений, полученных на основе осадков городских сточных вод, дало возможность получить прибавку урожая зерна ячменя ярового в пределах 2,5–3,0 ц/га, отвечающего существующим санитарно-гигиеническим требованиям.
Ключевые слова: осадки городских сточных вод, органо-минеральные удобрения, тяжелые металлы.

Цилюрик А.И. Агротехнические меры борьбы с эрозионными процессами в паровом поле севооборота / **А.И. Цилюрик** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 82–88.
Установлена высокая эффективность ухода за чистым паром, как типа раннего пара в Степи Украины, по совокупности признаков (высокая эрозионная безопасность, технологичность, водоаккумулятивная способность, высокая экономическая эффективность), что предусматривает замену глубокой зяблевой вспашки мелкой мульчирующей весенней обработкой. Доказано, что использование раннего пара дает возможность существенно снизить дефляцию почвы до безопасного уровня 5–12 г/м²/5 мин и уменьшить её смыв в 4–12 раз за счет сохранения максимального количества растительных остатков (396–630 шт./м²) и снижения доли эрозионных пылеватых фракций (агрегаты <0,25 мм) до минимальных показателей (5,4–5,6 %).
Ключевые слова: чистый пар, ранний пар, пшеница озимая, обработка почвы, дефляция, эрозия, экономическая эффективность.

И.Х. Узбек Биогеоценотические особенности развития техногенных экосистем степного Приднепровья / **Узбек И.Х.** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 89–101.
Показано, что максимальное количество микроорганизмов насчитывается весной с последующим скачкообразным снижением к осени. Установлено, что культурфитоценозы способствуют увеличению количества микроорганизмов до нескольких сотен миллионов на 1 г навески и стабилизации конструкции микробных сообществ в соответствии с физико-химическими свойствами природно-техногенных комплексов. Экспериментально доказано, что общая биологическая продуктивность люцерны и эспарцета на вариантах без удобрений составила 14–18 т/га (воздушно-сухая масса), в том числе до 11 т/га корней, из которых 74–87 % сосредоточено в слое 0–40 см. Разработан метод определения эколого-биологических характеристик корневых систем, по которым устанавливаются особенности их строения и расположения, рассчитываются поверхность, длина и насыщенность почв корнями. Утверждается, что реальным средством преобразования природно-техногенных комплексов в земельные угодья является внедрение культурфитоценозов, которые вместе с микроорганизмами и другой биотой становятся узловыми центрами концентрации элементов почвенного плодородия и являются основой налаживания консортивных связей – составляющих процесса почвообразования.
Ключевые слова: природно-техногенные комплексы, рекультивация, почвенные микроорганизмы, корни растений, консортивные связи, почва.

Цьова Ю.А. Динамика численности почвенных грибов в зависимости от агроэкологических условий / **Ю.А. Цьова** // Вісник Дні-

пропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 102–107.
Показано, что характер влияния способа обработки почвы на численность грибов зависит от сельскохозяйственной культуры. Для ячменя, при нулевой и минимальной обработке почвы, численность грибов наибольшая, а пахота и чизелевание этот показатель значительно уменьшают. Для кукурузы отсутствуют статистически достоверные зависимости численности грибов от способа механической обработки почвы. Численность почвенных грибов существенно выше в посевах ячменя, чем в посевах кукурузы, и монотонно снижается с увеличением глубины. Абсолютные значения численности выше, а скорость снижения её с глубиной меньше, при нулевой и минимальной обработке. В посевах кукурузы при таких же условиях и чизелевании наблюдаются локальные максимумы численности на глубине 10–15 см.
Ключевые слова: почвенные грибы, агроэкология, агрофон, экологические факторы, обработка почвы.

Шаталин Д.Б. Экологические аспекты применения биомассы Eisenia fetida (Savigny 1826) в период выращивания подсвинков / **Д.Б. Шаталин** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 108–112.
Обсуждается проблема белкового кормления животных и ее решение с использованием растительной углеводно-белковой экологически чистой добавки. Органическое производство свинины является выгодным и отличается от интенсивного развития свиноводства тем, что из рациона кормления животных полностью исключаются стимуляторы роста, премиксы, антибиотики. Предложенная кормовая добавка содержит полный комплекс незаменимых аминокислот и витаминов, играет важную роль в производстве высококачественной продукции.
Ключевые слова: Eisenia fetida, вермикультивирование, белковые корма, протеин, кормовая добавка, аминокислоты.

Жуков А.В. Зависимость инфильтрации технозёмов Никопольского марганцеворудного бассейна от физических свойств / **А.В. Жуков, Е.П. Масликова, И.В. Лядская** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 113–119.
Установлены закономерности профильного распределения показателей инфильтрации технозёмов на участке рекультивации Днепропетровского государственного аграрно-экономического университета. Изучены педоземы и дерново-литогенные почвы на красно-бурых глинах, лессовидных суглинках и серо-зеленых глинах. Построена гистограмма распределения значений скорости инфильтрации техноземов. Показано, что более плавно процесс инфильтрации протекает в дерново-литогенных почвах на красно-бурых глинах и более динамично в дерново-литогенных почвах на серо-зеленых глинах. На скорость инфильтрации существенно влияет содержание агрегатов размером 7–10 и 0,5–1,0 мм; в педоземах и дерново-литогенных почвах на красно-бурых глинах, лессовидных суглинках и серо-зеленых глинах влияние оказывают максимальная гигроскопическая влагоемкость, скорость фильтрации и тип технозема.
Ключевые слова: техноземы, водопроницаемость, инфильтрация, рекультивация, плотность и пористость почвы.

Эффективность антиоксидантной системы печени бройлеров кросса Кобб-500 в условиях выпаивания природных биологически активных добавок на основе гуминовых веществ / **Е.А. Михайленко, О.А. Дёмшина, Л.М. Степченко, Г.А. Ушакова** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 120–125.
Приведены результаты изучения влияния биологически активной кормовой добавки Гумилид на эффективность антиоксидантной системы печени цыплят-бройлеров кросса Кобб-500. Показано, что у птицы, которой в воду добавляли Гумилид, в водорастворимой фракции печени, наибольшая часть которой представлена цитозольной фракцией, происходило повышение активности каталазы, что является положительным признаком торможения процессов образования окисленных продуктов и активизации адаптивных процессов в печени цыплят-бройлеров.
Ключевые слова: цыплята-бройлеры, биологически активная кормовая добавка Гумилид, каталаза, супероксиддисмутаза, ТБК-активные вещества, цитохром С.

Новицкий Р.А. Трансформация ихтиоценоза Днепровского (Запорожского) водохранилища после зарегулирования р. Днепр / **Р.А. Новицкий, Н.Л. Губанова** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 126–132.
Представлены результаты оценки динамики изменений ихтиоценоза водохранилища после зарегулирования р. Днепр на Днепровском водохранилище. Показано, что вследствие гидростроительства произошла и структурная перестройка ихтиоценоза водохранилища, которая сопровождается измене-

ниями видового состава рыбного населения, состава экологических групп и фаунистических комплексов. Отмечено, что за 85-летний период существования Днепровского водохранилища из состава ихтиофауны исчезли 11 видов рыб и зарегистрированы 19 новых. Всего насчитывается 57 видов рыб. С начала 1990-х годов рыбное население водохранилища на 80,0 % обогащается за счет непромышленных короткоцикловых видов. Для Днепровского водохранилища интегральный показатель изменения структуры ихтиоценоза составляет 27,0 %, что подтверждает высокий уровень трансформации ихтиоценоза реки вследствие ее зарегулирования, появления и натурализации новых видов рыб.
Ключевые слова: фауногенез, трансформация, ихтиоценоз, Днепровское водохранилище, гидростроительство.

Потапенко Е.В. Оценка экологичеких режимов в пределах территорий электрических подстанций методами фитоиндикации / **Е.В. Потапенко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2016. – № 4(42). – С. 133–140.
Выполнена синфитоиндикация экологических режимов, которые формируются на территориях энергетических подстанций и установлены направления экологических трансформаций, вызванных загрязнением почвы подстанций технологическим маслом. Показано, что синфитоиндикация является информативным методом для установления экологических режимов в условиях антропогенной трансформации экотопов. Возможность использования инструментария фитоиндикации для целей экологической оценки антропогенно трансформированных территорий обусловлена неспецифическим характером реагирования сообществ живых организмов на загрязнение окружающей среды. На фоне естественных градиентов, которым подчиняется экологическая обстановка в зоне подстанций, их растительный покров отражает некоторые специфические черты, присущие именно этим антропогенным образованиям. Унификация экологической структуры растительности под влиянием загрязнения почвы технологическим маслом является свидетельством унификации экологических режимов.
Ключевые слова: фитоиндикация, загрязнение почв, электрические подстанции, кластерный анализ, экологическое разнообразие, сообщества растений.

The current state of fertility of black soils and ways to increase the productivity of crops (p. 5–11)

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The current state of fertility of black soils and the ways of its increase were studied. In modern conditions the resumption of agricultural production and increase the fertility of chernozem soils is a very important issue of agriculture. This is due to the fact that the black soil that previously relatively rich on mobile forms of nutrients lost its former high natural fertility as a result of their long inefficient usage and they are no longer able to provide the necessary quantity of agricultural plant nutrients. In the last decade crop production is mainly formed by the residual reserves of nutrients and humus mineralization. This consequences, which caused a decrease in the volume of fertilizer application, crop rotation and breach of saturation of cultivated crops, particularly sunflower. As a result, they contribute to the spread and development of erosion, dehumification, agrochemical and agrophysical degradation with the loss of agronomically valuable structure and deterioration of the physical properties of black soils. Using of unbalanced, primarily nitrogen fertilizer leads to leaching of calcium compounds from the soil, depletion of soil-absorbing complex of nutrients and reducing soil buffering. One way to solve the problem of renewal of the lost fertility of these soils is the introduction of modern technologies in growing crops that minimize tillage and agriculture biologization elements. It is necessary to restore the lost fertility of our soils and black soil to create a model of our soil and land management system and Ukraine will take place in the global market as a developed agricultural country and a reliable eksporter food raw materials.

Keywords: soil fertility, degradation, modern technology, agrochemical indices, yield, quality.

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The studying of the dose application of sapropel growth stimulant in potatoes cultivation (p. 12–15)

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It is substantiated a value of potatoes as an important food, fodder and industrial crop. It is shownthe necessity of increasing its production and improvement of the quality parameters of potato tubers for using of the natural humic preparations. The results of studies indicate that the humic substances increase the germination energy and seed germination, stimulate the carbohydrate and protein metabolism, have a positive effect on photosynthesis, stimulate the forma-

tion of biologically active substances, increase the resistance of plants to the adverse natural and environmental factors, diseases and pests, improve the development of plants and root formation, increase their productivity and product quality. It is indicated the presence of the contradictory facts about the effectiveness ofpreparations through the variety of species sensitivity of plants to humic substances and wrong calculation of doses of their introduction.
It is presentedthe results of studies on the establishment of the optimal dose of the humicsapropel preparation introduction by the extra rootfoliar feeding of potatoes plantsof "Santa" varietyin the 5–7 leaves and budding phases.It is proved that the preparation at concentrations from 0,1 to 0,0001 % has a different effect on the growth and development of plants. For introduction of humic preparations in high doses (0,1 % solution a preparation) it was found the oppression of the growth of plants and the reduction of yields of potato tubers. It has been established that the most effective is the use of the preparation concentrations of between 0,005 and 0,0001 %. Compliance with these recommendations of the using of humic preparation "Saprogum" provides an increase of leaf surface area to 7,2–8,0 thousand square meter on a hectare and plant height to 9,5–10 centimetreswhich ultimately results in a high crop yields at 280,3–285,6 quintals on a hectare.

Keywords: humic preparations, biometrics, potatoes, concentration, plant growth stimulant, harvest, photosynthesis.

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The influence elements of technology growing on individuai plant productivity lupin white (p. 16–19)

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Lupinus albus is a valuable crop, which in the future is of great economic importance due sufficiently wide application in food and fodder production and processing industry and other industries.
Lupinus albus grown mainly in Ukraine as green manure. In this regard, the scientific literature is almost no data on the reaction of varieties of culture on environmental factors, growth, development and formation of plant productivity by technological elements in growing grain goals.
Numerous studies found that preplant treatment of seeds bacterial drugs and growth promoters in conjunction with foliar feeding affects not only the features of the growth, development, morphological and biological structure of plants, but significantly alters their individual performance and productivity of grain.
The article set the specific performance of individual varieties of white lupine and proven positive effect of the studied growing technology elements. Therefore the study of the biological characteristics of growth and development and definition of the necessary elements of technology of cultivation of white lupine is very relevant issue. The results of the impact of pre-treatment of seeds, foliar fertilizing and selecting varieties for white lupine plants on the performance of individual performance. Established the specific performance of individual varieties of white lupine Veresnevyi and Makarovskyi. The proved a positive effect of pre-treatment of seeds with bacterial drug Ryzohumin and growth promoters Emistim S in combination with two foliar feeding Emistim S on the performance of individual performance.

Keywords: white lupine, individual performance, pre-treatment of seeds, foliar feeding.

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The peculiarities of forming lawn in VNAU (p. 20–22)

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Nowadays lawn grass, as an essential element of aesthetic decorative of landscape design both reclamation and ecological factors impact on the environment, is widely used not only in Ukraine but also abroad.
The pasture coverage is widely used in landscape design and landscape art to improve the aesthetic and decorative properties tracks and plantations. The successful formation of lawn conditions provided water regime optimization and balancing mineral nutrients plants.
On the basis of records and observations established lawn grass mixtures composition, condition and quality lawn density in Vinnytsia National Agrarian University. Displaying the economic structure and its biological lawns. The structure lawns on campus are mainly perennial grasses under reasonable guidelines.
The peculiarities of formation grass lawns by analyzing the quality of existing vegetation. Established the percentage of the quality of the lawn. Theoretically substantiated agronomic measures lawns care research at the facility. The consolidated balance lawn areas for qualitative condition that enables more appropriate and reasonable approach to the use of farming practices. In this way, in terms of regional questions lawn care system requires detailed study, but such research is important both in scientific and in the practical sense.

Keywords: lawn, care system, high-quality state density.

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Recovery of humus condition and natural fertility of degraded chernozem soils with help vermicompost as organic fertilizer (p. 23–28)

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The article presents the results of experimental studies of microbiological and agrochemical properties of vermicompost samples obtained on the basis of chicken manure and the expediency of its use as a modern organic fertilizer to improve the humus status and enhance the natural fertility of degraded chernozem Ukraine.
In the process of vermicomposting humification of organic substances is accelerated. The result is a young humus, which is composed of the physiologically active substances (humic and fulvic acids, sodium and potassium humates).
Vermicompost contains a well-balanced set of macro- and microelements for plant nutrition and physiologically active substances such as: humates of sodium and potassium. The elements of nutrition are exchangeable organic form, are protected from leaching, will be having prolonged action.
The process of adding vermicompost into the soil with proper farming practices helps to restore normal soil microflora, increases the total amount of humus in the soil, and can slow the process of mineralization of plant residues in the arable soil layer by fixing the maximum of humic substances and stimulating microbiological processes of humification.
The process of adding vermicompost into the soil improves the conditions of mineral nutrition and accelerates the growth and development of crops. Thus, the usage of vermicompost into degraded chernozem soils will be ensuring recovery of natural fertility and increase crop yields. The ecological advantages usage of vermicompost it hygienic safety, namely, the absence of

pathogens, helminth eggs and microbial pathogens of crop diseases plants.

Keywords: vermicompost, biohumus, humification, mineralization of organic substances, humic compounds, degraded chernozem soils, soil microflora, natural fertility soils.

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Peculiarities of the development of ecological-and-trophic groups of microorganisms of soybean rhizosphere using Fabian herbicide, Regoplant plant growth regulator and Ryzobofit microbiological agent (p. 29–33)

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Increase of pesticide impact in agrocenosis leads to decrease in number of major ecological-and-trophic groups of microorganisms that causes connections breaking in agricultural ecosystems and biological activity of soil.

Our researches were performed in the field and laboratory conditions of Uman National University of Horticulture during 2013–2015. We sowed soybean of "Romantyka" variety at the rate of 500–600 thousand similar seeds per a hectare in the experiment. Before-sowing treatment of the seeds by agents was done just before planting. Bacteria growth was studied according to the techniques on the 10th and 20th day of agents applying while shoots growing.

It was found that the largest number of cellulose-fermenting bacteria on the 10th day after agents applying was noticed by using of before-sowing treatment of soybean seeds by mixture of "Ryzobofit" in the norm of 100 ml/t with "Regoplant" in the norm of 250 ml/t followed by applying of "Fabian" herbicide in the norm of 90 g/ha together with "Regoplant" plant growth regulator in the norm of 50 ml/ha while shoots growing, where exceeding by the number of bacteria to the control was 29 %.

Analyzing the development of ammonifyingrhizospheric organisms in crops of soybean, it was found that their number increased to the control to 35% on the 10th day after "Regoplant" applying. Their number exceeded the control to 46–40% by applying "Fabian" herbicide in the norm of 90–110 g/ha in crops of soybean. The number of ammonifying microorganisms increased to 85–78 % by combined application with the same norms of "Fabian" herbicide with "Regoplant" plant growth regulator in the norm of 50 ml/ha.

On the 10th day of registration of nitrifying microorganisms it was found that they showed the most sensitivity to the herbicide among studied groups of bacteria. Thus, their number decreased proportionally with norm growing of "Fabian" herbicide, although it was higher to 21–8 % compared to the control. Herbicide applying of the same norms in the combination with "Regoplant" plant growth regulator in the norm of 50 ml/ha provides increasing in number of nitrifying agents of soybean rhizosphere to 38–21 %.

On the 20th day of registration, the most active microbiota of soybean rhizosphere was at the background of before-sowing treatment of the seeds by the mixture of "Ryzobofit" in the norm of 100 ml/t with "Regoplant" in the norm of 250 ml/t (exceeding was 89 % regarding the control). At the same time, using of "Fabian" herbicide in the norm of 90–110 g/ha separately and together with "Regoplant" plant growth regulator in the norm of 50 ml/t, the number of cellulose-fermenting microorganisms of soybean rhizosphere increased to the control to 23–20% and 29–27 % respectively; ammonifying microorganisms – to 77–69 % and 85–78 %; nitrifying microorganisms – to 54–46 % and 65–54 % respectively.

Thus, the development of ecological-and-trophic groups of microorganisms in soybean rhizosphere occurs the most actively by combination of using of chemical and biological agents. Before-sowing treatment of soybean seeds by the mixture of "Ryzobofit" microbiological agent in the norm of 100 ml/t with "Regoplant" plant growth regulator in the norm of 250 ml/t and further application of the mixture of "Fabian" herbicide in the norm of 90–110 g/ha with "Regoplant" in the norm of 50 ml/ha while shoots growing ensures increasing of number of major ecological-and-trophic groups of microorganisms of soybean rhizosphere on the 10th and 20th day on average to 87–82 % and 60–53 % respectively – that can indicate a reduction of negative impact

of chemical agent to rhizospheric microbiota by its combined use with biological agents.

Keywords: ecological-and-trophic groups of microorganisms, soybean rhizosphere, herbicide, plant growth regulator, microbiological agent.

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Influence of complex microbial preparations on microbiocenosis of oil flax rhizosphere (p. 34–36)

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Oilseed flax is a promising and highly profitable agricultural crops, is a good predecessor for most crops, which ensures the suitability of its cultivation on the Crimean Peninsula. Introduction in the rhizosphere of agronomically valuable microorganisms stimulates the growth and development of plants, improves nitrogen and phosphorus nutrition, increases their resistance to negative environmental factors and, as a result, improves productivity and product quality. In hard soil-climatic conditions of the steppe Crimea for the implementation of the genetic potential of crops and ensure consistently high-quality crops is an important application in growing modern and effective microbial preparations for pre-sowing treatment of seeds.

The aim of our study was to analyze the community structure of microorganisms in rhizosphere of southern chernozem of the flax under the influence of the complex microbial preparations. Complex microbial preparations, Diazofit, Fosfoenterin and Biopolitsyd used by pre-sowing inoculation of seeds of oil flax variety "Vera". These preparations are microorganisms that suppress the growth of plant pathogens. Biological products are stimulants of growth and development of plants, increasing plant resistance to biotic and abiotic stress factors. The predecessor of the flax is a winter wheat. Technology of cultivation of culture is common to the steppe part of Crimea. Microbiological analysis of the rhizosphere of flax showed that the inoculation of flax seed effect on the development of plants. Thus, it was shown that the inoculation of seeds of flax complex microbial preparations increases the number of microorganisms of most ecological-trophic groups in the southern black soil of the rhizosphere in the flowering stage of plants and to improve their development.

Keywords: rhizosphere; oil flax, quantity of microorganisms.

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Buckwheat respiration plant under biological (p. 37–40)

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The process of breathing plays an important in a complex metabolic processes of plant organism as it happens through continuous plant gas exchange with the environment. In addition, the respiration rate is an important indicator of plant metabolic energy supply, affecting the production process.

Research results. Completed researchts have shown that preparation of microbiological standards Diazobakteryn and methods of use of plant growth regulators Radostym left their influence on the respiration of plants of buckwheat, which is a testament to the regulation of biological oxidation. On average in 2010–2012 research presowing seed inoculation by MBP Diazobakteryn in standards 150, 175, 200 ml per hectare seed rate helped increase the intensity of respiration of plants buckwheat 3, 4 and 7 % according to the rules of preparation against control.

By sharing seed treatment before sowing Diazobakteryn in norm 150 to 200 ml with Radostym in norm 250 ml/t increasing of intensity of respiration of plants was observed compared with the control option for 13–18 % and 10–15 % – in relation to individual action of Radostym normally 250 ml/t. The greatest increasing of intensity indicators of respiration of buckwheat plants was noted by the use of Diazobakteryn in norm 200 ml mixed with Radostym in norm 250 ml/t for seed treatment by the next spraying with Radostym in norm 50 ml/ha, which provided additional benchmark by 27 %.

Studying the intensity of respiration in the next phase of growth, namely in the phase before flowering buckwheat, we have seen more growth of this indicator compared to the previous phase of plant development. On average in 2010–2012 Diazobakteryn use (150–200 ml) for seed treatment promoted the growth of the studied parameters by 4 %, and by the treatment of seeds with a mixture of Diazobakteryn with Radostym – 15 % compared to control.

The combination of technological measures, such as pre-treatment of seeds with Diazobakteryn in norm 150–200 ml and processing of crops with Radostym in norm 50 ml/ha, provided the increasing of breathing intensity compared with option of a separate action of Radostym on crops in norm 50 ml/ha 3–6 % and – 8–11 % according to monitoring.

The significant growth indicator of breathing intensity is seen in versions compatible with the experiment using drugs Diazobakteryn and Radostym for seed treatment and making of Radostym. Thus, this combination of preparations in norm of 200 ml Diazobakteryn the indicator of the breathing intensity exceeded 22 % the control option.

Conclusions. Thus, from the above experimental material we can summarize that the most intensive course of respiration in plants of buckwheat is traced for integrated use in crops of drugs: Diazobakteryn (seed treatment) + Radostym (seed treatment) + Radostym (processing of crops), which exceeds 23–27 % the control option.

Keywords: buckwheat, respiration intensity , microbiological product, plant growth regulator.

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Erosive degradation of chernozems of the South-Western part of Ukraine and the Republic of Moldova (p. 41–51)

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Intensive development of erosive processes of soils in Ukraine and Moldova entered an acute character, and in some areas close to a national disaster.
The erosion processes lead to the transformation of the land cover, decrease in soil fertility.
Micro hollow erosion, as human activities – treatment of the soil, increases erosion, surface deformation of the slope, reduces the effectiveness of erosion control measures. There were offered the sloping land technologies of soil fertility restoring for each of the categories of erosion.
The proportional relationship between growth of ravines and the morphometric parameters of the topography, quantity and intensity of the precipitation has been installed directly.
Gully form of erosion cause transformation of the surface slopes, soil indicators of soil fertility. The groups of land according to the degree of infestation by ravine for suspension of these processes were selected. The technologies for restoration of soil fertility were proposed.
The existing complex of erosion control measures was made. The basis for the formation of the fields, the road network, allocation of arable land, holding conservation farming is the landscape anti-erosion management. The most readily available and effective agro-technical measures include tillage across the slope or horizontally, soil harrowing, band placement of agricultural crops, solid grassing, eroded marginal lands reforestation and the removal of them to curing. More efficiently anti-erosion agroforestry activities will help to simple, affordable earthen hydraulic structures, grassing gutters creating.
The radical methods – replantation and transplantation of eroded soil, radical reclamation of the destroyed lands are directed to restore fertility of marginal eroded lands.
Developed and proposed typical model schemes for development of gully systems will reduce erosion, to create ecological and sustainable agroecosystems.

Keywords: erosion of soils, types of an erosion, indicators of bald-headed lands, measures for restoration of their fertility.

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The evaluation of phenotypic consolidation of technological indicators by heifers of holstein, ukrainian black-and-white and red-and-white dairy breeds (p. 52–55)

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Improving the breeds of dairy cattle should be based not only on the crossing of highly productive breeds, but, first of all, through the optimization of their internally breed structure. Consolidation of structural units of breed is facilitate the creation of breeding groups that are having constant characteristic of these properties will be effective during breeding operations.

One of the convenient methods of analysis and information of selection process in groups of cattle animals is statistical method.
Research work are conducted in herds of cattle of Holstein, Ukrainian Black-and-White and Red-and-White dairy breeds in TH "Dolynske" Chaplinka district, Kherson region.
The material for the study were data of morphological and functional indicators of udder by firstborn heifers Holstein (*n* = 25), Ukrainian Black-and-White (*n* = 25) and Red-and-White (*n* = 28) dairy breeds.
Conducted studies have established that the best for udder measurements were firstborn heifers of Ukrainian Red-and-White breed (in girth, width and depth), Ukrainian Black-and-White breed by length and Holstein breed by the distance from the bottom to the ground. And exaggeration of maximum indicators above the average herd in each of measurement is ranged from 0,4 cm to 4,8 cm, which was 1,0–7,0 %.
The firstborn heifers Ukrainian Red-and-White herd were the best of all by the measurements of udder teats. The highest indicators were exceed the average level in herd by each of measurement on 0,4–0,6 cm, which was 0–4,4 %.
Regarding the functional parameters of the udder, we note that the single best hope have shown firstborn heifers of Ukrainian Red-and-White breed, and the intensity of milk stream – animals of Ukrainian Black-and-White breed. Exceeding the maximum indicators of the average level in herd in each sign is amounted to 1,0 %, 0,08 kg and 0,02 kg/min in accordance.
Thus, comparing the morphological and functional properties of udder by firstborn heifers Holstein, Ukrainian Black-and-White and Red-and-White dairy breeds, both with an average in herd, and in the context of species groups come to the conclusion that animals of Ukrainian Red-and-White dairy breed are appeared the best for the most experimental indicators, and the firstborn heifers of Ukrainian Black-and-White breed – by the length of udder, the distance between the front teats and intensity of milk stream.
Comparing the changeability (σ) and variability (C_V) of morphological and functional properties of udder by firstborn heifers in the context of the studied species see how increasing and reducing their sizes depending on genotypic group. Therefore, it was necessary in calculations the degree of phenotypic consolidation by research indicators of firstborn heifers Holstein, Ukrainian Black-and-White and Red-and-White dairy breeds.
Research has established that the degree of consolidation the selected herd of Holstein, Ukrainian Black-and-White and Red-and-White dairy breeds for morphological and functional properties of udder ranged from –0,35 to 0,58. The greatest phenotypic consolidating showed all research breeds for measurement of udder girth (K_1 = 0,44–0,56; K_2 = 0,44–0,58). All other morphological and functional indexes of udder showed the negative or positive low degree of consolidation. This indicates the absence of selection work by research signs in the herd, except to girth of udder, which is characterized by relatively high consolidation.

Keywords: phenotypic consolidation, morphological and functional indicators of udder, Holstein breed, Ukrainian Black-and-White dairy breed, Ukrainian Red-and-White dairy breed.

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The anthropogenic factor impact on the phosphorus mobile forms content in the ordinary chernozem and financial mechanism for its increase (p. 56–67)

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A study of content changes of mobile forms of phosphorus in the ordinary black soil under the influence of long-term exposure to anthropogenic factors was carried out. For this purpose, a comparative assessment of this indicator agrochemical soil profiles and plowing virgin soil was made. It was observed decrease in the level of soil phosphorus availability of mobile forms particularly in upper layers of plowing soil. It was

noted a paradox in black soils: with a high content of total phosphorus it contains a low number of its mobile forms. This is due to the low water solubility of phosphate soil compounds and their weak dissociation into ions. The phosphate anions are well defined solid phase of the soil and their migration in the soil profile becomes limited. This raises the substantial predominance phenomena of immobilizing phosphate ions in relation to their mobilization and transfer into the soil solution. Content mobile phosphorus in the soil is particularly greatly reduced at technogenic pollution of heavy metals which form poorly soluble salts of phosphorus. Due to the above mentioned processes the coefficient of utilization of phosphorus from phosphate fertilizers is low and does not exceed 20 %.Therefore, special attention should be paid to the content of phosphorus in these soils mobile forms to determine which should be used standart techniques. It was proposed to develop a financial mechanism for solving the problem of improving plant phosphorus nutrition of crops.

Keywords: soil, fertilizer, gross and mobile forms of phosphorus, fertility.

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The productivity of maize in crop short rotations with soybeans in the conditions of northern Steppe of Ukraine (p. 68–71)

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An ability to increase maize productivity in different crop short rotations with soybeans on grounds with two main methods of tillage and using recommended and calculated dose of fertilizer on the basis of soil diagnostic standards in the stationary field experiment was shown. The expediency of the use of soy as a precursor of a grain of maize in crop rotations was determined. Grain productivity of maize precursor sown after spring barley was significantly lower compared to the soy used as a precursor. This is due to different amounts of nutrients remained in the soil after harvest of the predecessor. In comparison with spring barley, soybeans, along with crop residues accumulate high amount mineral forms of nitrogen in the soil. Thus it was created significantly better conditions of nitrogen nutrition for the subsequent corn crop rotation culture than spring barley as predecessor. It was recommended that the dose of fertilizer application under the planned corn crop should be calculated according soil diagnostic data for maintaining a positive balance of nutrients.

Keywords: soybean, corn, fertilizer, the main soil treatment, crop rotation.

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Effect of inoculation of soybean seed by bacterial preparations on the productivity of its agroecosystem in a northern part of the steppe zone of Ukraine (p. 72–75)

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The main results of studies of growth, plant development and formation of the basic elements of a soya depending on bacterial inoculation preparations seeds were set. The question of the effect of microbial products on soil microflora and rhizosphere population was studied. The efficiency of promising strains of nodule bacteria of soybean and their nitrogen-fixing capacity, which can manifest itself in a northern part of the steppe zone of Ukraine were evaluated. In crops with seeds carried out by treatment with strains 46 and 626 a number of nodules per plant in-

creased in 3,3 times, and their mass increased in two times. Presowing seed inoculation with nitrogen-fixing strains of soybean nodule microorganisms X9, 626a, 46 provided the best conditions for nitrogen fixation and high seed soybean productivity. A productivity of soybean agro-ecosystems was increased by 11,9–15,2 % due to the use of nitrogen-fixing bacteria strains. The best strains for inoculation of Amethyst soybean seed were X9, 626a, and 46. The results of the practical application of microbial agents in modern technologies of soybean cultivation were represented. The influence of growth conditions on the germination, plant safety, duration and interphase vegetation period, the activity of symbiotic nodules, features of formation of vegetative and generative organs of plants, yield and quality of soybean seed performance were established.

Keywords: microbial products, soybean, rhizosphere, soil micro-organisms.

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Ecological and hygienic characteristics and agrochemical properties of organo-mineral fertilizers derived from sewage sludge (p. 76–81)

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A theoretical and technological substantiation of utilization of local raw materials (municipal sewage sludge) on organic-mineral fertilizers of prolonged action was carried out and their use in the agricultural sector was suggested. It was established that process of decomposition and synthesis of humic substances were during the storage of urban sewage sludge. This process depends on following factors: the initial physical and chemical condition (maturity) of rain, humidity and temperature, the active surface of the mineral or organic origin. New approaches can extend the functionality of specialized reagents and additives to be incorporated in the organic-mineral fertilizers. A comparative evaluation of the physico-chemical and toxicological properties of municipal sewage sludge aeration station (city Dnipro) and organic-mineral fertilizers derived from them after the extraction of heavy metals was carried out. An effective method of extracting heavy metals from urban sewage sludge was evolved. An optimal composition of organic and mineral fertilizers and improved technology of their production in an industrial environment were proposed. Organic and mineral fertilizers have prolonged action and undeniable advantages compared with standard fertilizers. Granular organic-mineral fertilizers have advantages over amorphous fertilizers of similar composition on the effectiveness of their actions and aftereffects: a significant increase in the coefficient of use of plant nutrients was expressed. Application of organic-mineral fertilizers derived from municipal sewage sludge has made it possible to obtain an increase harvest of spring barley grain in the range of 2,5–3,0 t/ha that corresponds existing health and safety standards.

Keywords: sediments of urban waste water, organic and mineral fertilizers, heavy metals.

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Agro technical measures to combat erosion processes in the fallow field crop rotation (p. 82–88)

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Clean fallow – agrotechnical reliable measure drought, which significantly increases the productivity and stability of agriculture steppe. With timely and proper training it is equivalent to irrigation, guarantees 6–8 t/ha of winter wheat grain quality and a positive effect on growth and development of next crops in crop rotation. However, clean fallow is most vulnerable field crop rotation, which is very difficult to stop soil erosion, normalize under stress, to balance the balance of nutrients and energy turnover.
After the fall tillage, lumpy (aggregates >1 mm) upper layer (0–5 cm) soil regardless of soil fallow was – 61,0–62,9 % and not reduced below 60 %, which is the surface of the field wind resistant. During winter months, the impact of oppositely directed processes of freezing – thawing, moisture – drainage, soil aggregates collapsed to erosion dangerous dimensions, lumpy chernozem soil decreased in 1,3–1,4 times and was only – 43–45 %, so that they may be subject to deflation in open plains and slopes of wind resistant.
It is established the high efficiency of the content of the clean fallow in type early fallow in the Steppes of Ukraine for the combination of features: high security erosional, technology, water storage capacity, high economic efficiency, which involves changing the deep autumn plowing minimal moldboardless spring mulch tillage.
It is proved that the use of early fallow makes it possible to significantly reduce soil deflation to a safe level of 5–12 g/m²/5 minutes and reduce soil erosion in the 4–12 times, at the expense of conservation the maximum amount of plant residues 396–630 pcs./m², and reducing the share of erosion silt fractions (aggregates of <0,25 mm) to minimum indicators of – 5,4–5,6 %.
Established the high water storage capacity of early fallow in autumn and winter, which makes it possible to accumulate an additional 130 m³/ha moisture active root layer 0–150 cm, compared with the autumn plowing, which is very important in the arid conditions of the Steppe zone.
The content of early fallow makes it possible, without reducing grain yield, to get the maximum level of profitability 77,5–81,3 %, as well as save fuel by 19,9 l/ha, reduce labor costs 0,33–0,38 man-hour./ha and money to 306–324 UAH/ha compared to conventional plowing.

Keywords: clean fallow, early fallow, winter wheat, tillage, deflation, erosion, economic efficiency.

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Biogeocenotic features of development of anthropogenic ecosystems of steppe Pridneprovia (p. 89–101)

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Output of mineral resources by a quarry method are accompanied by destruction of the earth and building of the natural and anthropogenic complexes, representing an admixture of various rocks on quality indicators. The first in them are settled microorganisms and seeds of plants from the next old lands which are a basis of conception source of microbe- plant associations and specific soil – forming process.
It is demonstrated that the maximum quantity of microorganisms numbers in the spring with the subsequent salutatory depression to autumn. Their total amount depends on hydrothermal conditions and soil properties of natural and anthropogenic complexes. Microbial groupings form assemblages on physiological bunches of microorganisms which are capable in extreme conditions of anthropogenic environment to carry out resistant functioning.
It is ascertained that culture plant associations promote augmentation of quantity of microorganisms to several hundred millions on 1 g of soil lot and stabilization of a design of microbial assemblages according to physical and chemical properties of natural and anthropogenic complexes. The greatest ecological and biological relative conformity to anthropogenic environment have revealed a lucerne and a sainfoin in connection with the unique ability to a translocation (intratissue redistributions) nutrients and energy in that part which most of all needs it.
It is experimentally proved that the general biological productivity of the lucerne and the sainfoin on variants without fertilization averaged 14–18 t/ha (air-dry mass), including to
11 t/ha of roots from which 74–87 % are concentrated in the layer 0–40 cm. Advantage on the underground part mass over the above-ground mass is result of an adaptability of these plants to difficult conditions of natural and anthropogenic complexes.
It is developed the method of definition of ecological and biological characteristics of root systems on which the features of their constitution and disposition are determined, the surface, length and a saturation of soils with roots are calculated. It has been found experimentally that in unit of the total mass of roots the surface and length can be different and depend on qualitative properties of natural and anthropogenic complexes: on 1 g of roots of the sainfoin of 3rd year of life from bulk layer of chernozem of 0–40 cm (without fertilization) it was necessary 97 sm^2 of the surface and 11 m of length, and from red-brown clay – according to 141 sm^2 and 17 m. The saturation of breeds with roots is directly proportional to their mass. It is proved that a real agent of transformation of natural and anthropogenic complexes in ground lands is introduction of culture plant associations which together with microorganisms and other biota become the nodal centres of concentration of elements of soil fertility and is an adjustment basis of consortium relations – soil formation components.

Keywords: natural and antrhropogenic complexes, recultivation, soil microorganisms, roots of plants, consortium relations, soil.

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Dinamic of the soil fungi abundance with dependence from the agroecological conditions (p. 102–107)

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In the work the regularities of the dynamics of soil fungi, depending on soil fertility and different tillage regimes have been stated. The nature of the influence of tillage method on fungi has been shown to be depend on the crop. For barley a pattern may be reveled clearly whereby at null or minimum tillage fungi abundance is maximal and while plowing and chisel plowing this index is significantly reduced. Corn no statistically valid according the fungi abundance from tillage method. The number of soil fungi in barley crops is much higher than in corn crops. In crops of barley with increasing depth number fungi abundance. The absolute values of the numbers above, and the rate of decline with less depth at zero and minimal tillage. In corn crops there are local maxima in the strength at a depth of 10–15 cm provided that the use of zero and minimum processing, as well as chisel plowing. Profile distribution of number of fungi by different methods of mechanical tillage has the statistically likely. For zero and minimum tillage of soil in the upper almost no decrease of the quantity of mushrooms. Only in the layer of 15–20 cm is observed a moderate reduction of the number of this group of residents. Between the depth of accounting of the quantity of soil fungi and their strength in both zero and minimum tillage, there is no statistically reliable connection r = –0,05, p = 0,79 and r = –0,04, p = 0,82 respectively. It should be noted that the impact on the number of mushroom cultivation of zero tillage and minimum do not differ. For ploughing on depth 25–27 cm is observed almost linear with depth of reduction of quantity of soil fungi – r = –0,32, p = 0,05 and r =–0,30, p = 0,05. Analysis of the data indicates that the number of soil fungi significantly higher in spring barley crops than corn. In spring barley with increasing depth, the number of fungi monotonically decreases. The absolute value of the number higher and the rate of reduction of the number of depth less than at zero or minimum tillage. In sowing corn observed local highs quantity at a depth of 10–15 cm, provided the application of zero or minimum tillage.

Keywords: soil fungi, agroecology, soil fertility, environmental factors, tillage.

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Ecological aspects of the Eisenia fetida (Savigny 1826) biomass application for gilts growing (p. 108–112)

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The article reveals the problems of protein nutrition of animals and their solution through a plant-based carbohydrate – protein supplement environmentally friendly, which is becoming more widespread in animal feeding.
Organic pig production differs significantly from intensive pig production because of the feeding diet completely eliminated growth promoters, premixes, antibiotics.
In a fodder additive contains full range of essential amino acids and vitamins, and most of it is produced from environmentally friendly raw materials, which plays an important role in the production of quality products.
Because of high market value proteins of animal origin and the increasing demand for them for use in intensive animal husbandry, earthworms can play a key role in addressing these issues.
The section focuses on the critical analysis of the lack of natural amino acids which are essential in feeding farm animals. The results showed the influence of RUBD on the intensity of growth of animals. Average daily live weight gain of the pigs in groups represented respectively 468, 517 and 540 g, or comparative with control 100,0 and 115,5 of 110,4 %.
Thus, vegetable protein and carbohydrate Supplement, which is obtained on the basis of vermicultivation can be used in the production of environmentally friendly pork.

Keywords: Eisenia foetida, vermicultivation, protein meal, protein, feed additive, amino acids.

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The dependence from the physical properties of the techozems infiltrationof the Nikopol manganese-ore basin (p. 113–119)

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The regularities of profile distribution of indices of infiltration Technoserv on the land reclamation of the Dnipropetrovsk State Agrarian and Economic University. We investigated the infiltration rate in layers in peasemarch and sod-lithogenic soils on red-brown clays, Isopoda loam and gray-green clays with tubes Kaczynski. The histogram distribution of the values of infiltration rate Technoserv. It is shown that the infiltration process occurs more smoothly in the sod-lithogenic soils on red-brown clays and more dynamic in a sod-lithogenic soils on gray-green. Regression analysis allowed to establish the character of influence on infiltration physical properties such as aggregate structure of the soil maximum hygroscopic moisture content, density and porosity of the soil filter. The regression model describes 64 % of the variability of the studied indicator. The infiltration rate significantly affects the content of aggregates with a size of 7–10 and 0,5–1 mm; in peasemarch and sod-lithogenic soils on red-brown clays, on Isopoda loam and gray-green clays influence the maximum hygroscopic moisture content, the filtration rate and the type of technasia. It is established that the types Technoserv characteristic of Nikopol margantsevokislogo pool with physical and water-physical properties that are specific

to each type Technoserv and reflect the characteristics of rototilling process and environmental conditions, which are formed in the artificially created Montopoli bodies for living organisms. Studies show that the infiltration process occurs at different speeds in the profile of each of the considered types Technoserv.

Keywords: tehnozems, water permeability, infiltration, reclamation, porosity and density of the soil.

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Antioxidant system of liver broilers cross Cobb-500 at additions of natural biologically active supplements based on humic substances (p. 120–125)

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Adding the diet of broiler chickens Humilid led to a slight increase in the concentration for TBA-active products at a fraction of soluble protein compared to the control group. Xenobiotics of humic nature activation formation response of liver cells. Water-soluble fraction of a liver that contains the largest of cytosolic proteins and includes components from all its cells, increasing the number of TBA-active products can be explained by the process of biotransformation of humic acid by enzymes, which are mainly located in the Kupffer cells, microsomes and peroxisomes of hepatocytes.
Observed of catalaseactivityincreased by 37 %, while SOD activity varied within the control group. The combination of these facts indicates the activation of an antioxidant protection system. Results of the study confirmed the literature to intensify enzymatic antioxidant activity by increasing the concentration of metals in the liver, which are part of the active centers metalloprotein: Zn – catalase, Mn (Cu/Zn) – superoxide dismutase. Also, humic substances to form compounds negligent, it provides prolonged use of trace elements in the processing metalloprotein and thus activates enzymes. In addition, humic compounds that make up the Humilid exhibit antioxidant properties and can independently inhibit the formation of peroxides.
An indicator of oxidative stress increasing of concentration cytochrome C in cytosol the response for increasing content of TBA-active products. Our research showed that cytochrome C content in the soluble fraction of liver decreased on average by 12 %. That is, the data indicate the absence of oxidative stress in terms of application Humilid. Thus established a slight increase of TBA-active products is not accompanied by the release of cytochrome c in the cytosol. Perhaps the application Humilid in the liver of broiler chickens the inhibition of the peroxidase activity of complex cytochrome C and cardiolipin, which slows down the process of aging and death of cells in general and in particular the liver. In addition, Humilid a source of iron for heme, which is no-protein part of cytochrome C, so intense is his processing and fixing in the inner mitochondrial membrane. Also, the results indicate the involvement of other antioxidant components of the antioxidant system, as low and high-influenced humic substances requires further research.

Keywords: broiler chickens, bioactive feed additive Humilid, catalase, superoxide dismutase, TBA-active substances, cytochrome C.

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Transformation of ichthyocenosis in Dniprovs'ke (Zaporizshs'ke) reservoir after the hydroengineering arrangement of the Dnipro river (p. 126–132)

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In 2007–2016 years conducted a comprehensive ichthyological studies on the Dniprovs'ke (Zaporizshs'ke) reservoir and its tributaries –

Samara Dniprovs'ka river. The results of an assessment of dynamics of changes in the ichthyocenosis, following the regulation of the Dnieper river. Evaluation Criterion served as the index changes, which is the ratio of the number of species at certain stages of the existence of the reservoir and the number of species in the rapids of the Dnieper before hydroengineering the damb Dnieproges.
In the early 1930 (before the regulation) the ichthyofauna of the consisted of 46 species and 1 subspecies of fish after the construction of the dam Dnieproges a number of fish species has decreased to 37. After 1964, the diversity of fish fauna is constantly growing, primarily due to the emergence of types of pontocaspian. The result of the water engineering structural adjustment ichthyocenosis of the reservoir, which is accompanied by changes in species composition of fish populations, the composition of ecological groups and faunal assemblages.
Noted that 85-year existence of the Dniprovs'ke (Zaporizshs'ke) reservoir from the fish disappeared 11 species and was the appearance of 19 new species (exotic species). Today, the composition of the ichthyofauna of the reservoir there are 57 species of fish. Since the beginning of 1990-ies of the fish population of the reservoir is enriched almost entirely by nonindustrial of brief cyclic species (80,0 %).
For the Dnieper reservoir integral indicator of changes in the structure ichthyocenosis is 27,0 % and indicates a high level of transformation ichthyocenosis river because of its water regulation, the emergence and naturalization of new species. Transformation of ichthyocenosis the Dnieper reservoir in the near future will continue, with an increase in the number of species will occur due to pontocaspian and maybe of exotic species.

Keywords: faunogenesis, transformation, ichthyocenosis, dniprovs'ke reservoir, hydroengineering.

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The assessment of ecological regimes in the territories of electric substations methods of phytoindication (p. 133–140)

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In present article the synphytoindication of environmental conditions formed in the areas of power substations and set the direction of environmental transformations caused by soil contamination substations technological oil have been performed. Studies have been conducted in the autumn of 2016. Relevés have been made on 19 power substations. Geobotanical description have been within each sub-station separately for control site, which has not experienced the negative impact of oil spills and technological area with obvious traces of the spill process oil. Moreover, the substations within the description made in additional areas. The total number of relevés is 51, of which 22 are in control conditions and 29 are in process oil contaminated sites. In terms gigromorfes investigated edafotopes can be attributed to those that are favorable for plant environmental group sub-mesophytes. The variability of damping forms the regime that are favorable to the ecological group of hemi-hydrocontrastophiles. The soil acidity forms favorable regime for sub-acidophiles. Th total salt regime may be stated as being favorable for mesotrophes. The regime of the carbonate content in soil may be attributed to those that are favorable for acarbonatophiles. The nitrogen content in soil are favorable for hemi-nitrophiles. The soil aeration is favorable for sub-aerophiles. The thermal climate of ecotypes can be considered as immoral. In the study area the radiation balance of 2045,3 MJ /(m^2 · hr). The humidity can be evaluated as such, which is favorable subaridophytes. The difference between the amount of precipitation and evaporation according to phytoindication is –299,1 mm. The continentality of climate can be estimated as hemi-continental. The phytoindication evaluation reveals that the temperature of the coldest month is –4,8° C. The light mode is heliophyte friendly. The synphytoindication method has been shown to be a quite informative for environmental regimes detection due to anthropogenic transformation of ecotopes. Ability to use tools phytoindication designed for natural ecosystems, for the purposes of the environmental assessment of anthropogenically transformed areas, caused by non-specific nature of the response of communities living organisms on pollution. Against the background of the natural gradient, which is subject to environmental conditions in the relevant part of the steppe zone, where power substations are studied, and their vegetation cover reflects some of the specific features inherent in this is man-made formations. First of all, it thermal cilmat whose valuation is impossible to explain the relevant gradients. This feature of the termal climat accompanied by increased light mode and an increased level of human-induced soil aeration. We obtained evidence that pollution leads to unification of ecological structure of the plant community. Under the influence of pollution there is a transition to a final state, which is to some extent independent of the initial ecological diversity of communities. Unification of ecological structure of vegetation under the influence of soil contamination with oil technology is a testament to the unification of the environmental conditions.

Keywords: phytoindication, soil pollution, electrical substations, cluster analysis, ecological diversity, plant communities.

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